Controller user manual

Contents:

Controller set-up

Front board (door)

1. **Leds** : indicating whether the application is on or off. (Light is on- application is on; light is off- application is off).

   #1- Main desiccant pump
   #2- Main blowers
   #3- Regenerator (including: minor desiccant pump, water pump and blower)
   #4 - (optional): electrical tap, dumper
   #5- Heater/hot water pump

   Bypass
   Machine is working without the controller (in which case all other lights are off)

   Warning: The door is locked by buckles on its left side. They should be opened and closed carefully while administering counter-support to the fuse box.

2. **Prog. Button**- is used to enter the sub-menus from the main menu and to change the variables. (press once to enter edit mode - a flickering line will appear below the variable to be edited, press again to move to the next variable or to exit the edit mode).

3. **Arrow buttons**- are used to navigate within the menus and to change the variables' values while in edit mode.

4. **Enter button**- is used to enter the main menu from the main screen and to exit the menus.

Bypass switch

Electrical switches
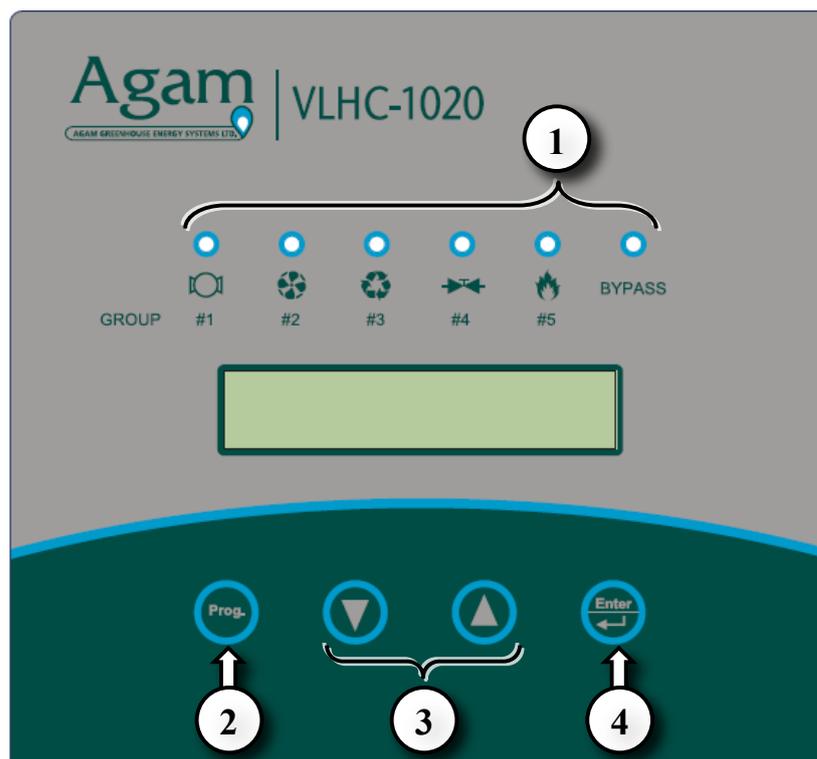
Left Panel:

1. **Controller bypass switch** (has the shape of a lock)
   has 2 states:

   a. **On**- machine is working in controller bypass mode
   b. **Off**- machine is working in normal mode

2. **Electrical switch box**:
   Inside the box there are 3 switches:

   a. **Main** - disconnects the machine from electricity
   b. **F1**   - supplies current to groups #1 and #2
   c. **F2**   - supplies current to groups #3, #4 and #5
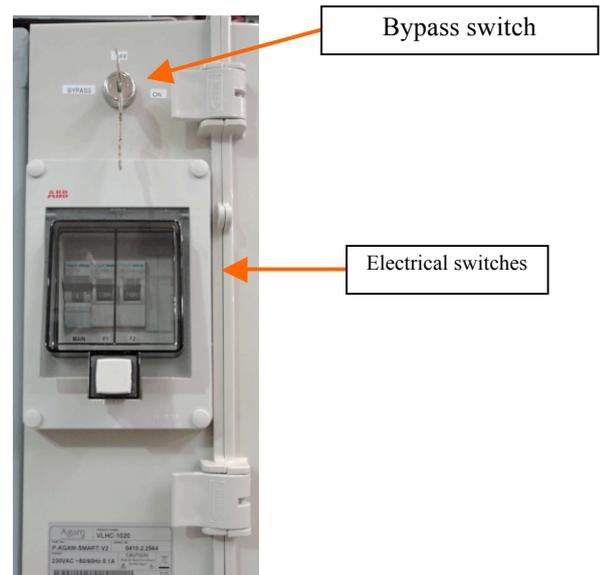
Bottom panel:

Contains the entrance points of the electrical cables from the different parts of the machine and the corresponding sensors according to the electrical scheme (see attached drawing: **Power electric diagram – electricity and control box**)

Program map

Main screen

Current Temperature   **Current Humidity**   **Current Time**

```
25.3°C 85.4%  12:23
       Normal Auto
```
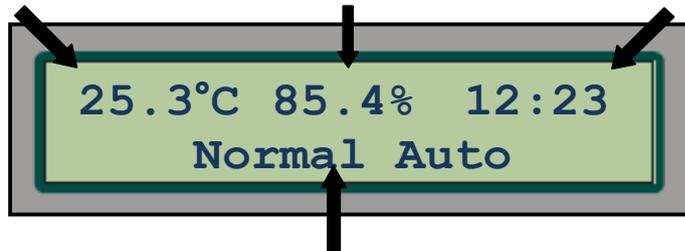
Current State:

State	Description
▪ Normal Auto	Machine is working in automatic mode
▪ Normal Manual	Machine is working in manual mode
▪ Not Operational	Machine is not working
▪ Low Limit	Desiccant level is too low
▪ High Limit	Desiccant level is too high
▪ Regenerator Limit	Desiccant concentration is too high
▪ Temperature Failure	Temperature sensor is not connected/not working
▪ Humidity Failure	Humidity sensor is not connected/not working
▪ Control Input	Machine is activated by computer
▪ Bypass Mode	Machine is activated by controller bypass
▪ Thermostat	Hot water temperature is too low

* Fast approach to view target humidity and temperature values:

While at the main screen press the ⬆ button. The following screen will appear for 5 seconds :

```
Target Temp         25.0°C
Target Humidity      75.0%
```

While at the main screen press '**Enter**' and the main menu will appear :

```
1. Control

      2. Settings
      3. System Mode
      4. System
      5. History
      6. Test
      7. Calibration
```
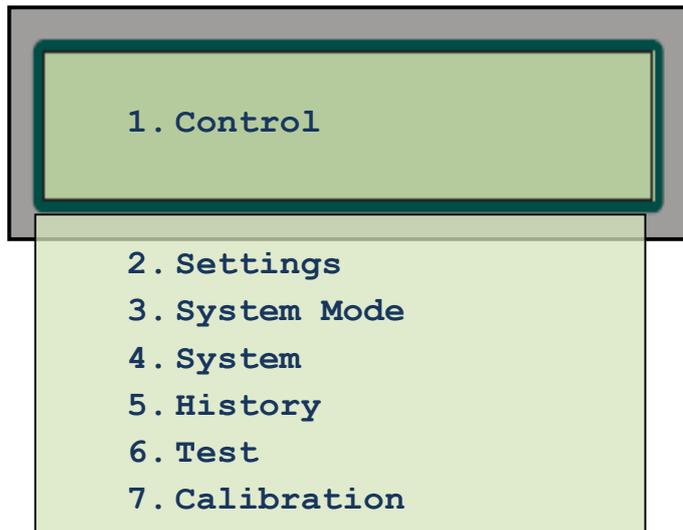
Using the **arrow buttons** move between the sub-menus and press **'prog**.' to enter the desirable one.

1. **Control**

```
Start Time   1            10:00

End Time     1            18:00
From Humidity    1         80%
To Temp    1               30°
Start Time    2           00:00
End Time     2            00:00
From Humidity    2          0%
To Temp    2                0°
```
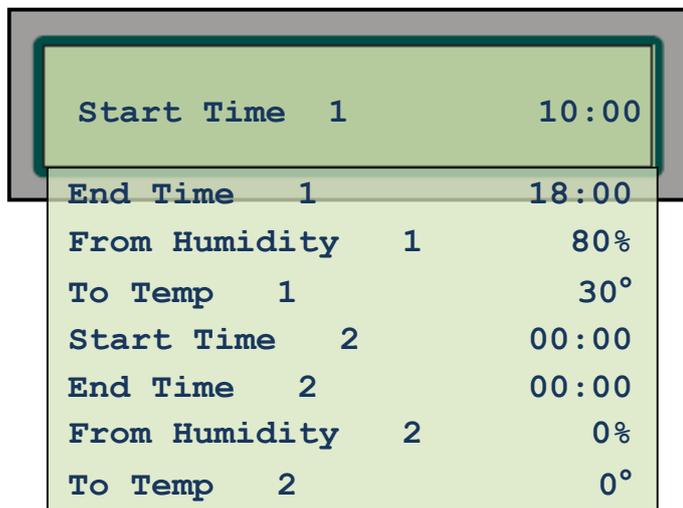
2. **Settings**

