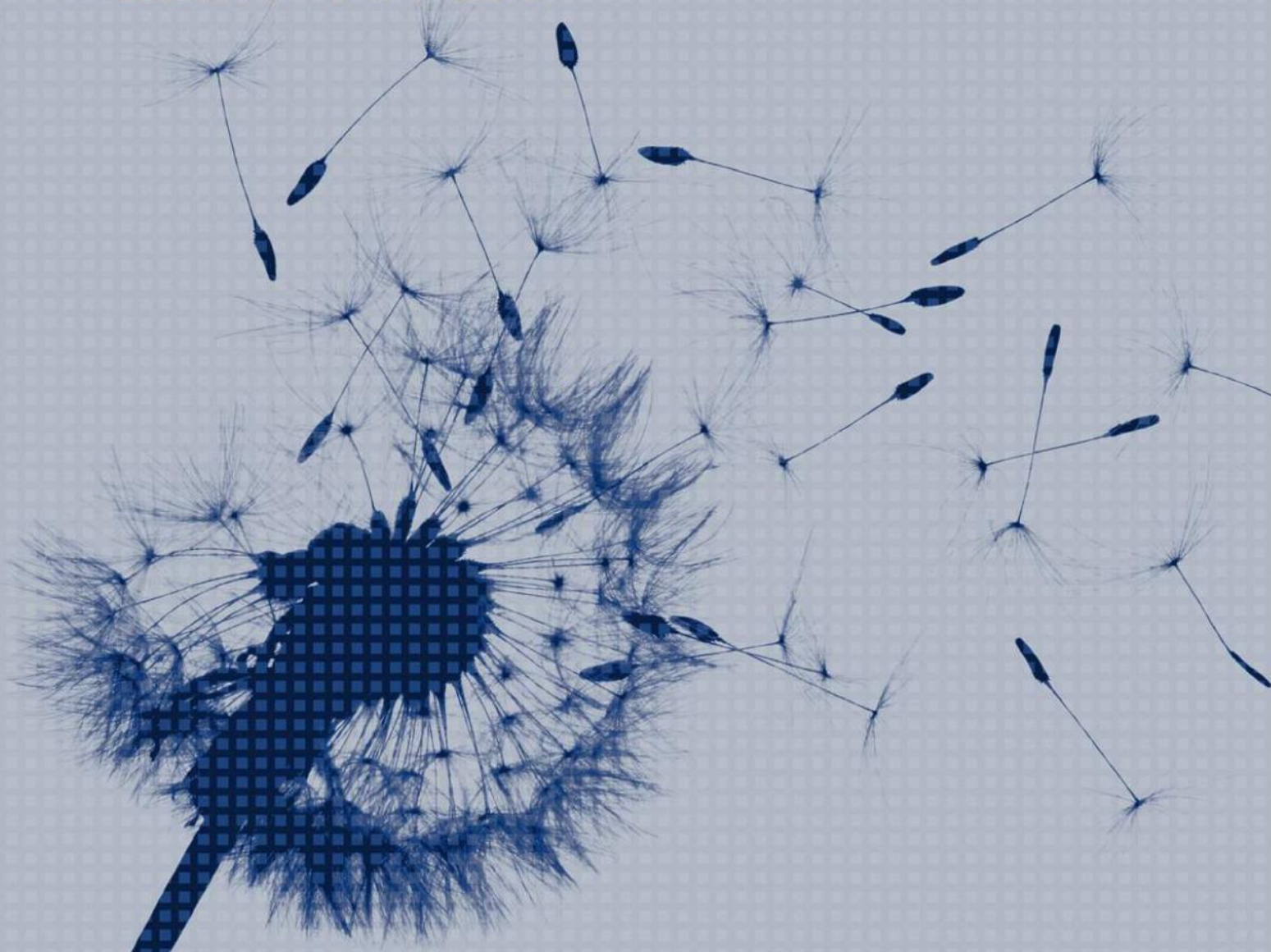
SMARTair™



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SmartAir Wireless Configuration and Setup

0) SCOPE

The scope of this document is to explain the SmartAir Wireless system. This includes explanation of how the Wireless locks work, how they must be configured, initialising Wireless Hubs, additional devices needed and how they can be connected.

1) SYSTEM ARCHITECTURE

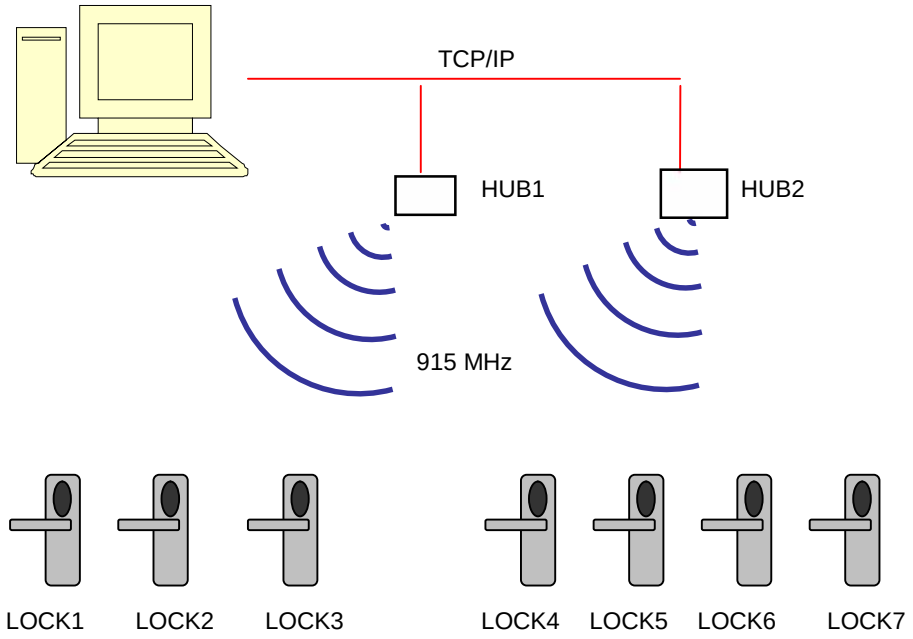
The Wireless locks and Readers can utilise iClass or Mifare technology and are connected through RF communications to the PC.

The Wireless Hub is connected to the PC through an Ethernet connection, using the UDP protocol and communicates with the Wireless locks using RF.

The RF communication is 915 MHz and a proprietary protocol with information sent between devices being encrypted.

A single PC can manage as many Hubs as needed.

A single Hub can manage up to 30 Wireless locks within a range of approximately 30 metres in a close environment or up to 100 metres in open space.



The RF lock's module can be in one of three states:

Always Sleep	Manufacturing mode	Switched off. No communication.
Always Awake	Initialization mode	Switched on. High power consumption. Automatically switches back to Always Sleep if more than 1 hour in this state.
Sleep/Awake	Standard mode	Switched on every 5 seconds. Normal power consumption Communication will have a delay of approximately 8 seconds.

2) INTRODUCTION

The aim of this section is to explain the process of adding a Fixed IP Address to a Hub or multiple Hubs and establishing communications with the Hub/s.
This process can be completed prior to the installation of Hubs in the field, avoiding the requirement to locate each Hub in the field and connecting to it with a Cross-Over cable and PC.

To start this process, it is necessary to know the fixed IP Address of the Hub/s. The Default/Factory settings are;

IP Address: 192.168.1.10
Subnet Mask: 255.255.255.0
Gateway: 192.168.1.0

Note: To ensure the Hub is configured to the Default settings, press the button, indicated in the below image, and then power up the Hub whilst pressing the button for at least 5 seconds. This will ensure the Hub has the above default network settings.

