# SMART TOUCH CONTROLLER


CE



REFRESH®
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# SMART TOUCH CONTROLLER INSTRUCTION

## INDEX



Read this manual carefully before using the product and keep it in a safe place for reference. This product was constructed up to standard and in compliance with regulations relating to electrical equipment and must be installed by technically qualified personnel. The manufacturer assumes no responsibility for damage to persons or property resulting from failure to observe the regulations contained in this booklet.

## 1.PRECAUTIONS

- Make sure that the mains supply to the unit is disconnected before performing any installation, service, maintenance or electrical work!
- The installation and service of the unit and complete ventilation system must be performed by an authorized installer and in accordance with local rules and regulations.
- If any abnormality in operation is detected, disconnect the device from the mains supply and contact a qualified technician immediately.
- This appliance can be used by children aged from 8 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 instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.
- A wrong electrical wiring can cause damage to the fan and interfere with other electronic devices. In addition to the local safety requirements, please observe the following actions:
  - Separate the power and motor control cables by a minimum of 15cm (6 in);
  - Wire each single fan separately;
  - **The SMART TOUCH CONTROLLER can control up to 4 HVLS fans.**
- **It is recommended that each fan has a dedicated power supply switch since the setting of the Modbus address to one fan must be carried out when only one fan is connected to the Modbus network.**

## 2.INSTALLATION

Refer to the manual supplied in the control panel packaging or consult the website www.refreshfans.com

## 3.WIRING DIAGRAM

Refer to the manual supplied in the control panel packaging or consult the website www.refreshfans.com

## 3.1 MODBUS NETWORK INSTALLATION (DAISY CHAIN)

- Use twisted pair cable type
- Minimum 24AWG (0,5mm) cable cross section.
- Run the wires as far away as possible from high voltage AC cables, fluorescent lights, arc welders, and other equipment that transmits EMI (electromagnetic interference).
- Do not run the twisted-pair cable in conduit with high voltage AC cables.
- Max length of the twisted-pair cable between each fan of the network: 120m (400ft)

If more fans (up to 4) need to be connected to one controller, the connection must have one beginning (SMART TOUCH CONTROLLER) and one end (last fan) as shown in the below images:

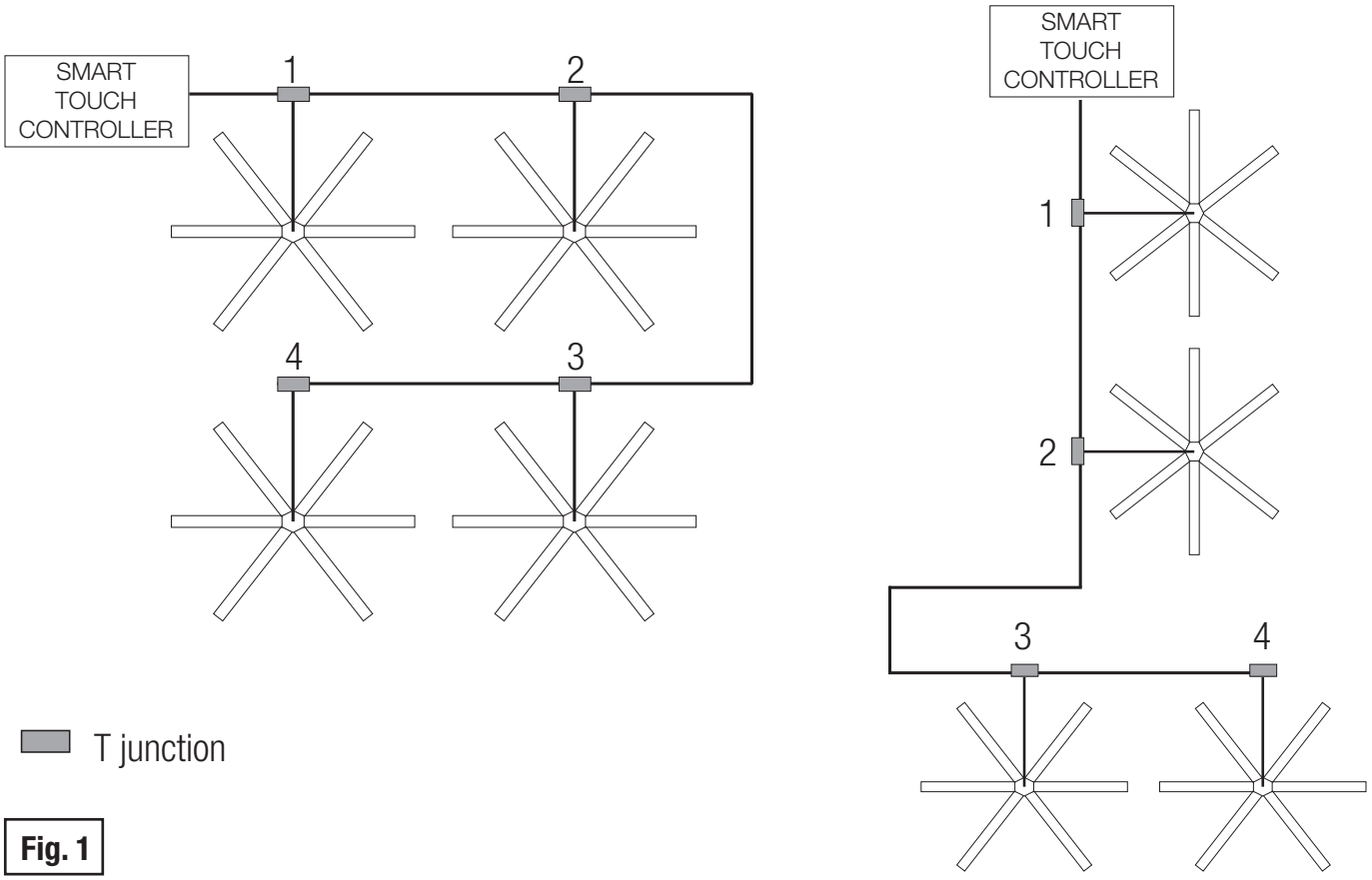



**Fig. 1**

If the fans are not connected as per Fig.1, there will be a degradation of the communication signal and the fan network may not function correctly.
Attention: each fan must have a unique Modbus address.
**It is recommended that each fan has a dedicated power supply switch since the setting of the Modbus address to one fan must be carried out when only one fan is connected to the Modbus network.**

