

SYSWIN SOLUTIONS SRL

USER'S MANUAL

SmartAir Cube



*“Sometimes all I need is  
THE AIR THAT I BREATHE  
And to love you” \**

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\* The Hollies

# USER'S MANUAL

## SmartAir Cube



SmartAir is a trade mark of Syswin Solutions.

[www.syswinsolutions.com](http://www.syswinsolutions.com)

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Please note the ID of your device that will be requested during the installation procedure:

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The same ID is labeled on the bottom side of the SmartAir Cube.



Caution: failure to follow the instructions contained in this manual may involve damages to the device.

Should this manual be lost or damaged, you may request a copy from the manufacturer: please enclose the serial number of your device with your request.

## 1. GENERAL WARNINGS

### 1.1. Purpose of this manual

The manual contains the correct procedures for installation and use of the in-door air quality monitoring device, SmartAir Cube.



**KEEP INSIDE THE DEVICE**

### 1.2. To whom this manual is addressed

This manual is addressed to the final user of the device and to those persons in charge of installation and maintenance of the in-door air quality monitoring devices. It is compulsory that all personnel in charge of these operations are familiar with the instructions and abide by the procedures contained in this manual.

This device can be used by children aged from 10 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instructions concerning use of the device in a safe way and understand the hazards involved. Children shall not play with the device. Cleaning shall not be made by children without supervision.

### 1.3. Responsibility

The manufacturer's responsibility is confined to the correct use of the device, in the limits indicated in this manual.

Syswin Solutions declines all responsibility for any damages caused to persons and/or to property as the result of:

- incorrect installation;
- use of unauthorized spare parts;
- improper use of the device;
- connection to inadequate supply;
- execution of changes unforeseen/unauthorized by the manufacturer.



**AVOID INJURIES! THE DEVICE HAS SHARP EDGES**

### 1.4. Manufacturer

Syswin Solutions is a startup company involved in Internet-of-Things and Machine-to-Machine emerging domains and has already acquired a strong technological know-how in developing related applications.

### 1.5. Warranty

The warranty period of the SmartAir Cube device, starting from the date of the shown on the delivery note, is one year.

The Warranty does not include damages to the device caused by:

- transport and/or handling;
- operators' errors;
- lack of maintenance as explained in this manual.

### 1.6. General safety warnings

- carefully read the manual before installing the device;
- protect the device against weather conditions (rain, snow);
- never let water or other liquids get into the device;
- the device is not suitable for outside use;
- keep the device in a dry place and away from any liquids that might spill;
- keep the device within the range of temperatures stated in the Terms of use (section 2.5).

