UHF Reader User Manual

1 Quick Guide

1.1 Product introduction

CMC181 is a high-performance UHF RFID reader, with complete proprietary intellectual property rights, supporting DRM (Dense Reader Mode) , excellent network stability ,especially suit for enterprise scale batch group application, can be widely applied to various RFID application systems such as SCM, Access control, anti-fake and shop floor control system and so on.

Application:

- Vehicle management
- Customs clearance management
- Storage and logistics management
- Access control system
- Shop floor control
- Asset management

Features：

- Compliant with the EPC Class1 Gen2 (ISO18000-6C) ；
- High scanning speed, up to 750 tags/s;
- Extra scanning range, up to 12 m (adjustable, vary with antenna);
- 4 auto switch antenna ports can support 4 antennas in use simultaneously;
- High reliability, aluminum out case, for the harsh work condition.

Specifications：

Specifications	Protocol	ISO18000（EPC Class1 Gen2）
	Operating Frequency	US:902MHz～928MHz (standard) Europe:865MHz～868MHz China:920MHz～928MHz
	Working mode	FHSS or fixed frequency with software settings
	Output power	5dBm～30dBm (1dBm step by software)
	RF interface	Four TNC interfaces
	Communication interface	RJ45
	IO	2 ways relay output, 1 photoelectric isolated inputs
	Reading distance	Maximum up to 12M
	Writing distance	Maximum up to 3M
	Maximum length of EPC	Maximum up to 496 bits
	Indicating lamp	Power, inventory and four antennas
	Power adapter	12V/3A
	Power consumption	Maximum up to 13W
Physical parameters	size	222mm*158.5mm*33.7mm
	weight	1.094kg
	Shell material	Aluminum alloy
Environmental parameters	Working temperature	-20℃～+50℃
	Storage temperature	-40℃～+85℃
	Storage humidity	5%～95% no condensation

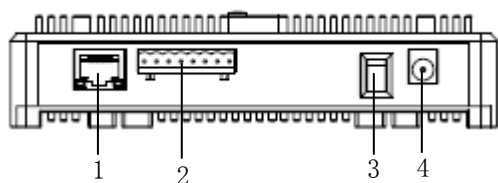## 1.2 Function description for UHF reader ：

The top view for UHF reader ：
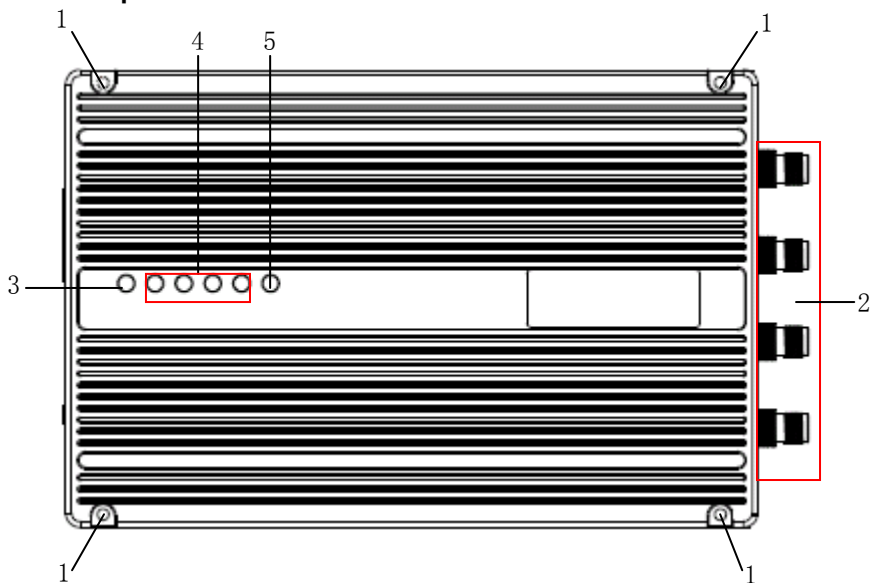
Icon show：