3) STARTING THE HUB AND CHANGING IP SETTINGS

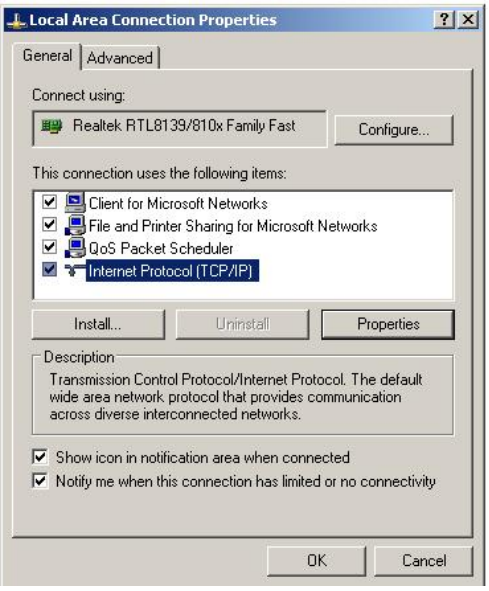
1. Power Up the Hub and connect it to the PC, which has the TS1000 Management software installed, using the supplied Cross-Over cable.

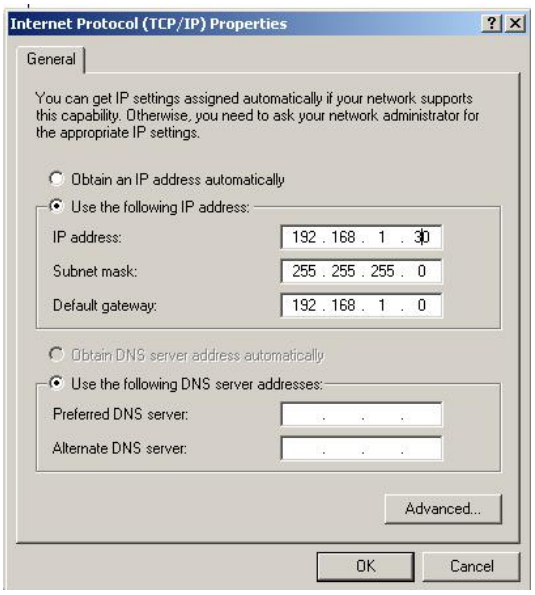
2. In order to connect to the Hub, at its default IP settings, and to change those setting to the site settings, it is necessary to change the IP settings of the connected PC.
Note: before changing any Network settings on the PC, take note of the original settings so they can be restored at the end of this process.
Note: you will require Administrator Rights on your PC to change these settings.

   a) On the PC, go to 'Start', 'Control Panel', 'Network Connections', 'Local Network'

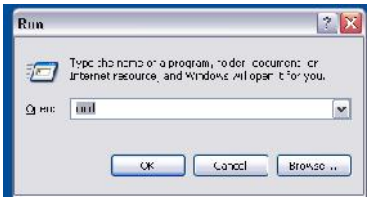
   b) With 'Local Network' selected, right click and select 'Properties'.

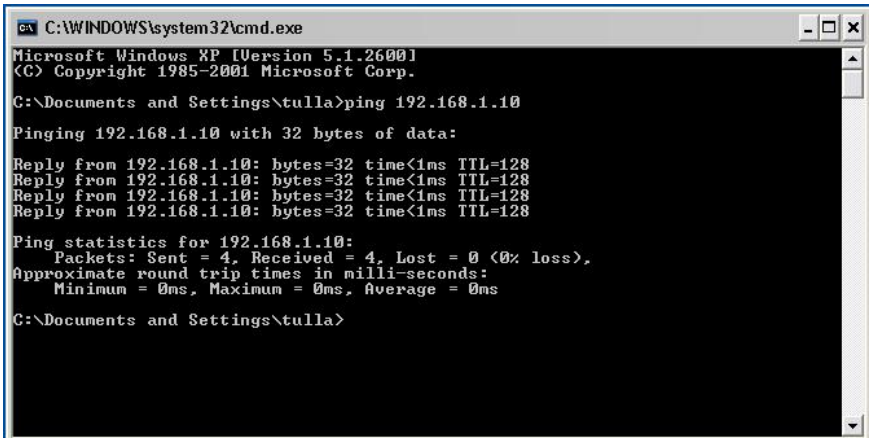
   c) Highlight 'Internet Protocol (TCP/IP)' and then click on 'Properties' to change the IP settings so that the PC can communicate with the Hub. (See below Screenshots)





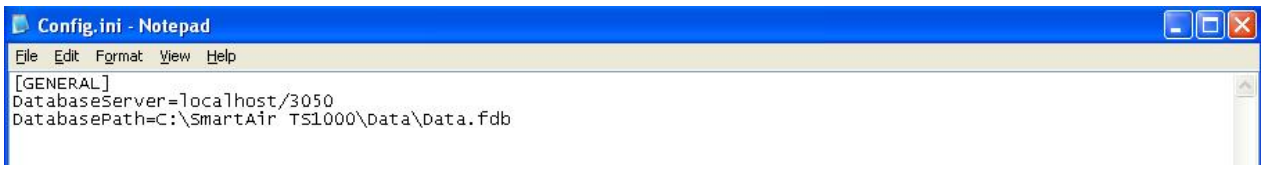
   d) To confirm that the PC can communicate with the Hub, on the PC, go to 'Start', 'Run', write "cmd" in the dialog box and press 'Enter'. Write "ping 192.168.1.10" and click 'Enter'. See screenshot below for a successful result.



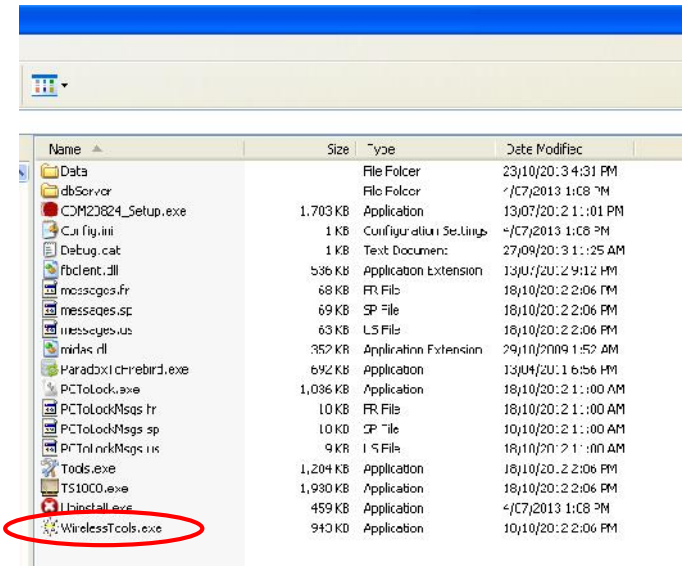


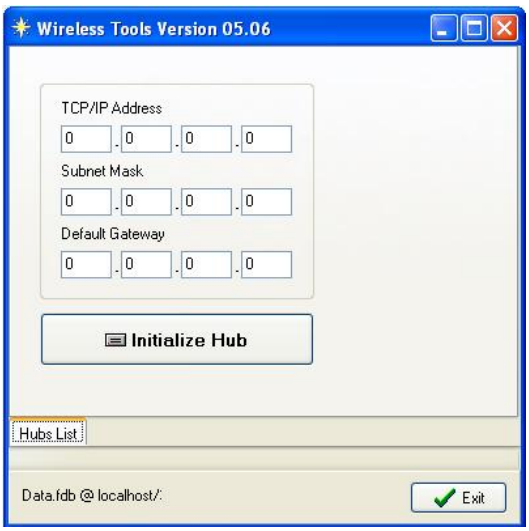
3. Go to the installation folder of the TS1000 software. By default, this folder should be "C:/Smartair TS1000"

4. Open the "Config.ini" file and rename the "DatabasePath=C:\Smartair TS1000\Data\Data.fdb" line to "DatabasePath=C:\Smartair **TS10**\Data\Data.fdb". Temporarily changing this path prevents the Config file from pointing to the TS1000 Database. Make a note of the original settings so they can be restored.