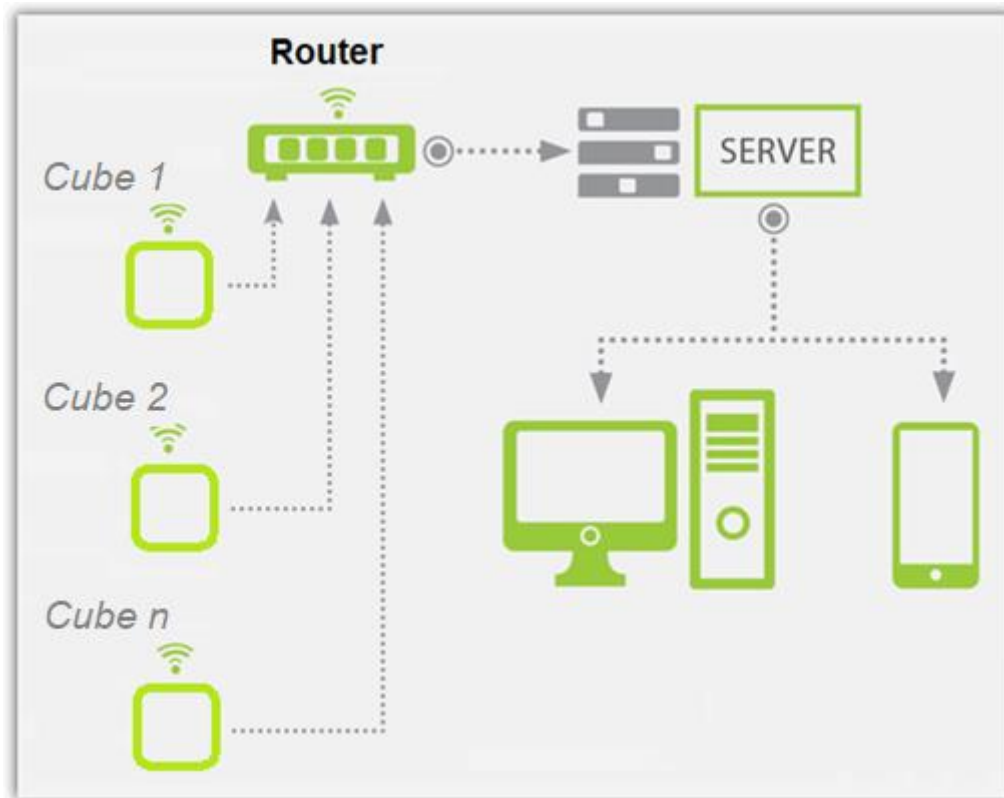


Syswin Solutions reserves the right to make changes to this manual without prior notice.

## 2. DEVICE FEATURES

The SmartAir Cube device has been designed to detect indoor air quality based on the information provided by sensors specializing in the detection of gases (CO<sub>2</sub>, VOC), humidity, temperature and particulate matter (PM<sub>1</sub>, PM<sub>2,5</sub>, PM<sub>10</sub>). Information is transmitted via a router to a remote server. The processed data is displayed on fixed (personal computer, laptop) or mobile (smartphone) devices through a dedicated application.

### 2.1. The interconnection diagrams



### 2.2. Main features

- gas presence detection: CO<sub>2</sub>, VOC.
- air quality index calculation.
- air relative humidity measurement.
- air temperature measurement
- particulate matter measurement (PM<sub>1</sub>, PM<sub>2,5</sub>, PM<sub>10</sub>)
- remote transmission of information via a router.

### 2.3. Supply

The wireless detector device does not require an external power supply as it is equipped with a 3.7V, 2000mAh battery. The battery is recharged via a 5V miniUSB port.

### 2.4. Technical specifications

Feature	Value
Temperature measurement range	-40°C ... 125°C
Temperature measurement resolution	0.01°C
Humidity measuring range	0 ... 99RH
Moisture resolution	0.1 in the range 0°C ... 60°C
CO <sub>2</sub> concentration range	400ppm ... 6000ppm
Resolution of CO <sub>2</sub> determination	1ppm in the range 0°C ... 60°C
Volatile Organic Compound (VOC) concentration range	0 ... 1100
Resolution of VOC	1ppb in the range 0°C ... 60°C
Particulate matter range	0 – 256mg/m <sup>3</sup>
Resolution of particle matter	1µm in the range 0 ... 60°C
Sampling period	every second
Connectivity	GPRS/LoRa (433MHz)/BLE (2.4GHz)/WiFi (2.4GHz)
Battery life	1.5 years
Duration between two recharges	48 hours
Dimensions	72 x 72 x 75mm
Weight	max 330 g
The length of the miniUSB charging cable (supplied as an accessory)	1.5 m

### 2.5. Terms of use

Operating temperature: 0°C ... + 60°C.

Relative humidity: 30 ... 90%.

Protection grade: IP40.