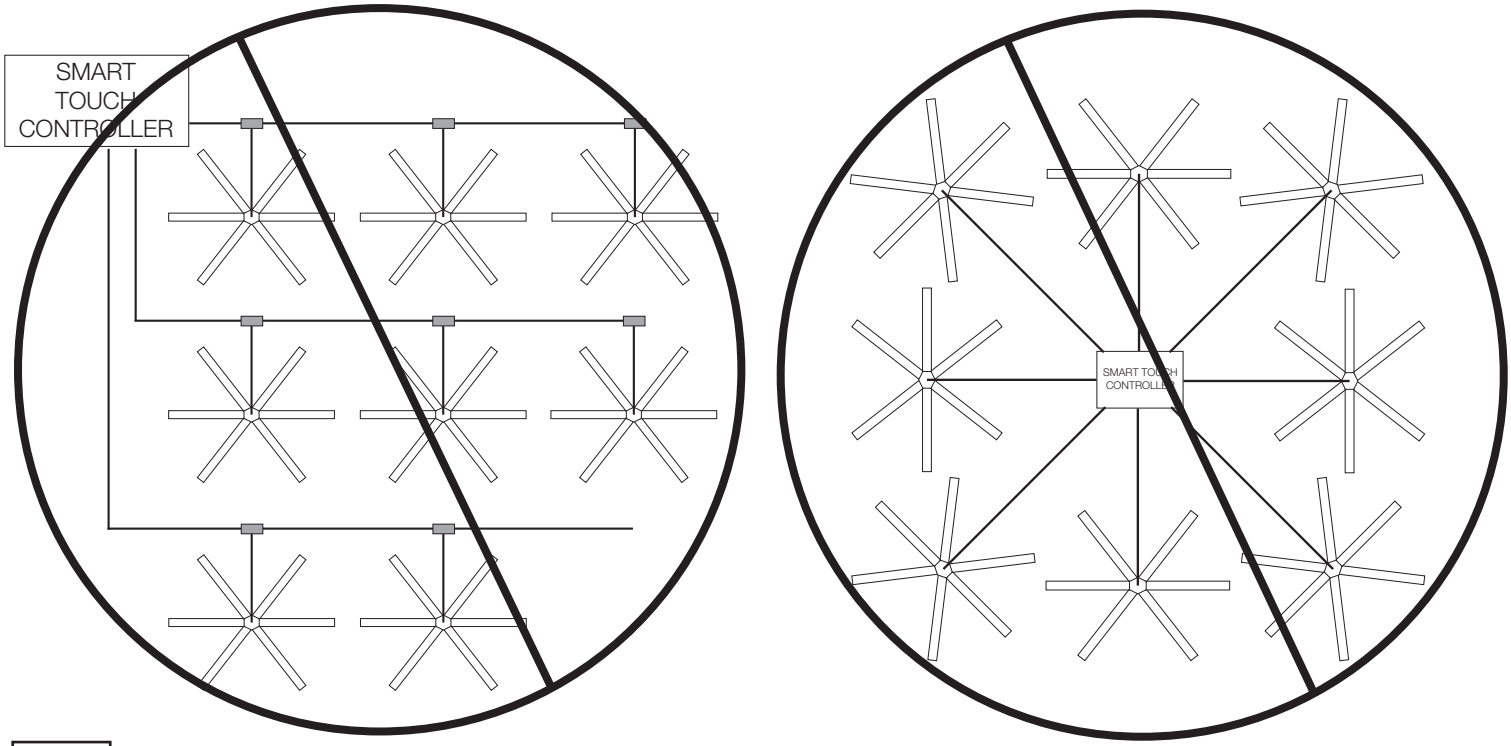



**Fig. 2**

To avoid any noise/interference in the communication signal, it is recommended that extra cable should not be coiled up and that there is no more than 0,6m (2ft) of excess cable at each connection point. If a longer cable is needed for future relocation of the fan, run the cable up toward the ceiling and back down in a horseshoe shape.

ALWAYS AVOID SHARP BENDS OF THE CABLE.

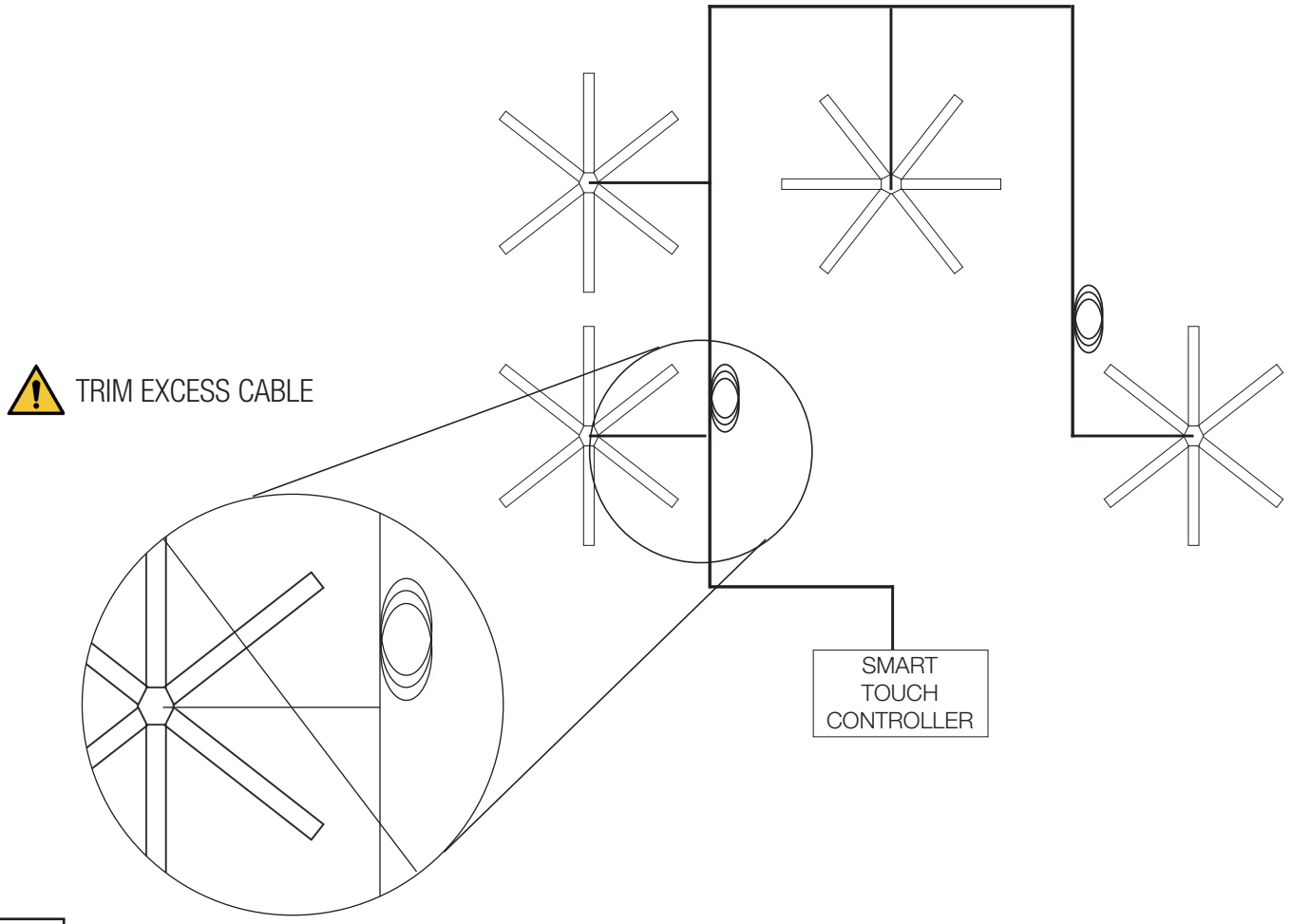
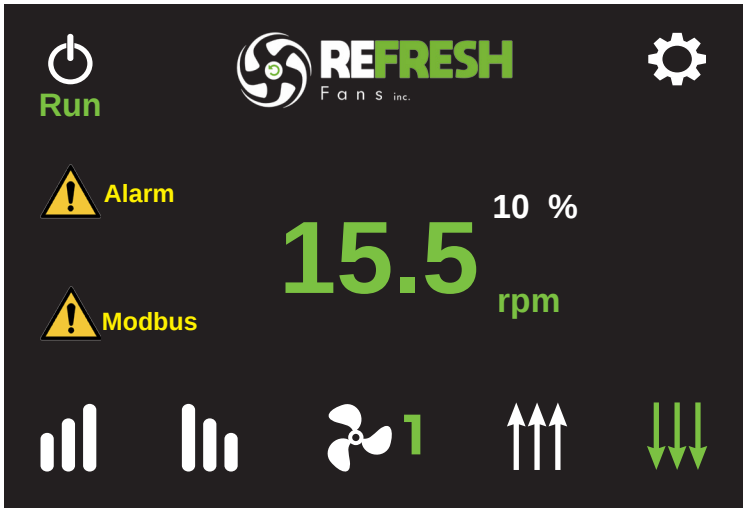