5. In the installation Folder of the TS1000 software, execute the "Wireless Tools" application.





6. In the above application, write the fixed IP Address settings required for the Hub to operate on the site Network. Once this has been completed, click on the "Initialise Hub" button. In the bottom of the dialog box should appear the message "OK: Hub IP changed successfully".

7. If there are more Hubs in the installation, disconnect the programmed Hub and connect additional Hubs, one at a time, and repeat the previous process, assigning each Hub an individual IP Address.

8. Once all Hubs have been assigned their new IP Network settings, go back to the installation folder of the TS1000 software, by default "C:/Smartair TS1000", open the "Config.ini" file and rename the "DatabasePath=C:\Smartair TS1000\Data\Data.fdb" back to its original setting so that the path is again looking at the TS1000 Database.

9. Use the processes in Steps 2 a) to 2 c), to set the PC Network settings back to their original. To ensure that all PC and Hub Network settings are correct use the 'Ping' command, as per Step 2 d), this time inputting the new Hub IP Address to ensure communications can be established.

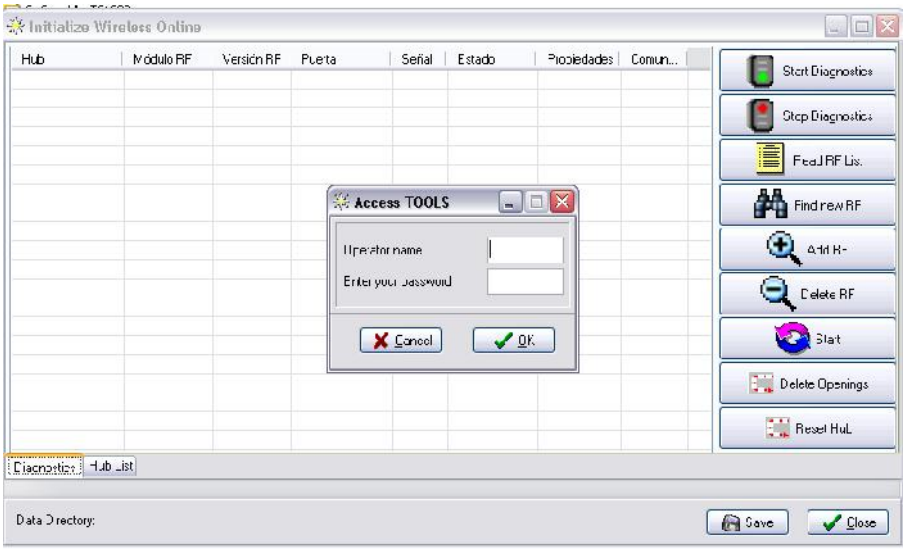
4) INITIALISATION OF THE INSTALLATION

Once all Hubs have been installed with their site specific IP Addresses, it is necessary to add the Hubs in the Database of the TS1000 installation.

1. Go to the installation folder of the TS1000 software. During a default installation of the software, this folder should be “C:/Smartair TS1000”

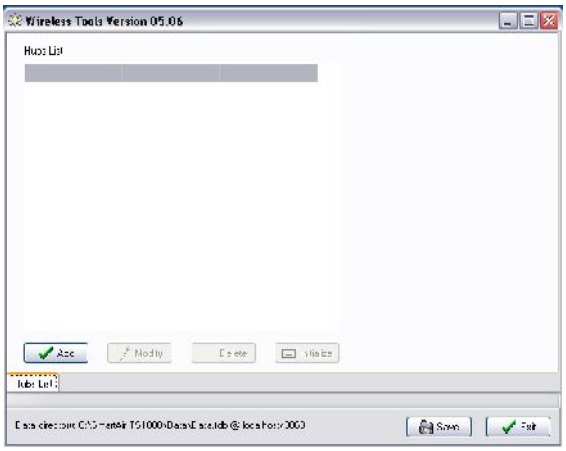
2. Open the “Wireless Tools” application. Because you renamed the Database Path line back to its original setting in Step 8 of the previous section, the Wireless Tools Dialog box will now look different, with extended settings and options.

3. The application will also now ask you for an Operator Name & Password. By default, these are;
   Operator Name: TOOLS
   Password: Is the License Number of your software

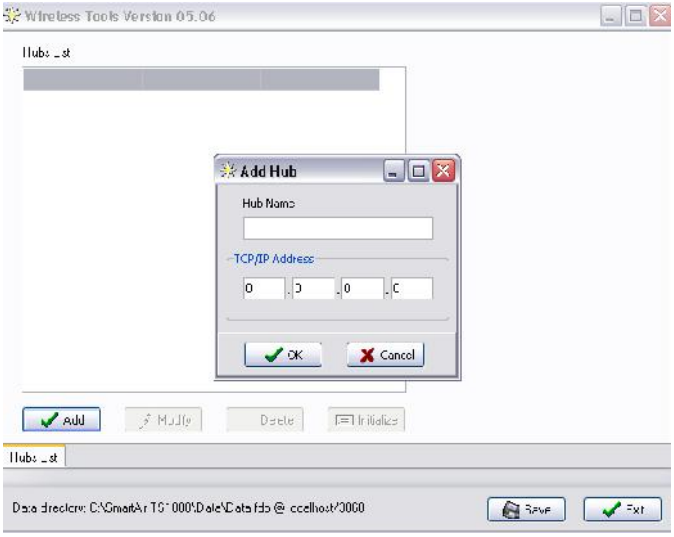


4. Once you have logged-in, another Dialog Box will pop up stating “There are no Hubs connected to this PC”. Click ‘OK’ on this message.

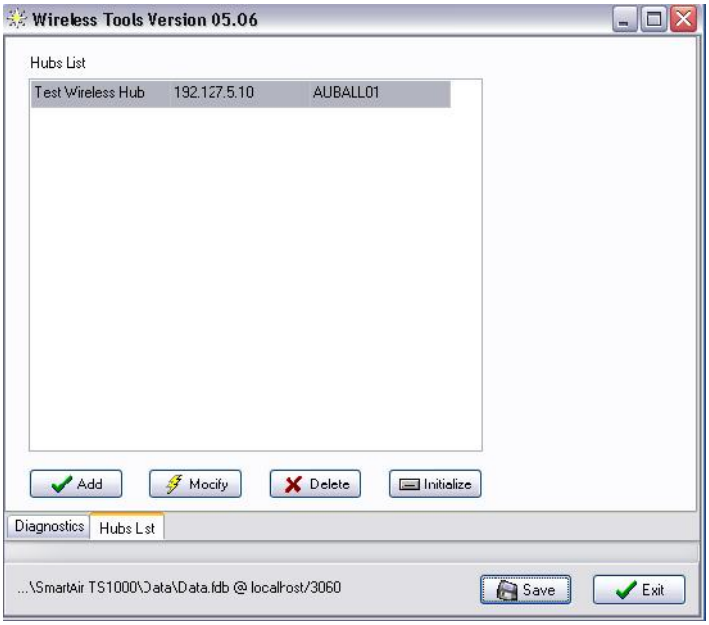
5. On the remaining screen, click “Add” to add the Wireless Hub or Hubs.