### 2.6. Certifications





### 3. INSTALLATION

#### 3.1. Preliminary information

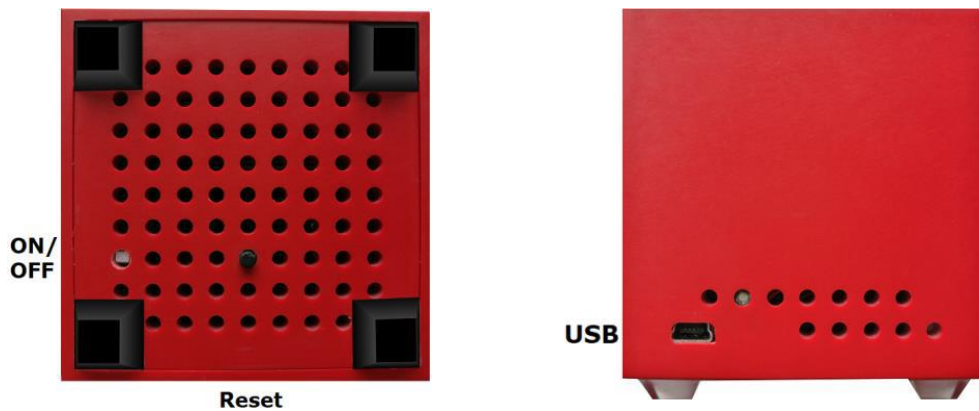
**Notice: Installation is possible only by using a 2.4GHz local WiFi network.**

The SmartAir Cube air quality monitoring device has a 48-hour energy autonomy, so it can be placed anywhere in a room that complies with the Terms of Use (section 2.5).

The installation of the SmartAir Cube requires a source for power, a Wi-Fi router, and a device to connect to the air quality monitoring application.

**The SmartAir Cube is delivered by default in OFF state.**

The placement of the buttons and USB connector are shown below:



*Note: Product images are for informational purposes only and may differ from the actual product image. This does not change their basic features.*

#### 3.2. Installation procedure

##### I. SmartAir Cube installation

1. Before installation, press the ON / OFF button.  
**\*NEVER PLUG THE CHARGING CABLE IN THE OFF STATE\*- It may result in trouble connecting to a WIFI network.**
2. After power ON, the Cube creates its own Wi-Fi network called **SmartAir-Cube-xxxxxxx** (where xxxxxxxx is the unique ID of the device, the Service Set Identifier - SSID, see page 4) to which you need to sign in with the password: **12345678** (figure A).