1. The fixed screw holes
2. Ant port
3. Power lamp
4. Ant lamp
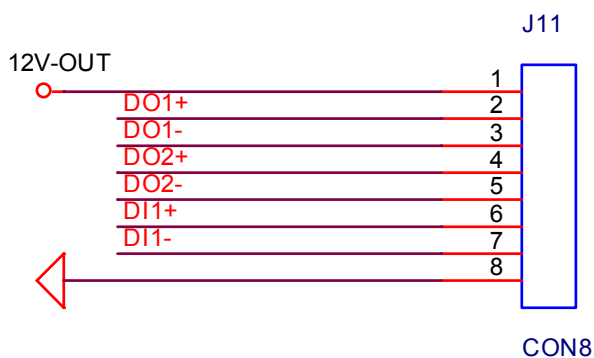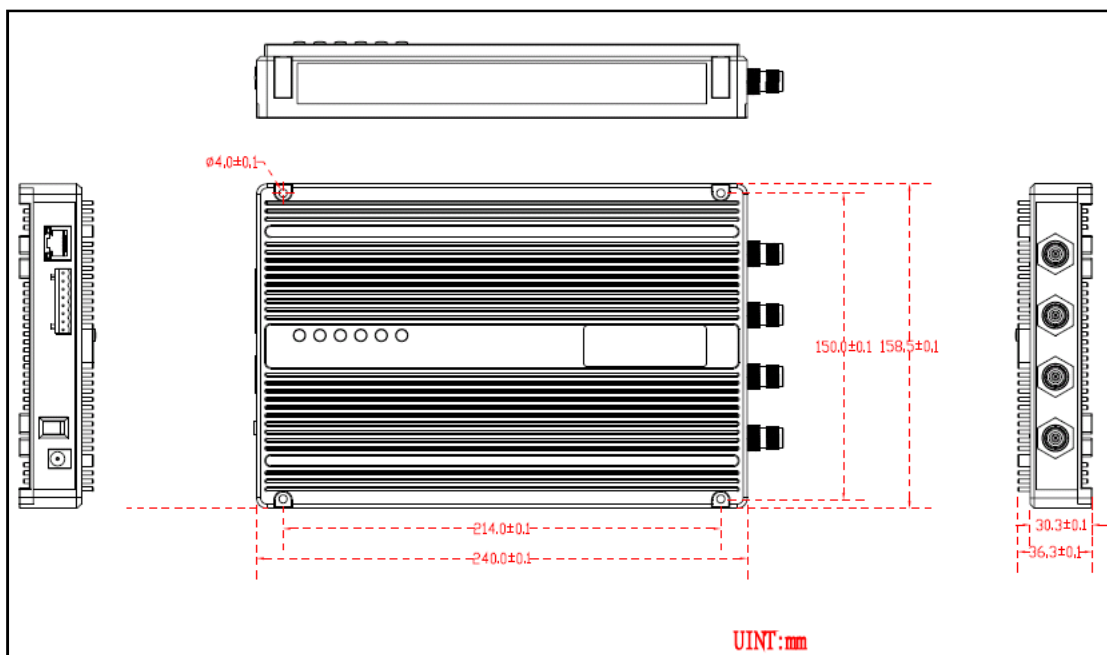5. Inventory lamp

The side view for UHF reader ：

Icon show ：

1. RJ45
2. I/O port
3. Power switch
4. Power interface

1.3 The definition of IO port：

Symbol	Function
+12V	+12V power output
D02+	
D02-	2 ways output circuit
D01+	
D01-	
DI+	1 way input circuit
DI-	
GND	Power GND

1.4 Product size（mm）

1.5 Standard fittings

Item	Quantity	Remark
Mainframe	1	UHF reader
Reticle	1	Standard line, 2M for standard
Terminal	1	8 pin,3.96mm space between pins, green
Power adapter	1	DC 12V/3A

1.6 Attention

1. Use standard power adapter of 12V/ 3A;

2. Non authorized person shall not change equipment, decompose and assembly, otherwise, it will cancel the warranty period;

3. Don't put the equipment storage or installed in direct sunlight, high humidity, dew and other heat source place;

4. The cable's length between ant and UHF reader should not exceed 10 meters. When the length is longer than two meters, you'd better use RF cable of low loss, or affecting the reading distance;

5. Electronic tag's read-write distance is related to the gain of the antenna size, the angle between the tag and the antenna size, the labels on items related to such factors as the medium and the surrounding environment. So in practical application , please according to the site conditions to select the best match.

2 The Demo of use

System frame for UHF reader ：

A whole RFID system consists of UHF reader, antenna and tag. The host sends reading and writing command to UHF reader through RJ45 interface. After receiving command, UHF reader sends a specific frequency electromagnetic wave to space by the antenna. When the tag goes into the magnetic field, the energy obtained from tag's internal antenna will drive the tag circuit, whose internal information is sent. The UHF reader will accept and send the information to the host. The system frame's sketch map is shown in figure 2.0:
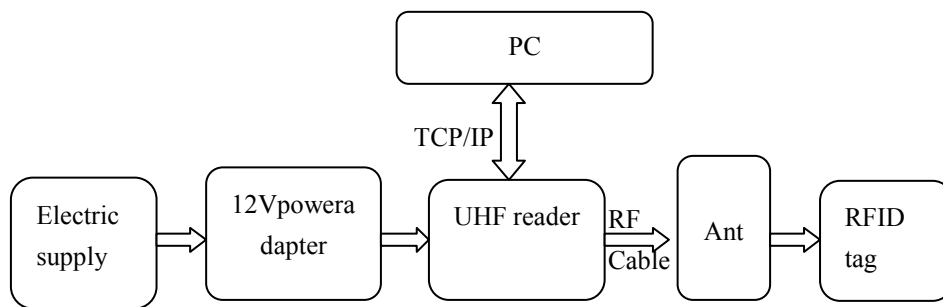
```
                           ┌──────────┐
                           │    PC    │
                           └──────────┘
                               ↕
                           TCP/IP
┌──────────┐   ┌──────────┐   ┌──────────┐ RF   ┌─────┐   ┌──────────┐
│ Electric │ → │ 12Vpowera│ → │UHF reader│Cable │ Ant │ → │  RFID    │
│ supply   │   │ dapter   │   │          │ →    │     │   │  tag     │
└──────────┘   └──────────┘   └──────────┘      └─────┘   └──────────┘
```