6. Give the Hub a description and input the relevant IP Address information.



7. The Hub has now been added to the TS1000 Database with the required IP Address. Add additional Hubs, if required, before Saving and Closing the application.



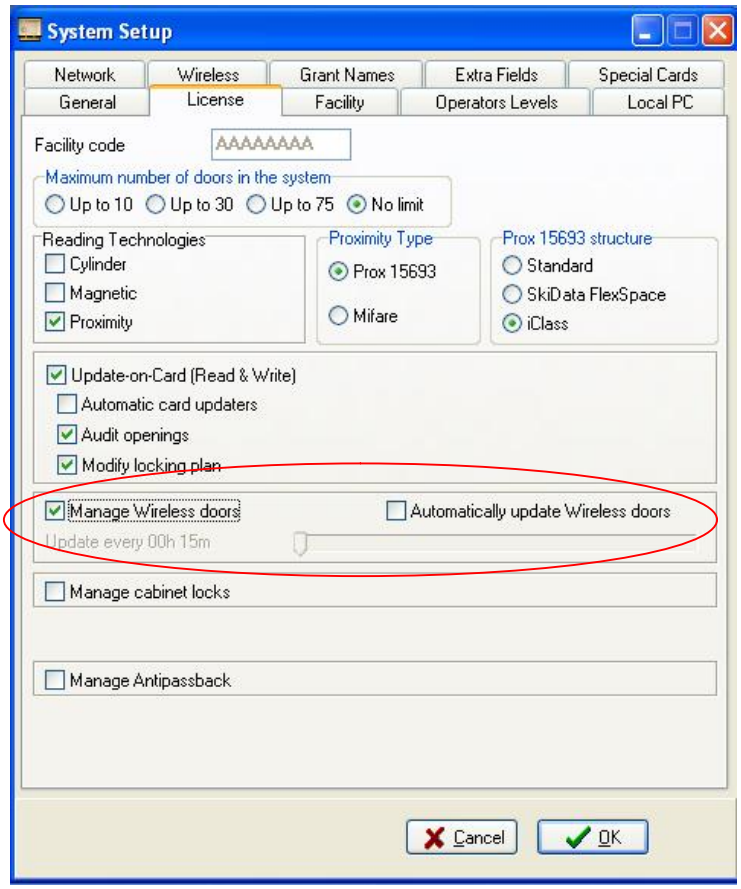
5) TS1000 SOFTWARE

5.1 Activating the Wireless licence

The Wireless functions are activated through the SmartAir licence system. Once the TS1000 application has been started, Click on “Site” (top left of screen) and select the ‘Data’ file in the ‘Data’ Folder. Once the Data has been loaded, you will see a Log-In Screen. By Default, the User Name is ‘TS1000” and the Password is the Licence Number.

Once Logged In, click on the “Setup” button to see the below screen.

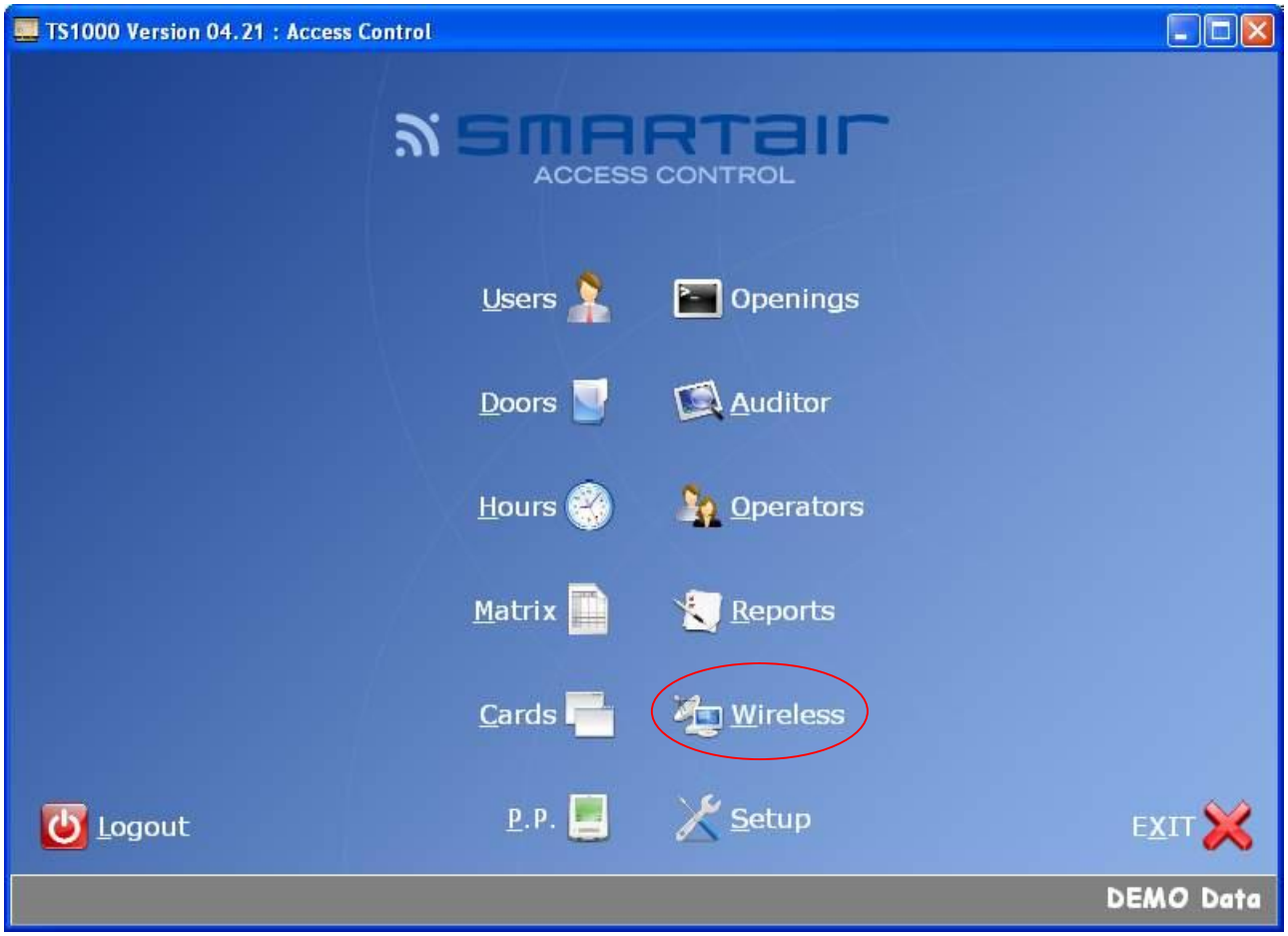
The below shown option must be activated during Data folder creation. It will only be available if Proximity Mifare or iClass technology has been chosen as the Credential type in the installation.



If the “Automatically update Wireless doors” option is checked, the system will check during the defined period of time (from 15 minutes to once a day) if any change in the Wireless information is still pending to be sent.