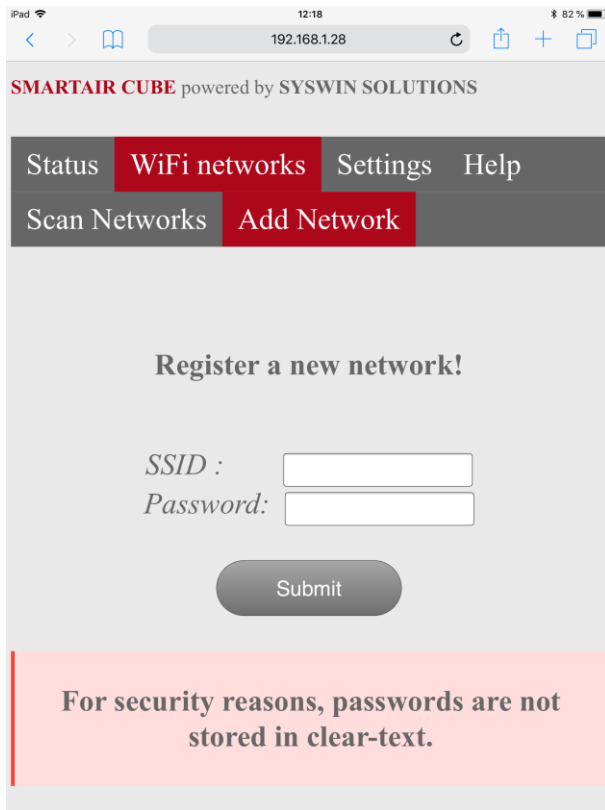


Fig. A

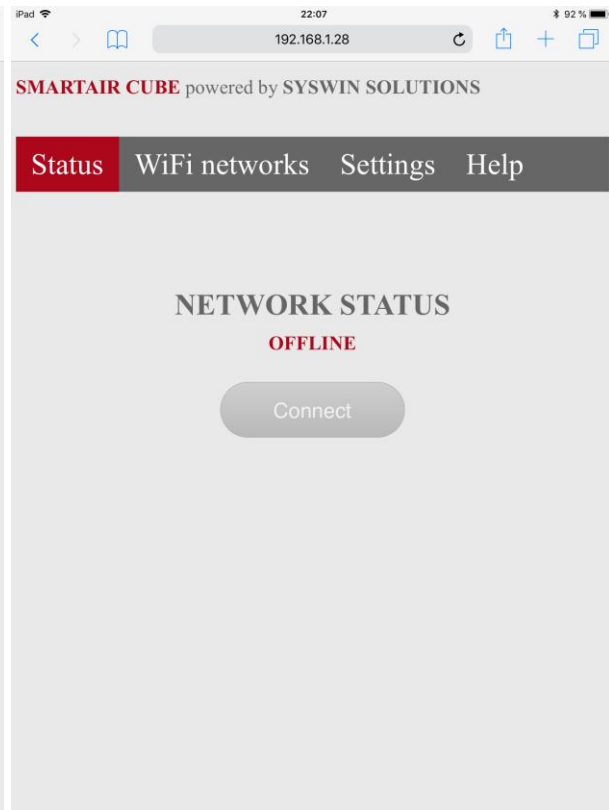


Fig. B

3. Open a web browser on your PC / mobile and write the following link in the address bar: <http://192.168.1.28>

### **Configuration page**

Initially, the SmartAir Cube has no configured networks (figure B). You can see all the surrounding Wi-Fi networks under the Wi-Fi Networks Menu. All Wi-Fi networks are scanned and the signal strength and the name of each are displayed (figure C). It can help the user to determine if the Cube position is adequate relative to the router / router distance.