Upon entering the settings menu you will be asked to enter a password (see section **G**)

```
        Enter Password
              0
```

```
 Temp Mode                   0
 Stop Delay                 10
 Lvl Resume Delay            2
 Reg Resume Delay           15
 Temp Unit 0=C 1=F           0
 Humidity Hyst.             2%
 Temp Hyst.                 1⁰
 Group Act Delay             2
 Group #4 Operative          1
 Group #5 Operative          1
```

3. **System Mode**

```
 System Mode            AUTO
                        MAN
                        OFF
```

4. **System**

```
 Time                  00:00
 History Res.          1 Day
 Unit Number               0
 Baud Rate              9600
```

5. **History**

Event	# of events
Low Lvl Stop	2
High Lvl Stop	1
Reg Stop	5
Thermo Stop	3
Reset	

To reset the data you will be asked to enter a password (see section **G**)

```
          Enter Password
               0
```

6. **Test**

```
Temp          24.0⁰        459
Humidity      44%          405
Input Low Level            ON
Input High Level           ON
Input Regenerator          ON
Input Control              ON
Input Thermostat           ON
Input Bypass               OFF
Relay #1                   ON
Relay #2                   ON
Relay #3                   ON
Relay #4                   ON
Relay #5                   ON
```

7. **Calibration**

This function is to be changed by the manufacturer only.

Press '**Enter**' to return to the main menu.
Press '**Enter**' again to return to the main screen.

Controller settings
Primary settings

Lift the main switch.
All the lights will turn on and the version number will appear on the screen. Then the lights will turn off and the main screen will appear.

1.Control - Setting the machines' operating program

1.1
a. Press '**Ente**r' to enter the main menu.
b. Press '**Prog**' to enter the control menu.
c. Press '**Prog**' to set **'start time 1'** for the machine to start working, a flickering line will appear below the hour-digit.
d. Using the **arrows** choose the desirable hour and press '**Prog**' to continue to the minute-digit. Repeat the actions listed in this section.
e. Press '**Prog**' to exit the setting mode.
f. Press the **arrow pointing down** once and repeat the steps listed in sections c-e to set **'end time 1** for the machine to stop working.
g. Press the **arrow pointing down** once and press '**Prog**' to set **'from humidity 1' -** the minimal desirable humidity in the greenhouse.
h. Press '**Prog**' to exit the setting mode.
i. Press the **arrow pointing down** once and press '**Prog**' to set **'to temp 1'** - the maximal desirable temperature in the greenhouse.
j. Press '**Prog**' to exit the setting mode.
k. There are 2 options :
    (1) If you want to set a second program (different time frame, different minimal humidity, different maximal temperature) – go to **section 1.2** below.
    (2) If you don't want to set a second program - Press '**Enter**' to return to the main menu.

1.2
a. Press the **arrow pointing down**.
b. Press '**Prog**' to set **'start time 2'** for the machine to start working, a flickering line will appear below the hour-digit.
c. Using the **arrows** choose the desirable hour and press '**Prog**' to continue to the minute-digit. Repeat the actions listed in this section.
d. Press '**Prog**' to exit the setting mode.
e. Press the **arrow pointing down** once and repeat the steps listed in sections c-e to set **'end time 2** for the machine to stop working.
f. Press the **arrow pointing down** once and press '**Prog**' to set **'from humidity 2' -** the minimal desirable humidity in the greenhouse.
g. Press '**Prog**' to exit the setting mode.
h. Press the **arrow pointing down** once and press '**Prog**' to set **'to temp 2'** - the maximal desirable temperature in the greenhouse.
i. Press '**Prog**' to exit the setting mode.
j. Press '**Enter**' to return to the main menu.

2. Settings

  a. Press '**Enter**' to enter the main menu
  b. Using the **arrow buttons** go to '**settings**' menu.
  c. Press '**Prog**' to enter the menu.
  d. Password screen will appear. Enter the password as described below, you will then enter the settings menu.
  e. Press '**Prog**' to set the desirable variable, a flickering line will appear below the digit.
  f. Using the **arrow buttons** choose the desirable value. Press '**Prog**' to exit the setting mode.