**Fig. 3**

# 4.OPERATION

## 4.1 HOME PAGE




| Button | Description |
|---|---|
|  | Selection between “Run” mode (fan rotates) or “Stop” (fans does not rotate) |
|  | Fan settings (paragraph 4.5) |
|  | Selection of the air flow direction (if available): touching the icons you can change the flow direction. The selected icon turns blue after few seconds. |
|  | Fan selection: touching the icon the fan number can be selected |
|  | Speed seeting: touching the symbols  or  the speed (%) of the selected fan increases or decreases. The actual motor speed is displayed (rpm). To set the speed limits, refer to paragraph 4.6 |
|  Modbus | Alarm Modbus: the symbol is displayed and blinks if one of the fans does not communicate on the Modbus network. Touching it, the “Alarm identification” screen of the faulty fan is accessed (paragraph 4.4) |
|  Alarm | Alarm: the symbol is displayed if one of the fans has one or more alarms active. Touching it, the “Alarm identification” screen of the fan is accessed (paragraph 4.6) |

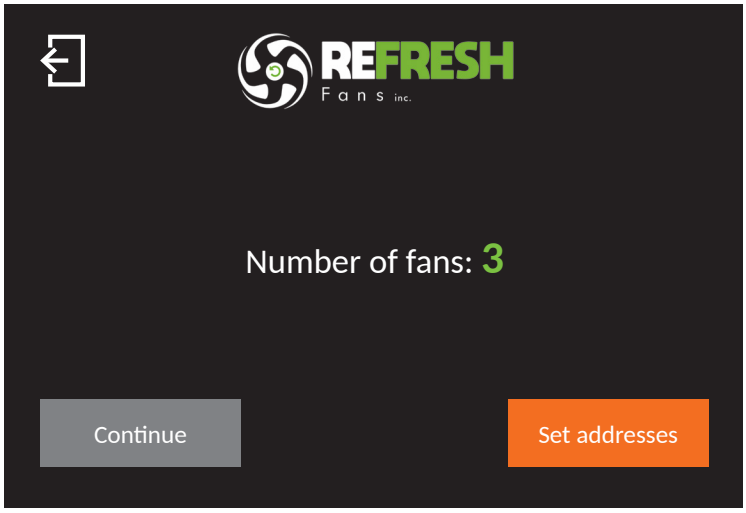
## 4.2 SETTING OF THE LANGUAGE AND OF THE NUMBER OF THE FANS OF THE NETWORK

When the unit is powered on for the first time, the following screen is diplayed:


| Button | Description |
|---|---|
| **Language Set** | Language selection (English or Italian) |
| **Fans Set** | Setting of the number of fans of the network up to 4 units |
| **Ok** | Confirm and access to the next screen |

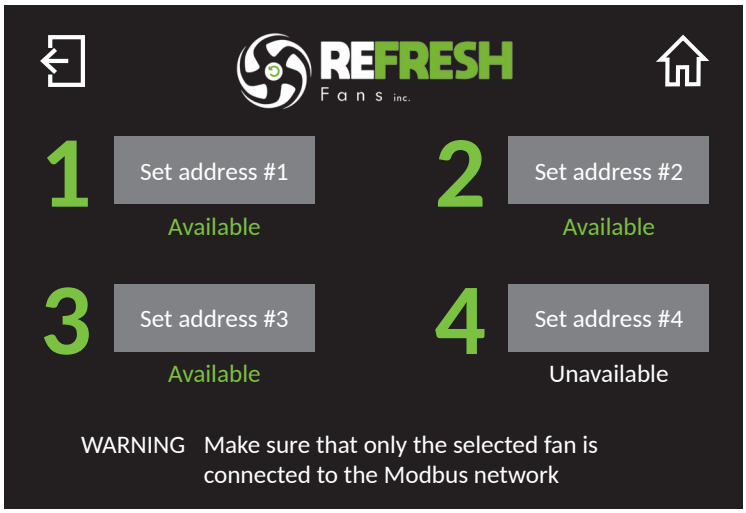
It is not possible to access the next screen without setting the number of fans of the network (from 1 to 4) .