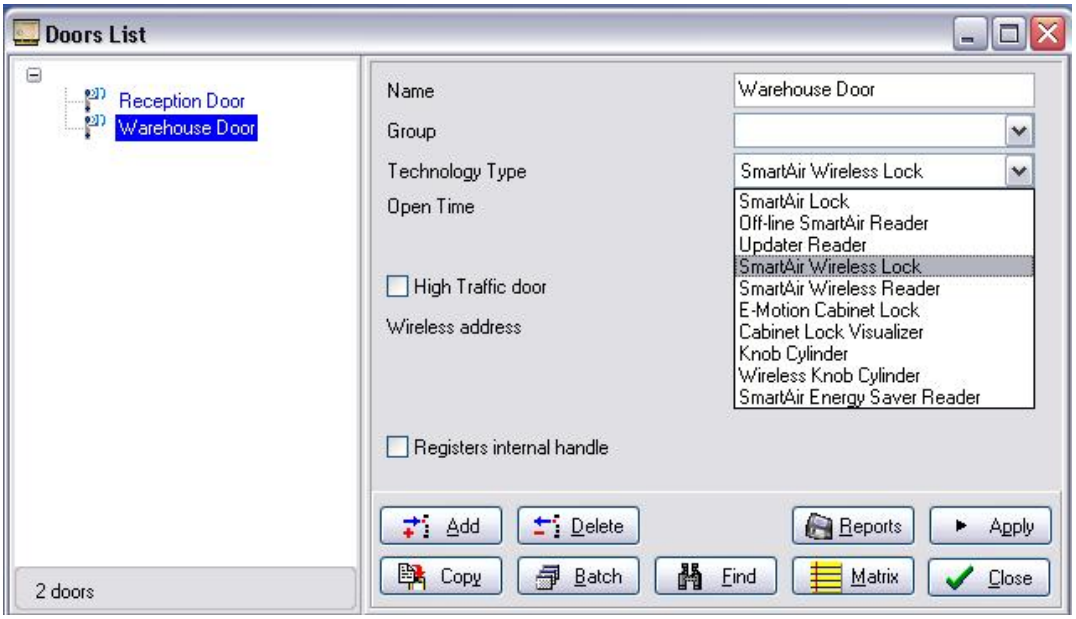
This feature only works if the software is in the main screen or in the login/password screen.

The new button “Wireless” is available when the process of Initialising the Wireless Hub, as per Sections 2 & 3, has been completed.



5.2 Wireless door type

Once the 'Wireless' option has been activated, new 'Technology Types', "SmartAir Wireless Lock" or "SmartAir Wireless Reader" can be created in the Doors screen:

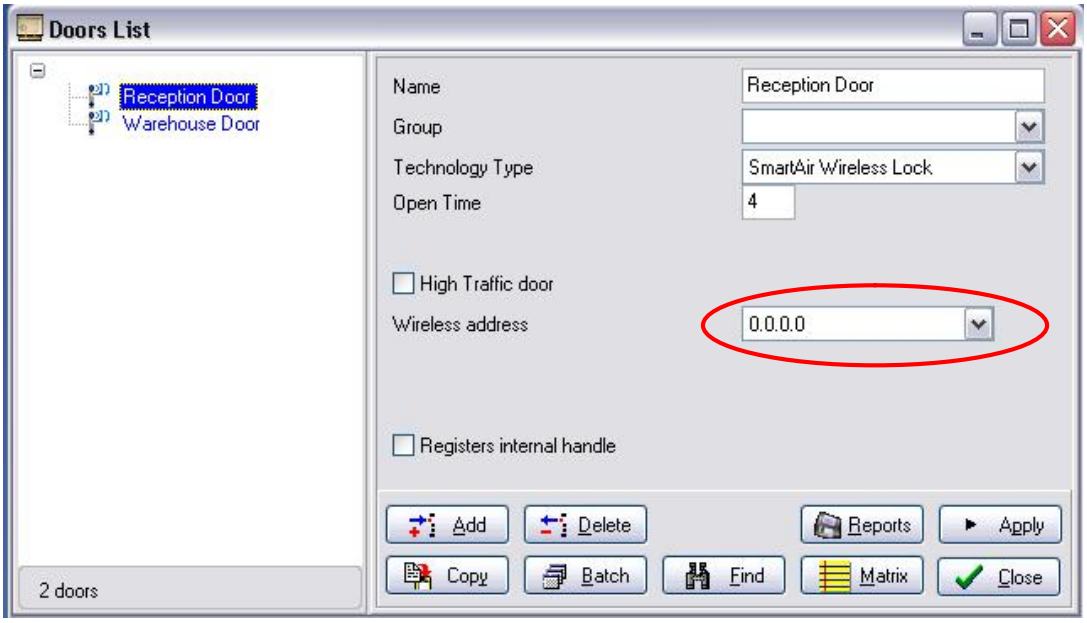


The only new parameter to be defined for this type of door is the "Wireless address".

Doors that have this parameter empty or equal to 0.0.0.0 will not communicate through RF.

Once the "Locking Plan" has been defined, the Portable Programmer can be loaded with the list of Wireless doors data.

The wireless address cannot be typed in to the field, it will be automatically updated during the lock initialisation.



5.3 Initialise Wireless Locks

Create all Wireless Doors for the site, as per step 5.2. Ensure the Portable Programmer (PP) is connected to the Computer and Turned 'On'. Then, from the Main Screen, click the "P.P" button. Click on "Send Data to PP". This will download all Door Data to the Portable Programmer. You will receive a message when the download is complete.

Connect the lead supplied with the Portable Programmer and connect it between the PP and the first Lock you intend to Initialise. Turn 'On' the PP and press the second button from the left, under the LCD screen, also under the icon which looks like a door. Use the 'Down' arrow to highlight "Initialize" and press "OK". This will provide a list of doors which can be initialised with the portable programmer. Select the relevant door and press "OK". This will download the relevant information from the Portable Programmer to the door. Once you receive the message stating that the download has been successful, disconnect the lead. Before repeating the procedure for other doors in the installation, Go to steps 5.4 & 5.5 to change the 'Awake' mode of the Lock.

During this initialisation, the wireless address of each Wireless door will be also collected in the Portable Programmer. The wireless address will also be available through the test option of the Portable Programmer.

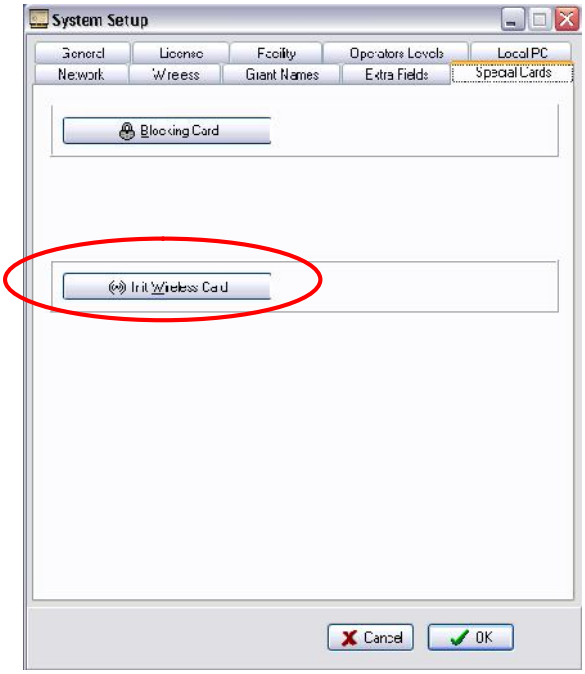
Once the doors have been initialised and the wireless address has been assigned, we will be able to send the rest of the information through RF.

5.4 Encode an RF Initialisation Card

When manufactured, RF modules are in the "Always Sleep" mode. This means that they will not accept any command from the PC. An RF module must be in an "Always Awake" mode to be detected by a Hub.

To change from the "Always Sleep" to the "Always Awake" modes we need a special card.

From the Main Screen, click on the "Setup" button and then the "Special Cards" Tab.