## Registering a new network

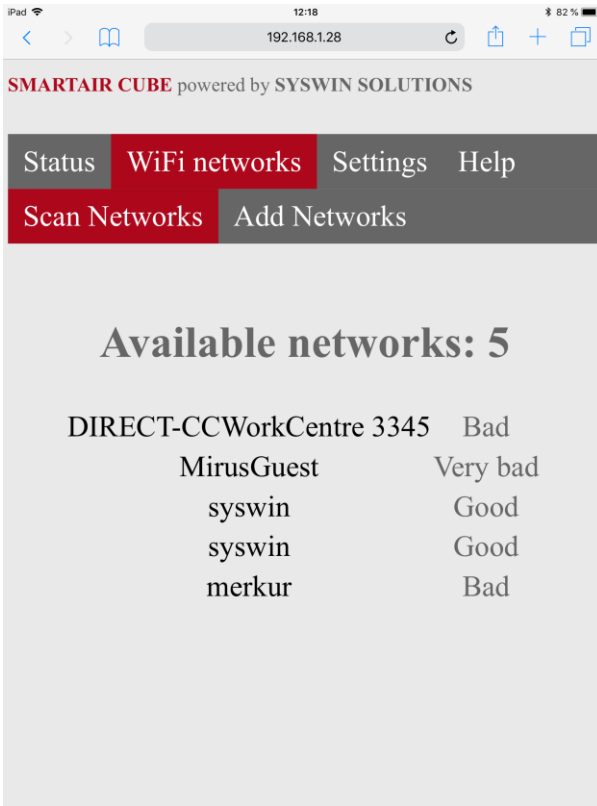


Fig. C

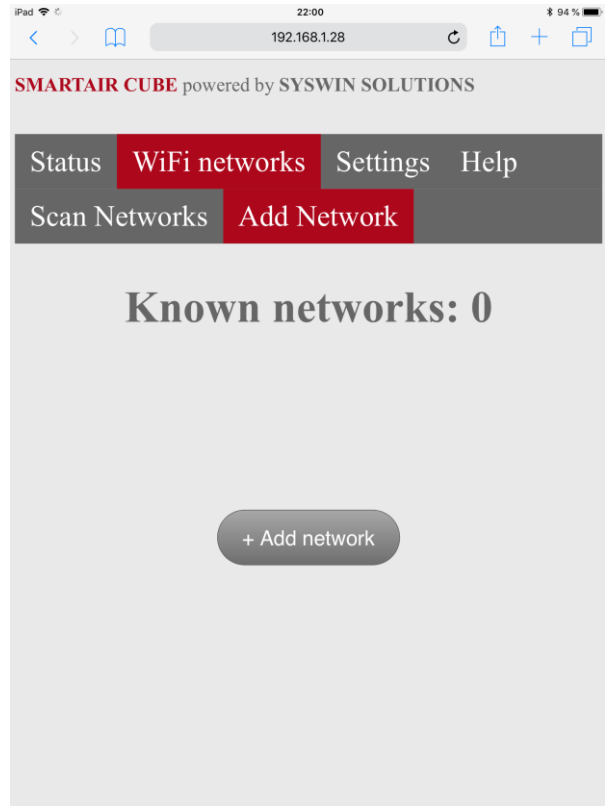


Fig. D

4. Register the SmartAirCube in your home/work network. Go to the Add Networks submenu and click the Add Network button (figure D).
5. Enter the Wi-Fi credentials of your network, which the SmartAirCube will be using to send data to the user application. See Help page for more information (figure E).