Touching the Ok button the following screen is accessd:




| Button | Description |
|---|---|
| | Back to the previous screen |
| **Set addresses** | Access to the “Modbus address setting” screen (paragraph 4.3): in case of first connection, the Modbus address must be assigned to each fan of the system |
| **Continue** | Back to the Home page |

## 4.3 SETTING OF THE MODBUS ADDRESS

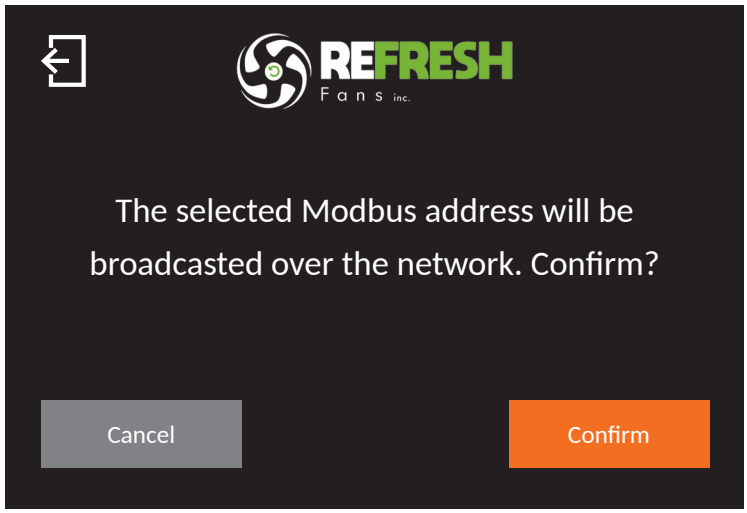



| Button | Description |
|---|---|
| | Back to the previous screen |
| | Back to the Home Page |
| **Set address #1** | Setting of the Modbus address of fan #1 |
| **Set address #2** | Setting of the Modbus address of fan #2 |
| **Set address #3** | Setting of the Modbus address of fan #3 |
| **Set address #4** | Setting of the Modbus address of fan #4 |

The Modbus address can be “Available” or “Unavailable” depending on the number of fans in the system (paragraph 4.2)

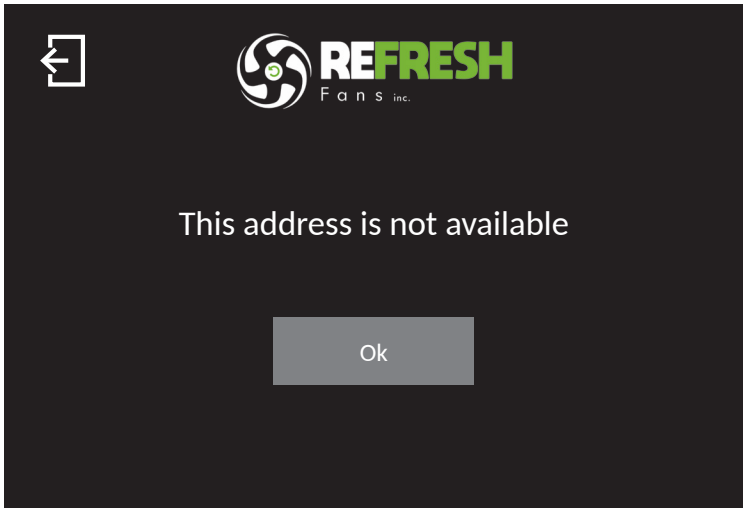
**ATTENTION: To set the Modbus address to each fan, only the selected fan must communicate on the Modbus network. Therefore, it is recommended that each fan has a dedicated power supply switch.**

If a fan with an available Modbus address is selected, the following screen is displayed:




| Button | Description |
|---|---|
| | Back to the previous screen |
| **Confirm** | Confirm and assignment of the Modbus address: repeat this operation for each available fan |
| **Cancel** | Cancellation of the operation and back to the previous screen |