Figure2.0 system frame map

2.1 Presenter

Name	Specs	Amount
UHF reader	222mm*158.5mm*33.7mm	1
Reticle	Standard cable	1
Circularly polarized antenna	225mm*225mm*39mm	1
Tag	UHF	some
PC	/	1
Power adapter	DC 12V/3A	1

2.2 The software instructions on PC ：
2.2.1   Working in TCP/IP mode
1. Connect one side of the electric supply with 12V power adapter, the other side of 12V power adapter connected with UHF reader. Connect cable of antenna with UHF reader, connected with PC by reticle. Then open power switch of UHF reader and PC.

2. Double click "UHF Demo" on PC shown in figure 2.1, and you will go into figure 2.2.
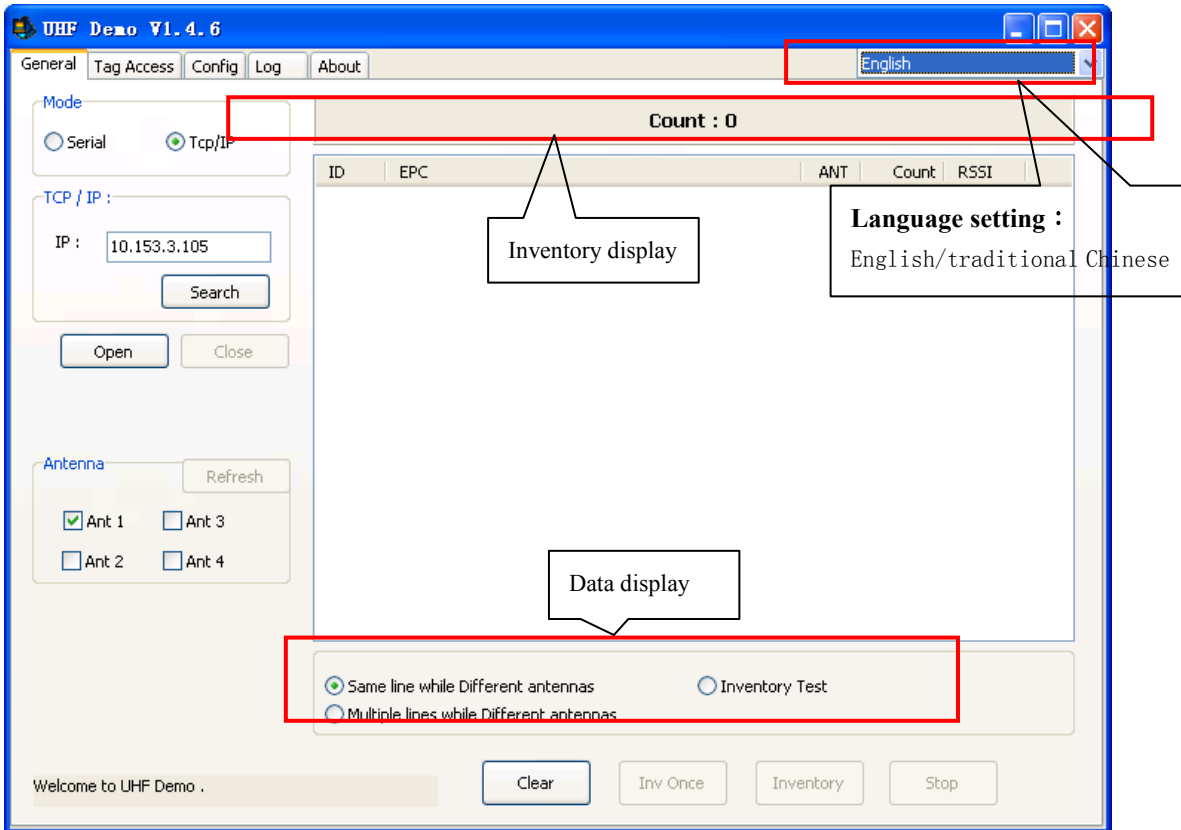

Figure 2.1

Figure 2.2

Icon show:

Search: get devices' IP

Open: connect the device

Close: disconnect the device

Refresh: refresh the interface of the device

Same line while Different antennas: add count

Inventory Test: no add count, easy to long distant operation

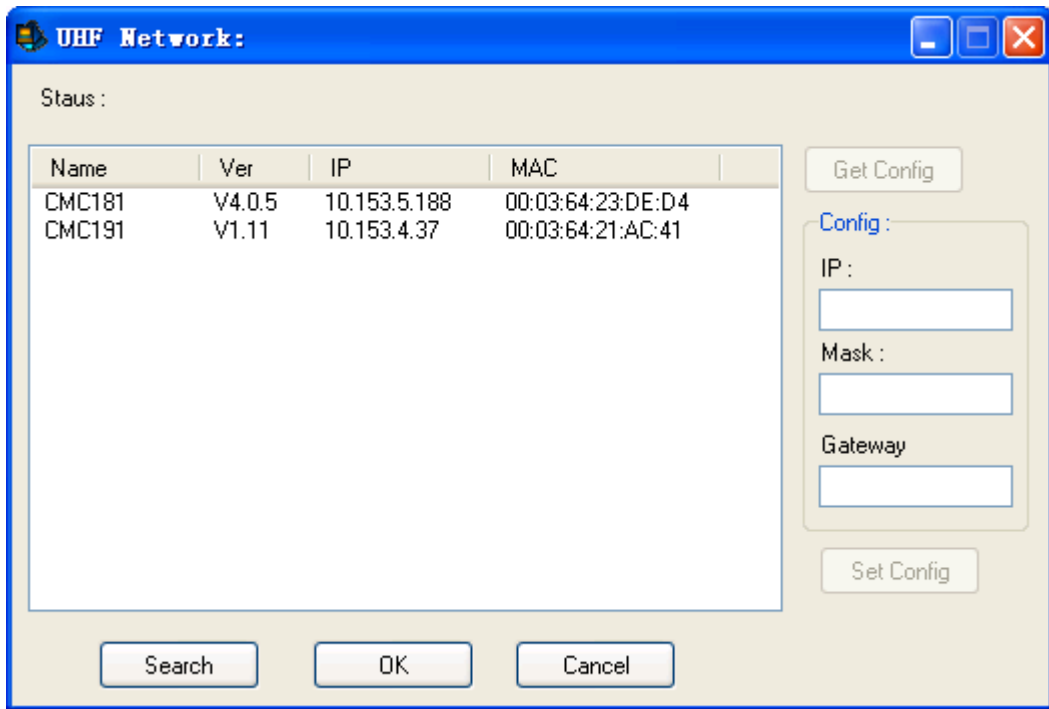3. In Figure 2.2 ,select" TCP/IP" and then click "search", you will see Figure 2.3.

Figure 2.3

Icon show

Set Config: set device's network parameters

Get Config: get device's network parameters

Config: fill in network parameters including in IP, Mask and Gateway.

4. Click "OK" to get all UHF reader devices .You choose every device by clicking the MAC ,then click "Get Config" to
gain device's network parameters .After getting   device's network parameters ,you can fill in what you want to
set ,then click "Set Config".

    And click "open" to connect network, if success, UHF reader will show you "Init OK" and firmware
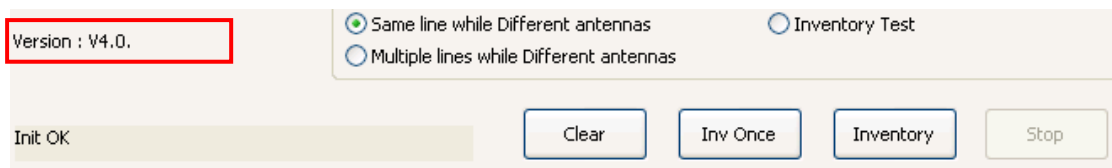version .UHF reader will automatically search corresponding ant port .see in Figure 2.4.

Figure 2.4

1）Inventory

a. Pander data display option .You can select appropriate option, such as you'd better pander "Multiple lines
while different antennas" with multi-ant ports.

b. Make UHF tags dead against the center of the antenna.

c. Click "Inventory" and "Inv Once". Show you in Figure 2.5.
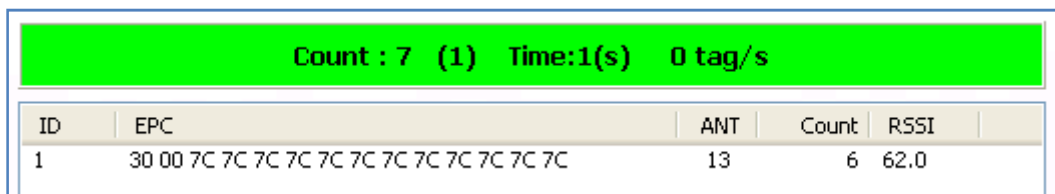
d. Click "Stop" to complete inventory.