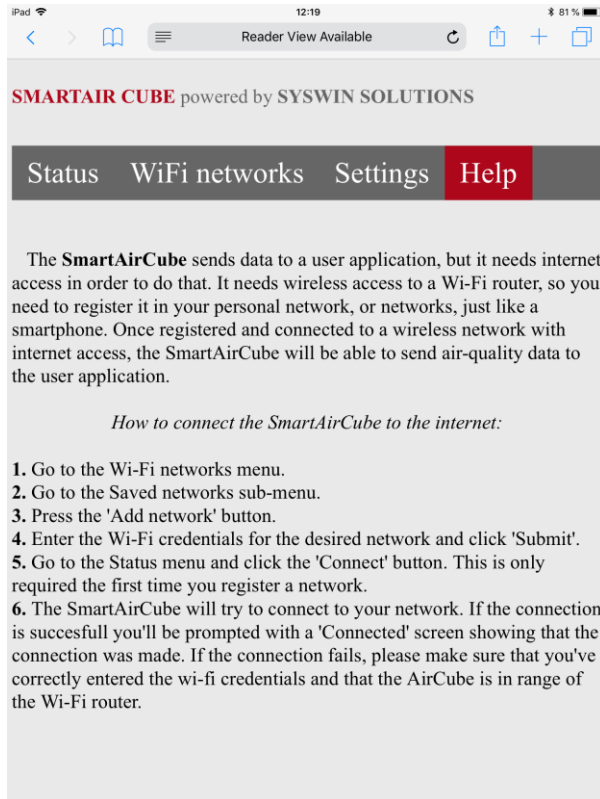


Fig. E

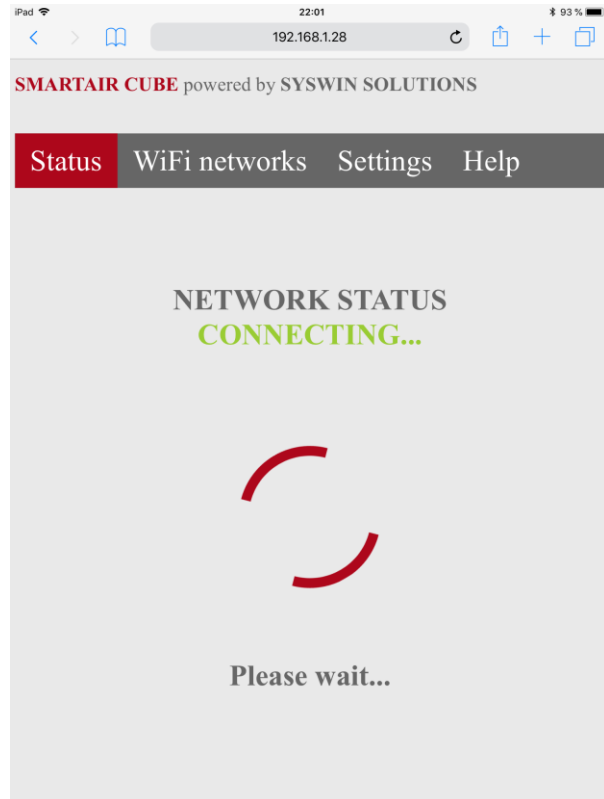


Fig. F

6. After pressing the Connect button from Status menu, the loader animation starts (figure F) together with the red LED from inside of the SmartAir Cube. (see LED indicator table below).
7. If *Connection failed* message is displayed, the cause could be:
  - a. The SmartAirCube is not in range of the router.
  - b. Wrong password.
  - c. Wrong SSID.
  - d. Router offline/disconnected.
8. If connection was successful, the Status page changes (figure G):
  - a. Current network data and Disconnect button are displayed.
  - b. The green LED from inside of the SmartAir Cube lights for 3 seconds.
  - c. Two green pulses of 200ms for each successful transmission to the application.
  - d. The red LED from inside of the SmartAir Cube lights in case of an error.
  - e. In case of network failure, the SmartAirCube automatically attempts to reconnect to the network.

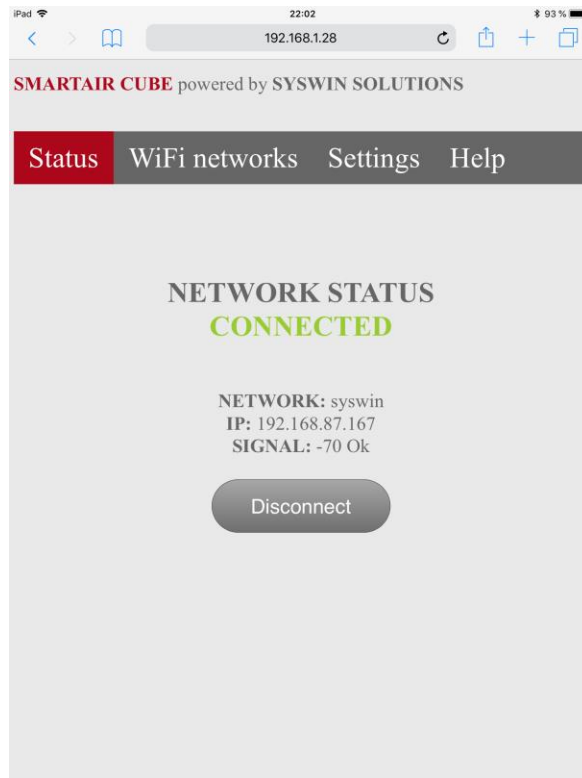
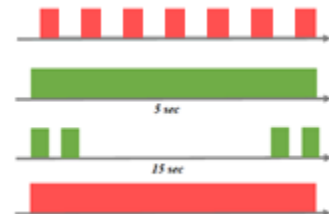


Fig. G

9. Look for the LED inside the cube.

**LED indicator table**

- Configuration in progress
- Configuration successfully done
- Active – successfully sending data
- Network connection error