Place a Blank Card on the Card Encoder, press on the "Init Wireless Card" button and the card will be encoded.

Important: If a lock has not been initialized with a system code and is working in the manufacturing mode, the card encoded with a system code will not work.

5.5 Present the “Init Wireless Card” to the Locks

Once a door has been initialised using the Portable Programmer (PP), and before moving to another door, the “Init Wireless” card can be presented to it.

If the card is valid, we will see a green light. Note: This card will not open the lock.

This process will put the RF modules in the “Always Awake” mode. This means that power consumption is high, so we should change to the “Sleep/Awake” mode as soon as possible.

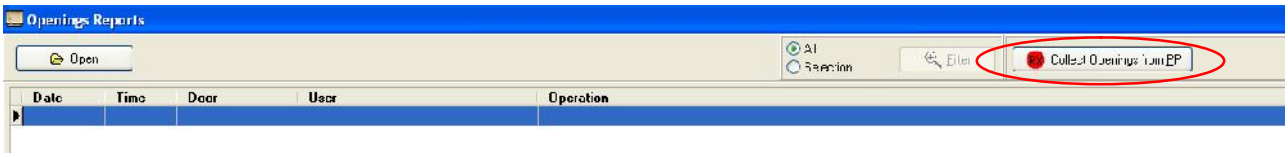
If this step is not completed within 60 minutes, the RF module will automatically change back to the “Always Sleep” mode.

We can check the state with the small led on the RF module. Now, it should be always on. This information is also available through the “Test” menu in the PP.

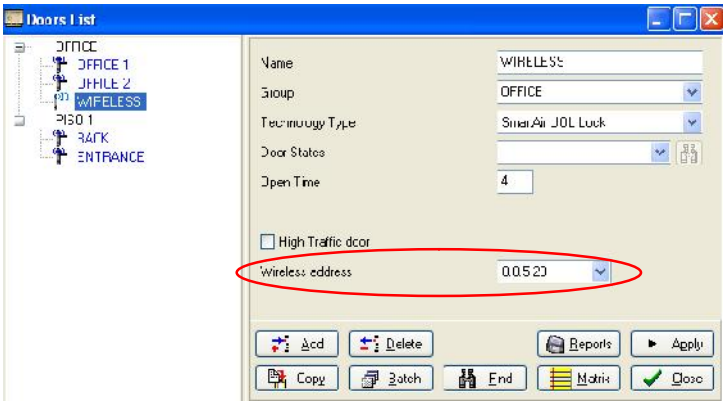
It is recommended to do this process for a few doors at one time, for example those connected to a hub, or those located in the same floor.

5.6 Uploading the Wireless Lock or Reader MAC Address into the TS1000 software

On the Main screen of the TS1000 software, click on the “Openings” button and then click on the “Collect Openings from PP” button. Note: the Portable Programmer must be connected to the PC and turned ‘On’ for this operation to work.



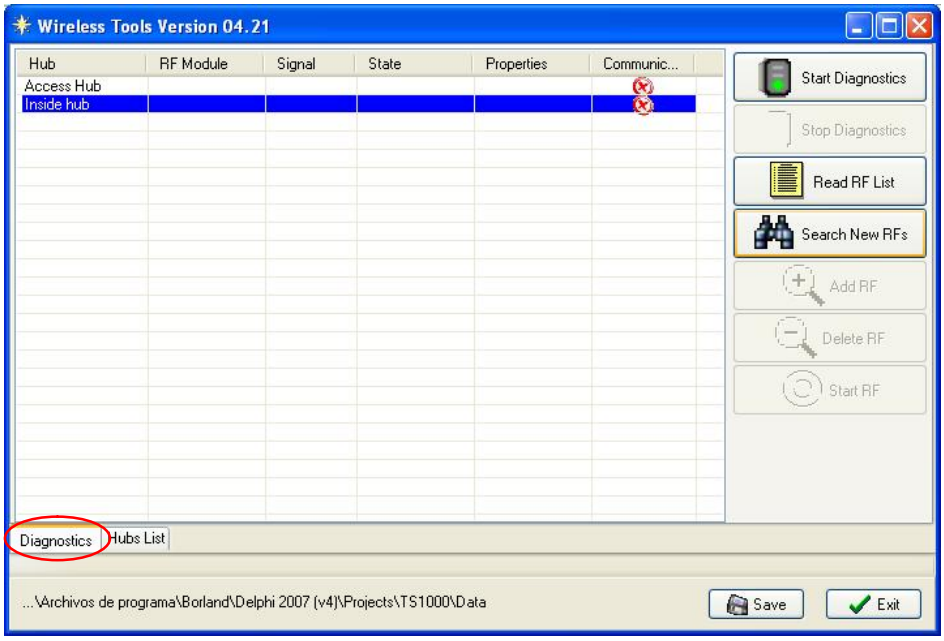
With this operation, the MAC addresses of the locks are transferred automatically to the PC and will then appear in the ‘Wireless address’ field in the “Doors” menu of each Smartair Wireless door.



6) RF MEDIA CONFIGURATION

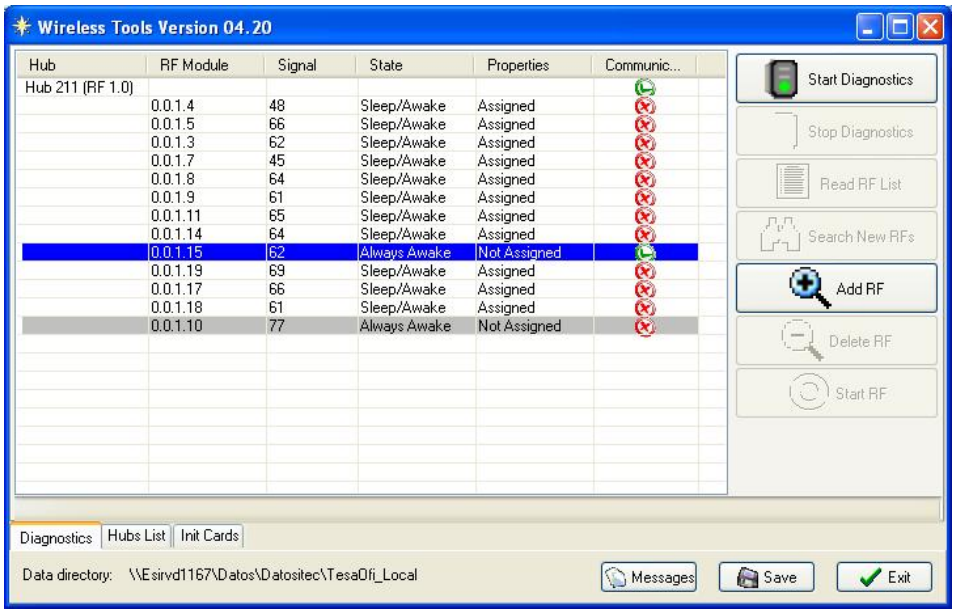
6.1 Search new Wireless Locks and Readers

Close the TS1000 software and re-open the “Wireless Tools” application. Go to the Diagnostics tab, select the hub we want to configure and click on the “Search New RFs” button.



The hub will check the RF media for new modules. This process can take up to 20 seconds.

The new RF Locks and/or Readers will be added to the list below the Hub. They will be in a grey line and marked as “Always Awake” and “Not assigned”.