Figure 2.5

2) Tag Operation

Click "Tag Access", you will see Figure 2.6.
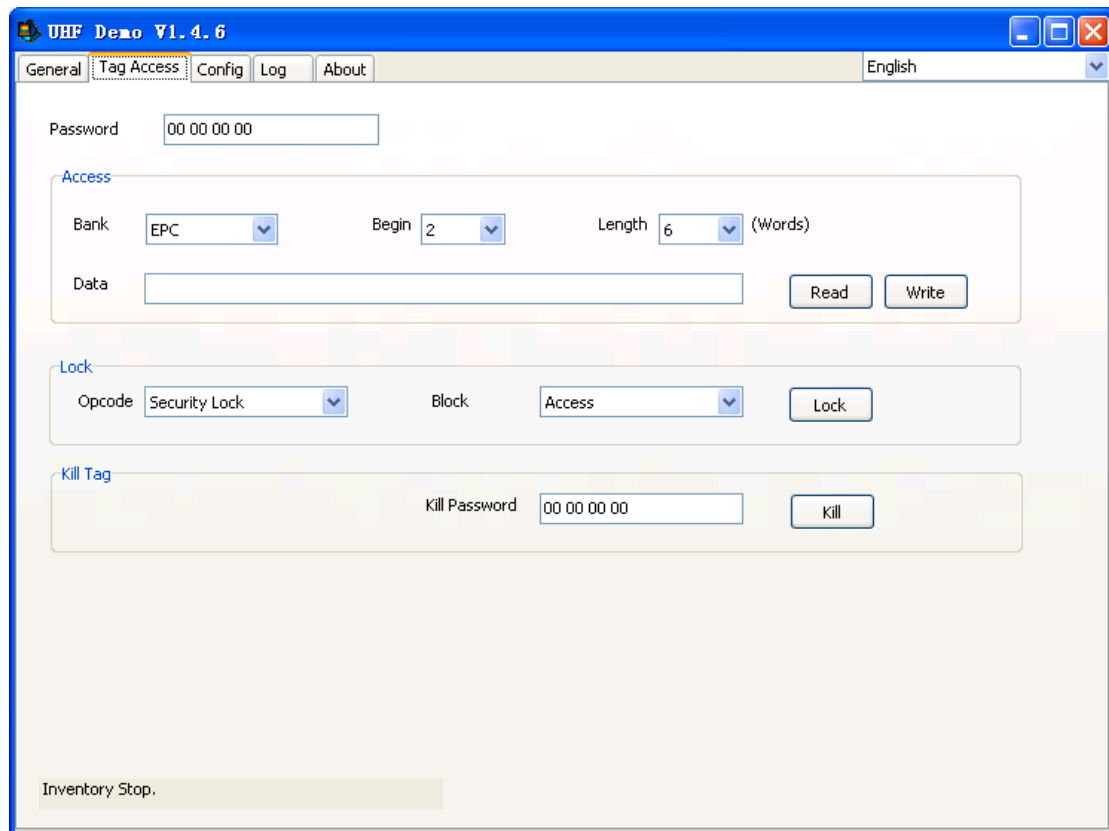

Figure 2.6

Icon show:

Password   : default is 00 00 00 00;

Bank   : tag bank memory including RESERVED、EPC、TID、USER ;

Begin   : the start address is word pointer (16-bit unit);

Length   : length is word length of EPC;

Data   : data to write;

Read   : read special tag memory;

Write   : write data to special tag memory;

Opcode   : set option mode.

Block   : set tag password;

Lock   : lock tag;

Kill password   ; kill tag password. It cannot be set "00 00 00 00";

Kill   : after logout，tag cannot recover ;

Read Tag

Set corresponding parameters of tag memory bank, make tag dead against ant, and click " Read" to get tag information. If

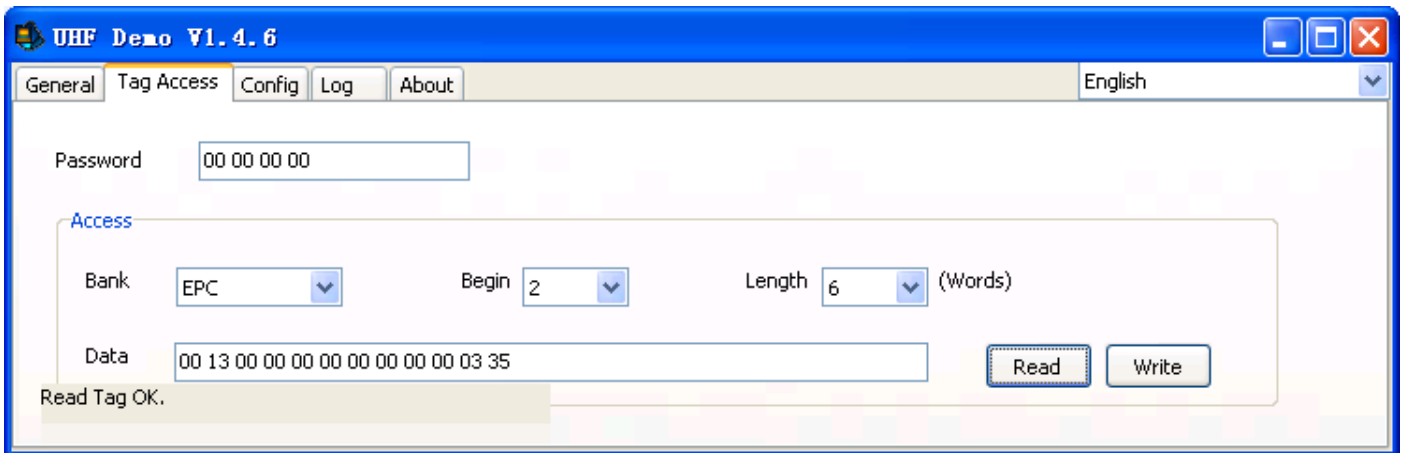Reading succeeds, you will see "Read tag OK" in figure2.7.