  Set the variables according to the following table:

Temp Mode	0	
Stop Delay	10	
Lvl Resume Delay	2	
Reg Resume Delay	15	To be used according
Temp Unit 0=C 1=F	0	to manufacturer's directives only
Humidity Hyst.	2%	
Temp Hyst.	1^0	
Group Act Delay	2	
Group #4 Operative	1	Choose '**1**' if the group is activated by the machine
Group #5 Operative	1	and '**0**' if it is not

  g. Using the **arrow buttons** move to the next variable and repeat sections e-f. Repeat until all Variables are set.
  h. Press '**Enter**' to return to the main menu

3. System-Mode - Setting

  a. Press '**Enter**' to enter the main menu
  b. Using the **arrow buttons** go to 'system mode' menu.
  c. Press '**Prog**' to enter the menu.
  d. Press '**Prog**' for adjustment of the work mode. A flickering line will appear below the variable being processed.
  e. Using the **arrow buttons** choose the desirable option and press '**Prog**' to exit the setting mode.
  f. Press '**Enter**' to return to the main menu

4. System - Adjustment of the current time

  a. Press '**Enter**' to enter the main menu
  b. Using the **arrow buttons** go to '**system**' menu.
  c. Press '**Prog**' to enter the menu.
  d. Press '**Prog**' to adjust the hour, a flickering line will appear below the hour-digit.
  e. Using the **arrow buttons** choose the desirable hour, press '**Prog**' to pass to the minute-digit and repeat the actions in this section.

f. Press '**Enter**' to return to the main menu.

5. <u>History</u>

a. Press '**Enter**' to enter the main menu
b. Using the **arrow buttons** go to '**history**' menu.
c. Press '**Prog**' to enter the menu.
d. Using the **arrow buttons** move between the different categories.
e. Check the number of stops which occurred. If there were stops which happened due to a too-low or too-high level of desiccant - see management options under "**problem solving**" in the user manual. The same applies for cases when the regenerator has stopped working more than 3 times a night.
   If the machine was stopped by the thermostat, check whether the heater supplies the appropriate heat.
f. In order to reset the data navigate to '**Reset**' using the **arrow buttons** and press '**Prog**'. Enter the password as described in section **G**.
g. Press '**Enter**' to return to the main menu.

6. <u>Test</u> - <u>checking the machines' functioning</u>

a. Press '**Enter**' to enter the main menu
b. Using the **arrow buttons** go to '**history**' menu.
c. Press '**Prog**' to enter the menu.
d. Review the sections to see if they are compatible with the machine's status .
   according to the explanations in the following table:

Temp	24.0^0	459	Displays the current temperature in the greenhouse
Humidity	44%	405	Displays the current humidity in the greenhouse
Input Low Level		ON	Displays the desiccant's status: ON: normal level, OFF: level is too low, see "problem solving"
Input High Level		ON	Displays the desiccant's status: ON: normal level, OFF: level is too high, see

		"problem solving"
Input Regenerator	ON	Displays the desiccant's status: ON: normal concentration, OFF: concentration is too high, see "problem solving"
Input Control	ON	Displays distal activation (by computer): ON: normal, OFF: was turned off by the computer or electrical bridge is disconnected.
Input Thermostat	ON	Displays the hot water status: ON: desirable temperature, OFF: temperature is too low.
Input Bypass	OFF	Displays activation by a controller bypass: ON: activated by controller bypass, OFF: normal activation by controller
Relay #1	ON	
Relay #2	ON	Each relay activates a group as described in "controller setup"
Relay #3	ON	One can turn the group on or off by pressing 'Prog', moving to the desirable
Relay #4	ON	state using the arrow buttons and pressing 'Prog' again to choose
Relay #5	ON	*After 5 minutes the relay will return to its previous state

> **NOTE:** The relays activated within the test-menu will automatically return to the state which was previously set within the **control menu** immediately after exiting the Test mode.

   e. Press '**Enter**' to return to the main menu.

7. Calibration

   This function is to be changed by the manufacturer only.

   Entering a password

   In certain cases you will be asked to enter a password.
   The password is **1234**
   a. Press '**Prog**'
      A flickering line will appear beneath the digit '0'.
   b. Using the **arrow buttons** move to the digit '1'.
   c. Press '**Prog**' again to move to the next digit.
   d. Using the **arrow buttons** move to the digit '2'.
   e. Continue accordingly until you have entered the whole password.