10. If connection is successful you need to register yourself as a user.

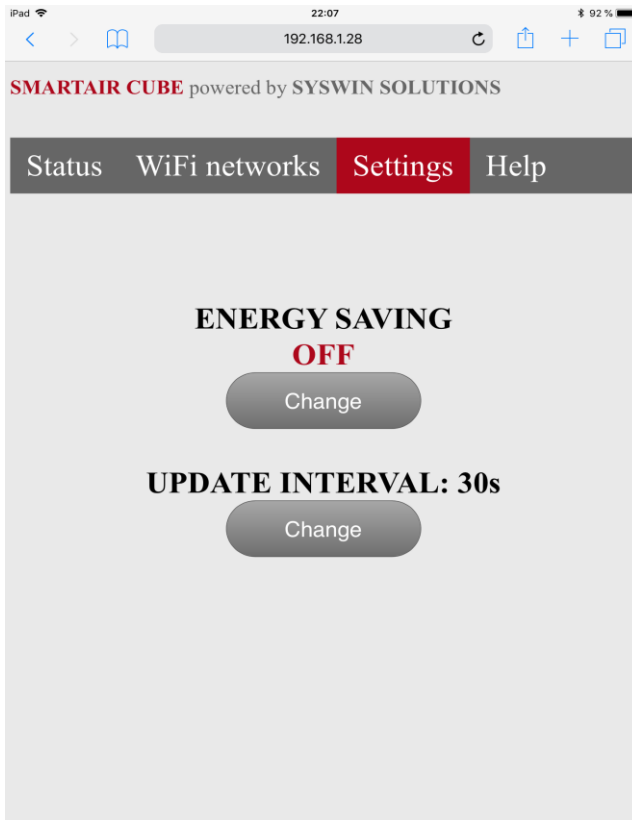
**II. User registration**

1. Go to the following webpage: <http://smartaircube.syswin.ro/>
2. Enter your data for creating the new user.
3. You will receive a verification email by which you confirm the account.
4. Log in to your account with previously recorded data.

5. Click on **+ADD DEVICE** from drop-down menu.
6. Configure the sensor with the ID shown on the label on the bottom of the Cube (identification code of 8 digits and letters).
7. Now you can view the parameters transmitted from the **Device List**.
8. For multiple devices repeat **step 5**.

### III. Settings Menu

#### Energy management



**Fig. H**

#### **Energy saving: OFF**

**(by default, figure H)**

##### **Features:**

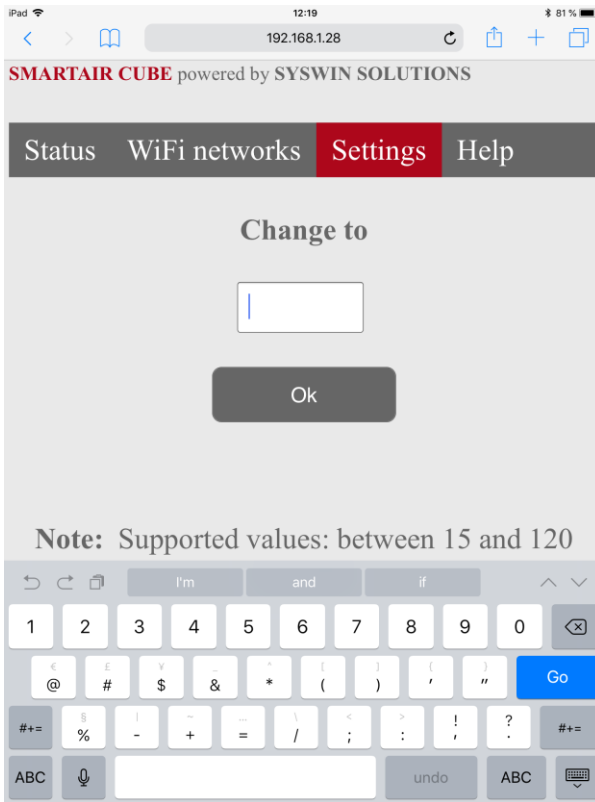
- The SmartAir Cube keeps the configuration Wi-Fi network active. You can connect to the SmartAirCube-[ID] network, where [ID] is your SmartAir Cube's ID and change settings/add or remove networks/ see current network status/ scan surrounding networks and signal strengths.
- This is the least energy saving mode and it drains the battery pretty quickly. This is why the SmartAir Cube automatically enters power saving mode if there's no activity on the configuration page for a couple of minutes. You can also turn energy saving mode on in the settings menu.

#### **Energy saving: ON**

- The configuration page shuts down and the SmartAirCube-[ID] network is disabled.
- This is the most energy efficient mode that can provide up to 72h of battery life.
- The configuration network can be turned back on following these steps:
  1. Power off the device using the power button.
  2. Press the reset and power buttons together.
  3. A confirmation should be received by the indicator LED (RED-GREEN-RED-GREEN).