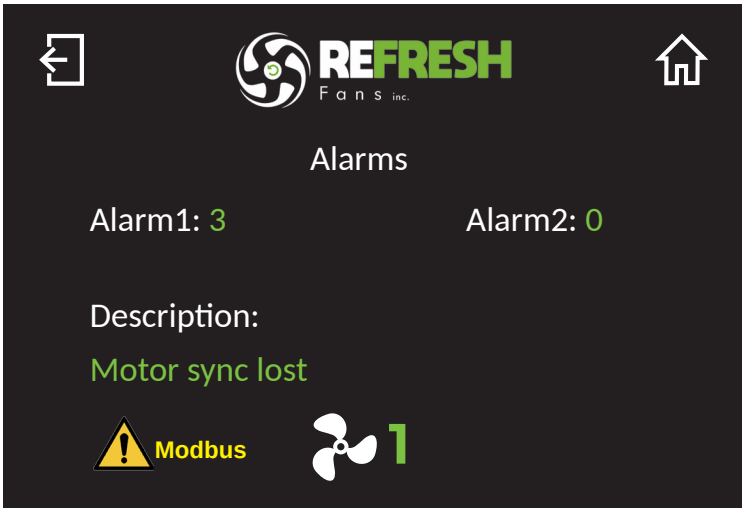
If a fan with an unavailable Modbus address is selected, the following screen is displayed:




| Button | Description |
|---|---|
| | Back to the previous screen |
| **Ok** | Back to the previous screen |

### 4.4 ALARM IDENTIFICATION

Touching the icon Alarm in the Home Page, the following screen is displayed:

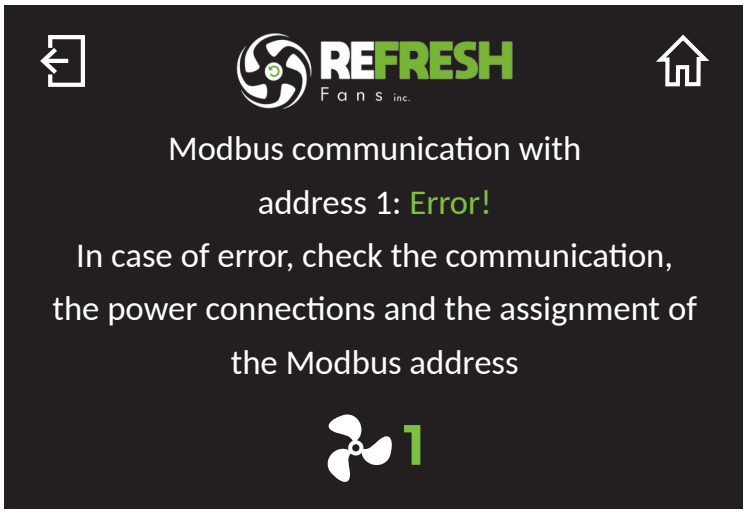



| Button | Description |
|---|---|
| | Back to the previous screen |
| | Back to the Home Page |
| | Selection of the fan number |
| **Modbus** | Alarm Modbus: the symbol is displayed and blinks if one of the fans does not communicate on the Modbus network. Touching it the “Alarm identification” screen of the faulty fan is accessed |

On the screen the motor Alarms 1 and 2 are displayed as well as the anomaly description.

| ALARM 1 VALUE | ALARM 2 VALUE | LED BLINKS (single blink approx. duration) | ALARM DESCRIPTION POSSIBLE CAUSE | TROUBLESHOOTING |
|---|---|---|---|---|
| 0 | 0 | 1 Blink/2s (1s) | No error | - |
| 1 | 0 | 1 Blink/s (0.5s) | Memory error – motor parameters lost | Contact manufacturer/technical support |
| 2 | 0 | 2 Blink/s (0.25s) | Short circuit – electronics power module damaged | Board damaged – Contact manufacturer/technical support |
| 3 | 0 | 3 Blink/s (0.17s) | Motor synchronization lost – wrong motor parameters or electronics damaged | Check motor windings. If motor windings OK (all 3 windings have same resistance), contact manufacturer/technical support. If motor windings damaged (open/short circuit), replace motor |
| 4 | 1 | 5 Blink/s (0.1s) | Supply voltage out of range 135Vac÷550Vac (DC bus voltage 190÷780V) only with motor still - not running | Check power supply voltage / check power supply wiring |
| 4 | 32 | 5 Blink/s | Supply voltage above 565Vac (DC bus voltage over 800V) during motor running (instantaneous value) | Check power supply voltage / check power supply wiring |
| 4 | 33 | 5 Blink/s | Supply voltage below 107Vac (DC bus voltage below 150V) during motor running (instantaneous value) | Check power supply voltage / check power supply wiring |
| 4 | 34 | 5 Blink/s | “Restart on the fly” failed | The drive couldn’t catch the impeller – power cycle/retry |
| 4 | 49 | 4 Blink/s (0.13s) | U phase voltage missing/disconnected (or wrong motor parameters) | Check power supply/wiring. If wiring OK, contact manufacturer/technical support |
| 4 | 50 | 4 Blink/s | V phase voltage missing/disconnected (or wrong motor parameters) | Check power supply/wiring. If wiring OK, contact manufacturer/technical support |
| 4 | 51 | 4 Blink/s | W phase voltage missing/disconnected (or wrong motor parameters) | Check power supply/wiring. If wiring OK, contact manufacturer/technical support |
| 4 | 113 | 6 Blink/s (0.08s) | Electronics temperature over 85°C | Check if operating temperature is above rated maximum operating temperature. Check mechanical load for anomalies (e.g. difficult turning) |
| 4 | 114 | 7 Blink/s (0.07s) | Motor windings temperature over 125°C | Check if operating temperature is above rated maximum operating temperature. Check mechanical load for anomalies (e.g. difficult turning) |
| 4 | 115 | no Blink | Short circuit on Pt100 motor temperature probe | Check temperature probe wiring – detects temperature probe manumission |