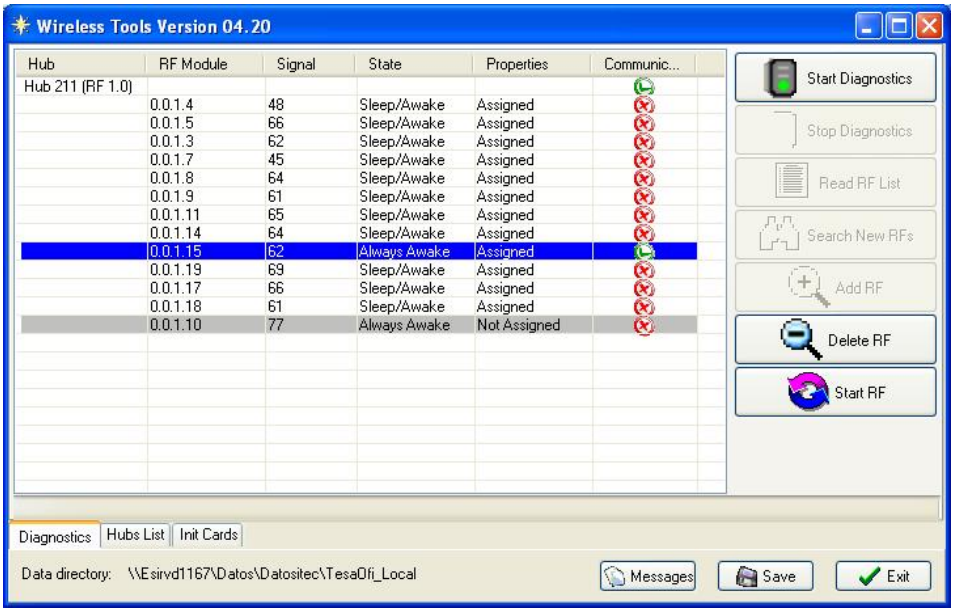


6.2 Add RF module to the hub

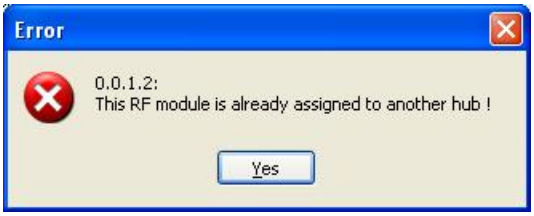
Each RF module will be managed by a Hub.

To include the RF module in the Hub's list, you must select it in the list and click on the "Add RF" button.

If it is correctly added, the 'Properties' column will change from "Not assigned" to "Assigned"



If this RF module was assigned to another hub, the following message will be shown:



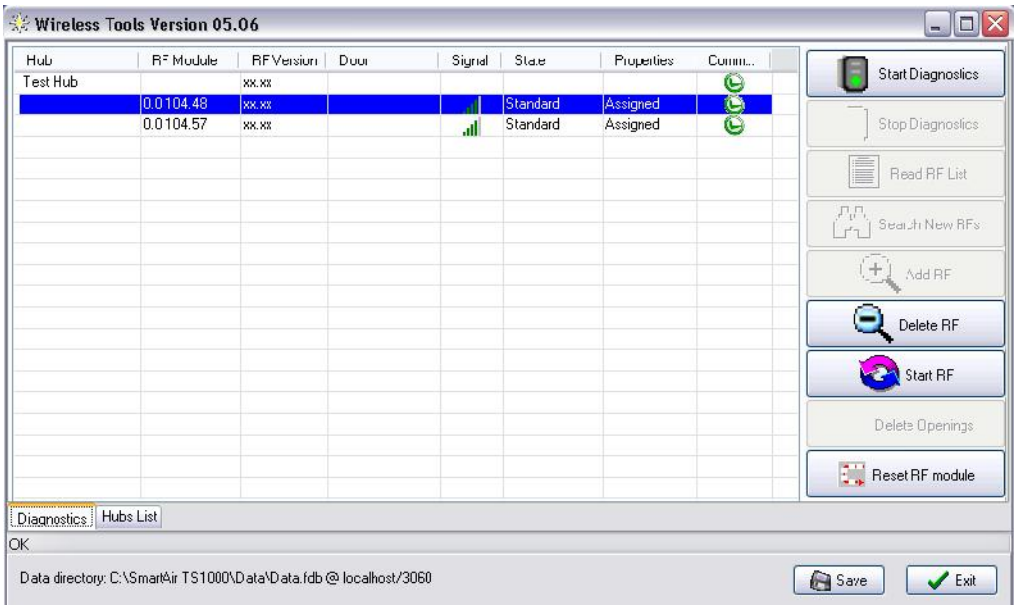
The RF module must first be deleted from the previous hub and then added to the new one.

6.3 Starting the RF module

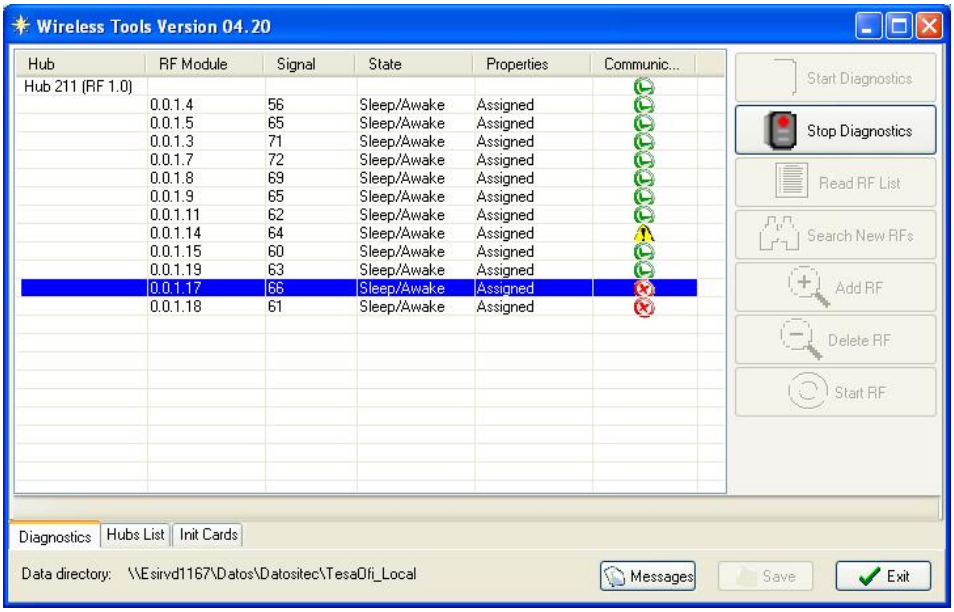
The RF module is now assigned to a hub but is still in the “Always Awake” state and therefore, its power consumption will be high.

To put the RF module in the ‘Standard’ (Sleep/Awake) mode, we must highlight the module and click on the “Start RF” button.

If it starts correctly, the ‘State’ column will change form “Always Awake” to “Standard”.



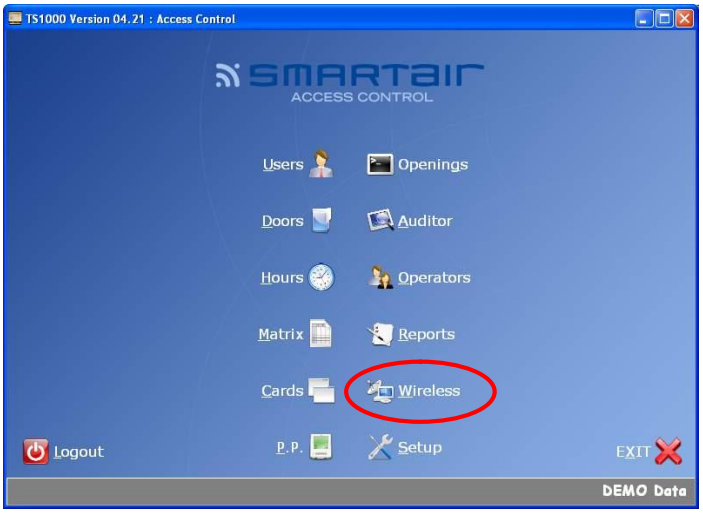
The RF module initialization process is finished. To be sure that all the RF modules are correctly communicating with the PC, we can run the diagnostic. If some of them are not communicating, we will see a yellow triangle.