Figure 2.7

Write tag

Set corresponding parameters of tag memory bank, make tag dead against ant, edit data to write, and click "Write". If it is

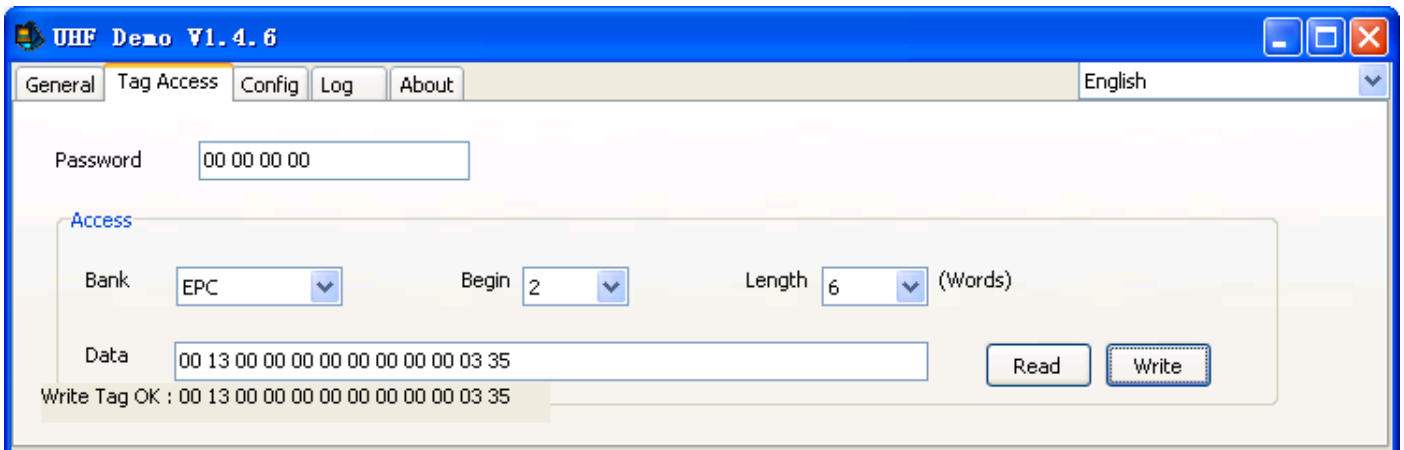successful, you will see "Write Tag OK" in figure 2.8.

Figure 2.8

Lock Tag

Set password of tags to lock, select corresponding operation and password, click "Lock". If it is successful, you will see "Lock Tag
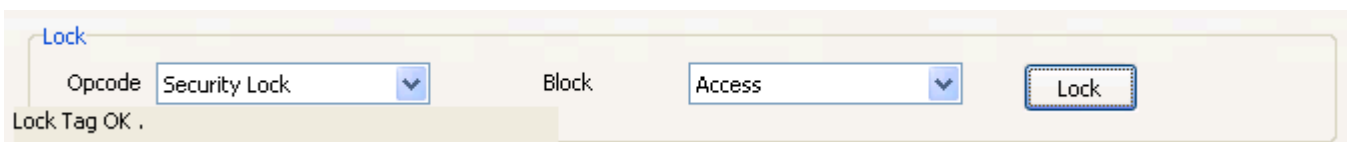
OK" in figure 2.9.