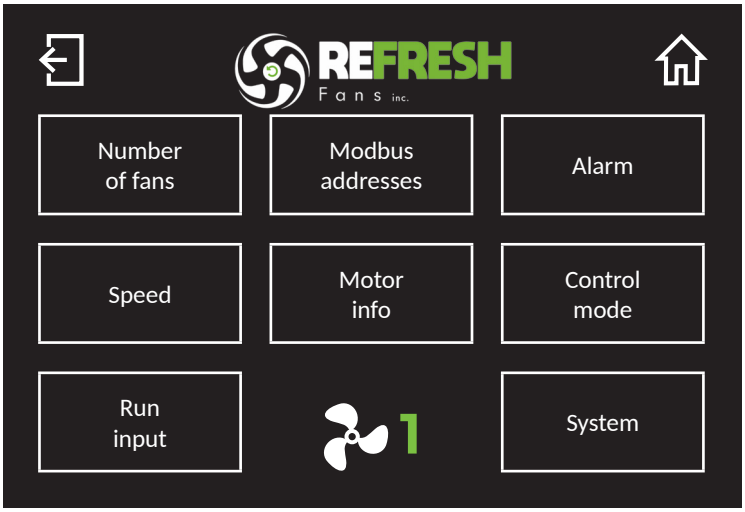
Touching the icon Modbus in the Home Page, the following screen is displayed:




| Button | Description |
|---|---|
| | Back to the previous screen |
| | Back to the Home Page |
| | Selection of the fan number |

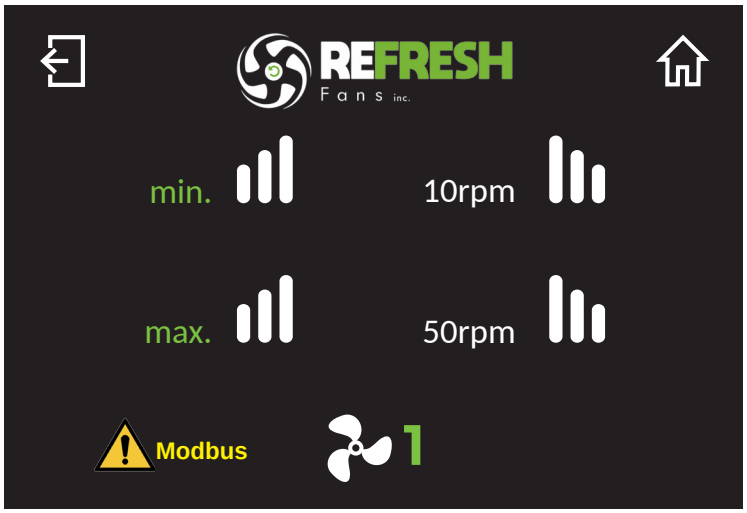
On the screen the wording “Error!” and the Modbus address of the faulty fan are displayed.
The instructions how to solve the problem is displayed.

## 4.5 SETTING




| Button | Description |
|---|---|
| | Back to the previous screen |
| | Back to the Home Page |
| | Selection of the fan number |
| **Number of fans** | Setting of the number of fans of the network (paragraph 4.2) |
| **Modbus addresses** | Setting of the Modbus addresses (paragraph 4.3) |
| **Alarm** | Alarms identification (paragraph 4.4) |
| **Speed** | Setting of the speed limits (paragraph 4.6) |
| **Motor info** | Motor information (paragraph 4.7) |
| **Control mode** | Control mode setting (paragraph 4.8) |
| **Run input** | Setting of the run input (paragraph 4.9) |
| **System** | System information (paragraph 4.10) |