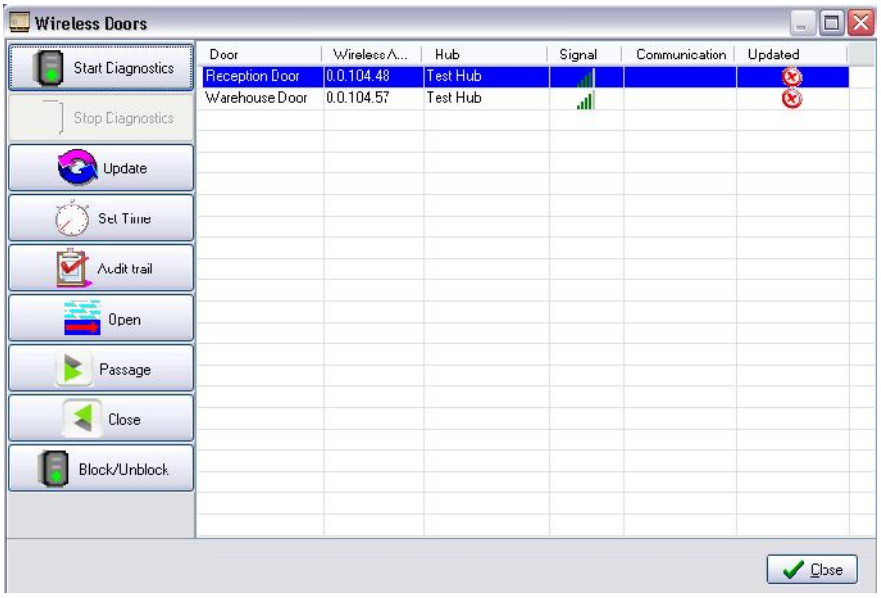
Click ‘Save’ before Exiting the ‘Wireless Tools’ application.

7) WIRELESS DOORS MANAGEMENT

On the TS1000 Management Software main screen, with the Database open, click on the “Wireless” button.



Diagnostic of wireless locks will only show doors managed by hubs connected to this PC.



Each line corresponds to a Wireless door connected to a Hub managed by this PC.

The “Communication” column will be filled after trying to connect to the lock.

The “Updated” column indicates if the lock has all the information or if changes have been made in the software and not still sent to the lock.

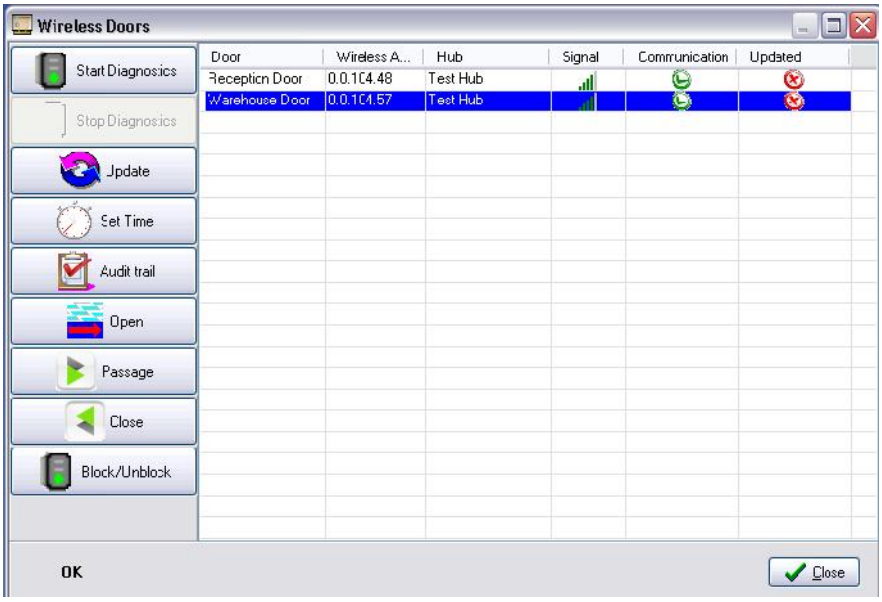
If we want to select more than one lock, we can click on the Ctrl key while selecting different rows.

If we want to select all the locks, we can click on the Ctrl + A key and all of them will be selected.

During the initialisation process, it is recommended to Set Time all locks and then update all of them.

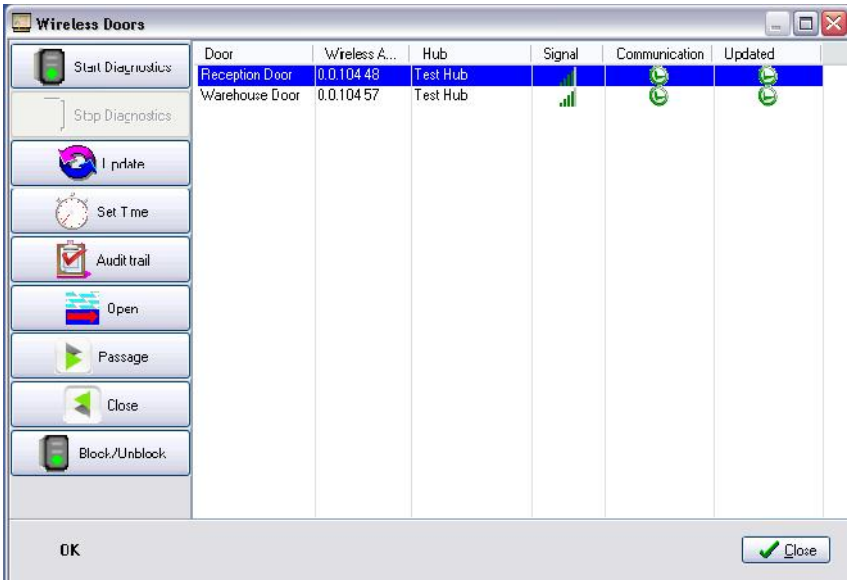
Those events should automatically refresh the “Openings” screen.

The “Start Diagnostics” button sends a round of diagnostic commands to each module.



For the other options, highlight one or more locks and then:

- Click on the “Update” button to send modified information to the lock. Locks marked with a red-cross in the ‘Updated’ column indicate that their configuration (matrix, parameters, timetables) have been modified and therefore they must be updated.



- Click on the “Set Time” button to adjust the lock’s clock with PC values. It is recommended after battery changes.
- Click on the “Read Openings” button to collect all the events form the lock’s memory. Usually this button is not used because events arrive automatically to the PC.
- Click on the “Open” button to remotely open a lock from the PC.

8) COMPLETION OF PROGRAMMING

Setup of Wireless Hubs, Locks and communications between them and the TS1000 software is now complete.

Utilise the TS1000 software to program and setup the remaining Site configuration requirements including Users, Card Encoding, Time Zones (Hours), and the important “Matrix”.

Once this has been completed, all information will need to be sent to the Wireless locks in order for the doors to operate as programmed.

From the Main TS1000 screen, click on the “Wireless” button. Highlight all Doors and click on the “Update” button. This will download all User, Time Zone and Matrix information to the locks.

The installation should then be complete.