4. Release the reset button.

**Sampling management**



**Fig. I**

**Update interval: 30 sec (by default)**

- The user can change the SmartAir-Cube sampling interval. By default, it is 30 seconds, but it can range from 15 to 120 seconds (figure I). A shorter update interval makes the device react faster to gas presence, while a longer one gives higher energy efficiency.

**IV. Reset and charging**

1. To return to the factory settings, press the Reset button on the bottom of the cube (press and hold for at least 2 seconds). The confirmation LED blinks red and green after about 10 seconds.
2. SmartAir Cube can be recharged via mini USB cable from your computer, laptop or USB network adapter.

**Note: It may take up to 48 hours for the Cube to calibrate; during this time, slightly erroneous data may be displayed. After the first 48 hours of operation, the Cube will start indicating the data with the highest accuracy.**

**4. MAINTENANCE**

- Handle the SmartAir Cube with care to assure a longer useful life.
- Take care when handling the device, do not let it fall, do not knock it or move it

suddenly.

- Use the appropriate USB connector. Do not force it when fitting as the connectors could be damaged.
- Do not use any type of paint on the device, it could affect the operation of connections and closing mechanisms.
- Do not paste stickers on the top of the device as they will cover the air access holes to the sensors.
- Do not place any object on the top of the device as they will cover the air access holes to the sensors.
- Do not store the device in places exposed to dirt and dust to avoid damage to electronic components.
- Never open the casing, warranty will not cover products that have been opened.
- For cleaning, use a dry cloth, no aggressive chemical products.

## 5. TROUBLESHOOTING

The following table lists the problems that may occur on the device. There are listed the possible causes together with the recommended solutions to eliminate the problems.

PROBLEM	POSIBLE CAUSES	RECOMMENDED SOLUTIONS
The device does not start working.	The device did not successfully connect to the router and the red led is constantly on.	Make sure you configured the SmartAirCube with a valid wireless network. Press the ON/OFF button for hard reset.
There is an error message on the application/webpage.	The device was taken out of range of the Wi-Fi router and lost the connection.	Reconnect the device by getting it in Wi-Fi range.
	The battery is discharged.	Plug the device in with the supplied USB cable and let it recharge. The device will still be working while it charges up.
User can not login into the mobile/web application.	Unsuccessful creation of the account.	Make sure that you have created an account with the register option and you have verified your account via email, only then you can login with the registered credentials.
The color of the Fibonacci spiral logo within the application becomes gray	The application has lost connection to the internet.	Check the availability of the internet connection.
	The SmartAir Cube does not transmit data anymore.	Check if the device is still working or do a power off and power on procedure.



## 5. DISPOSAL AND RECYCLING

**IMPORTANT By returning the SmartAir Cube together with your buying receipt to Syswin Solutions headquarters you can receive back up to 5% of your buying price, pending technical inspection.**



- When SmartAir Cube device reaches the end of its useful life, it must be taken to an electronic equipment recycling point.
- The equipment must be disposed of in a selective waste collection system, and not that for urban solid residue. Please manage its disposal properly.
- Your distributor will inform you about the most appropriate and environmentally friendly disposal process for the used product and its packaging.



- The SmartAir Cube contains electronic material, which, as indicated by **Directive RoHS 2002/95/CE**, and **Directive WEEE 2002/96/CE**, if treated correctly, can be salvaged and recycled at the end of its working life. Recycling this product contributes towards reducing the need for new materials and reducing the accumulation of waste.



**CAUTION: THE MANUFACTURER IS NOT RESPONSIBLE FOR DAMAGES TO THE ENVIRONMENT CAUSED BY ILLEGAL WASTE.**

## 7. SUPPLIERS



## Revisions

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Revision	Date	Change
0	24/11/2017	Manual creation
1	13/12/2017	Updated section 3.3. Negotiating WiFi access Added table for LED status description
2	23/05/2018	Updated section 3.4. Data acquisition Updated table for LED status description
3	05/06/2018	Replaced sections 3.2, 3.3, 3.4 with 3.2. Installation Procedure
4	17/07/2018	Updated section 3.2.
5	07/01/2019	Added charging cable in the 2.4. Technical Specifications table

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