## 4.6 SPEED SETTING



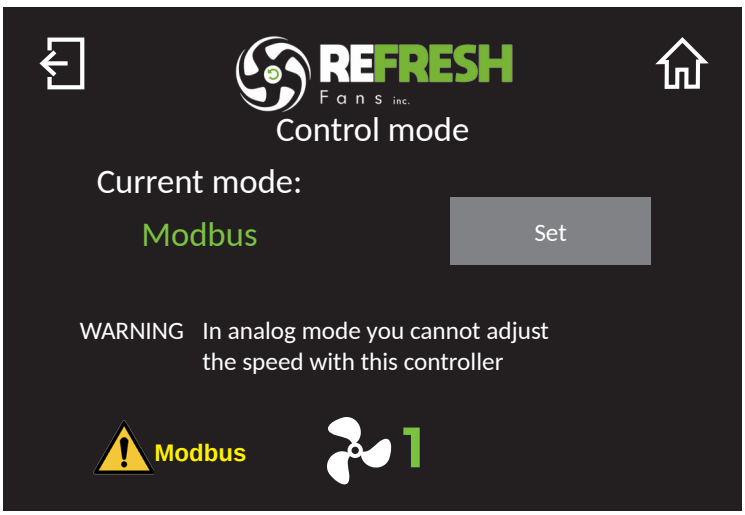

| Button | Description |
|---|---|
| | Back to the previous screen |
| | Back to the Home Page |
| | Selection of the fan number |
| Modbus | Alarm Modbus: the symbol is displayed and blinks if one of the fans does not communicate on the Modbus network. Touching it, the “Alarm identification” screen of the faulty fan is accessed (paragraph 4.4) |
| **min.** | Setting of the minimum speed (from 10rpm): touching the symbols or the minimum speed value increases or decreases. |
| **max.** | Setting of the maximum speed: touching the symbols or the maximum speed value increases or decreases. |

The maximum speed in case of reverse operation (if available) corresponds to 80% of the maximum speed value (max) displayed in this screen.

## 4.7 MOTOR INFORMATION

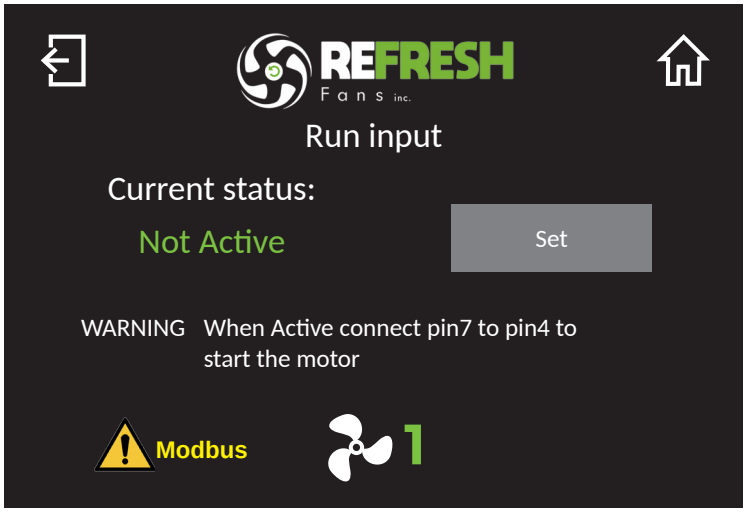

| Button | Description |
|---|---|
| | Back to the previous screen |
| | Back to the Home Page |
| | Selection of the fan number |
| Modbus | Alarm Modbus: the symbol is displayed and blinks if one of the fans does not communicate on the Modbus network. Touching it the “Alarm identification” screen of the faulty fan is accessed (paragraph 4.4) |
| **Run time** | Run hour counter of the motor |
| **Default set** | Indication of the motor parameters |

## 4.8 CONTROL SETTING




| Button | Description |
|---|---|
| | Back to the previous screen |
| | Back to the Home Page |
| **Set** | Setting between Modbus or Analogic. In Analogic mode the fan speed and the Run/Stop mode can not be set with the SMART TOUCH CONTROLLER. Any other functionality remains active |
| | Selection of the fan number |
| Modbus | Alarm Modbus: the symbol is displayed and blinks if one of the fans does not communicate on the Modbus network. Touching it, the “Alarm identification” screen of the faulty fan is accessed (paragraph 4.4) |

## 4.9 RUN INPUT SETTING




| Button | Description |
|---|---|
| | Back to the previous screen |
| | Back to the Home Page |
| **Change** | Run Input contact activation: if active, pin #7 of the motor connector must be connected to pin #4 to start the rotation |
| | Selection of the fan number |
| **Modbus** | Alarm Modbus: the symbol is displayed and blinks if one of the fans does not communicate on the Modbus network. Touching it, the "Alarm identification" screen of the faulty fan is accessed (paragraph 4.4) |

## 4.10 SYSTEM INFORMATION


| Button | Description |
|---|---|
| | Back to the previous screen |
| | Back to the Home Page |
| **Language Set** | Language selection (English or Italian) |
| **Buzzer Set** | Setting of the buzzer: can be "on sensitive", "no beep" or "everywhere" |
| **Backlight Set** | Setting of the backlight: can be always "on" or turn-on "time" |
| **Backlight timeout Set** | Backlight duration when "time" setting is active (adjustable between 5÷240 seconds). The backlight turns off after the time in expired. |
| **Firmware** | Firmware information |