Figure 2.9

Logout Tag Operation: firstly set password of tags to kill, the password cannot be "00 00 00 00" **.**Click "Kill"and you will see "Kill Tag OK" in figure 2.10.
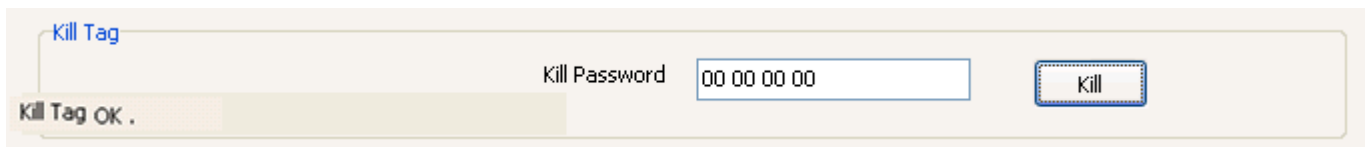
Figure 2.10

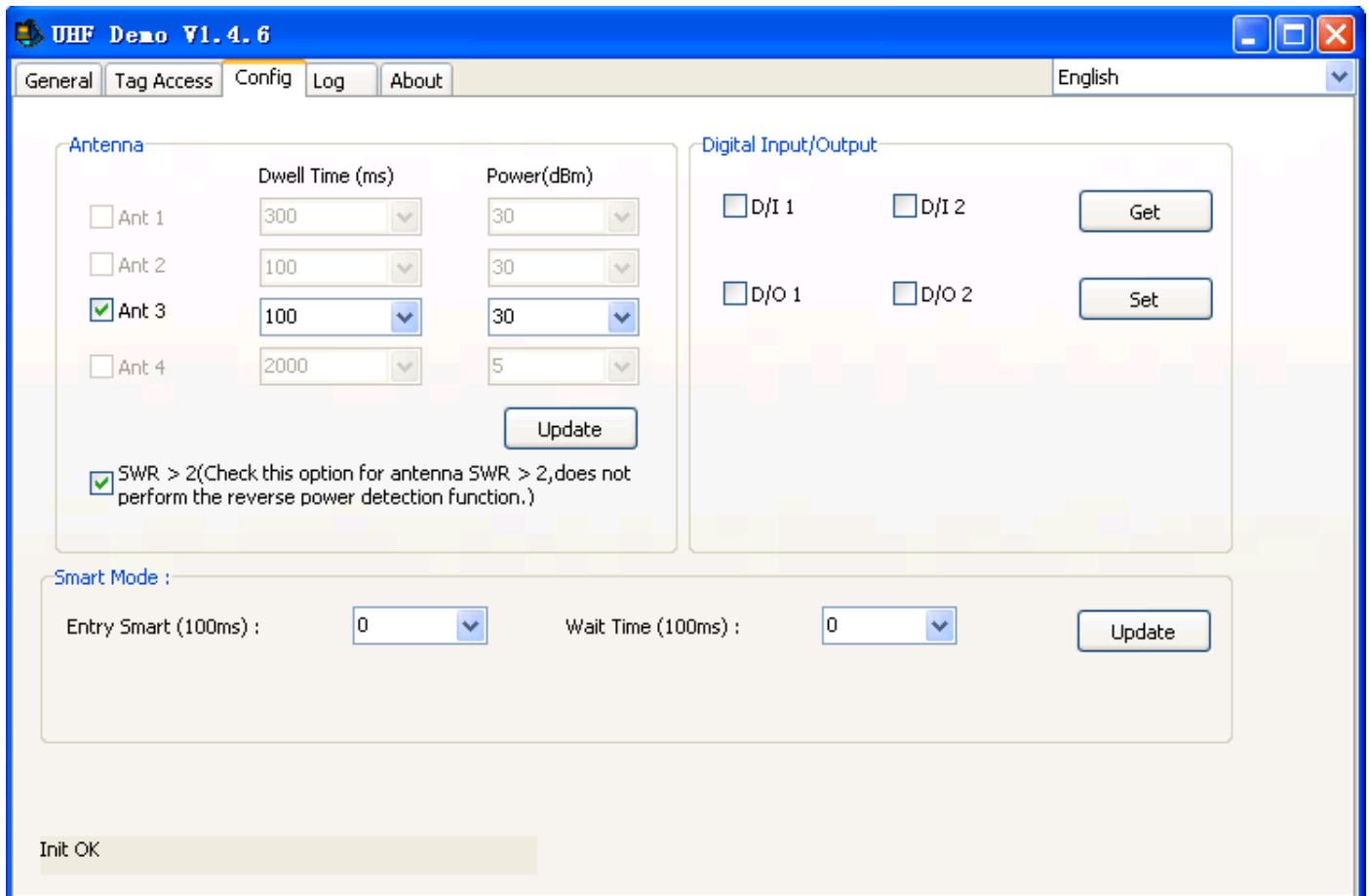**2）set device parameters**

Click "Config" in figure 2.11.

Figure 2.11

3) Icon show

Ant: set the ant port

Dwell Time (ms): set executive time of ants

Power (dBm): set output power which arranges 0 from 30.

SWR>2: check this option for ant SWR >2, do not perform the reverse power detection function.

Update: update parameters.

4）Operation notes

Click "Log" in figure 2.12.

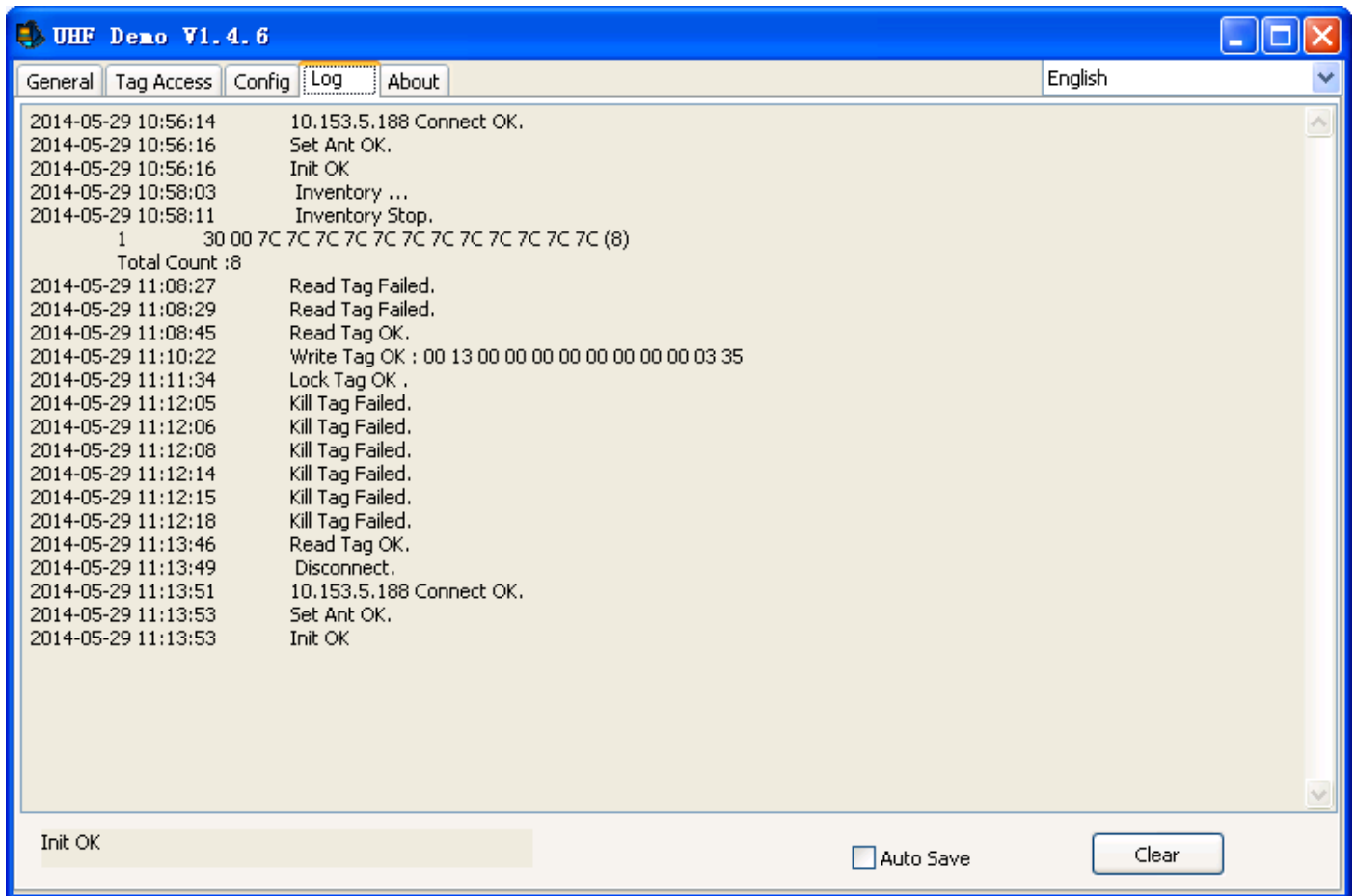 Pander "Auto save" to save log notes.

Figure 2.12

Notice：

This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

Appendix-1 Frequently asked questions for UHF Reader

1. Search tags unsuccessfully
    A. Check ant's connection
    B. Check ant's port
    C. Check tag 's placement

2. The distance of reading tags is not enough
    A. Check whether making a tag dead against the ant
    B. Check connection between the device and ant's linker
    C. Check whether ant's output power is enough big.

3. The speed to read tags is low when there is only one ant.
    A. Pander "SWR > 2" when SWR of the external ant is small.
    B. Cancel "SWR > 2" when SWR of the external ant is big .And pander the corresponding ant port by yourself.

Appendix-2 After service

◆ Product warranty period is one year .If it is not the damage to the non-natural disasters and man-made factors ,the warranty period is free to repair ；

◆ Once the product to sell, unless the product with quality problems need to repair or replacement, will not return.

◆ The product due to the damage to man-made factors and fault for unmerited operation is not in the scope of three bags, repair with charging.

FCC 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 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 Statement

This device complies with FCC radiation exposure limits set forth for an uncontrolled environment.

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.

Caution!

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