DryGair Dehumidification Unit

Smart DG Interface

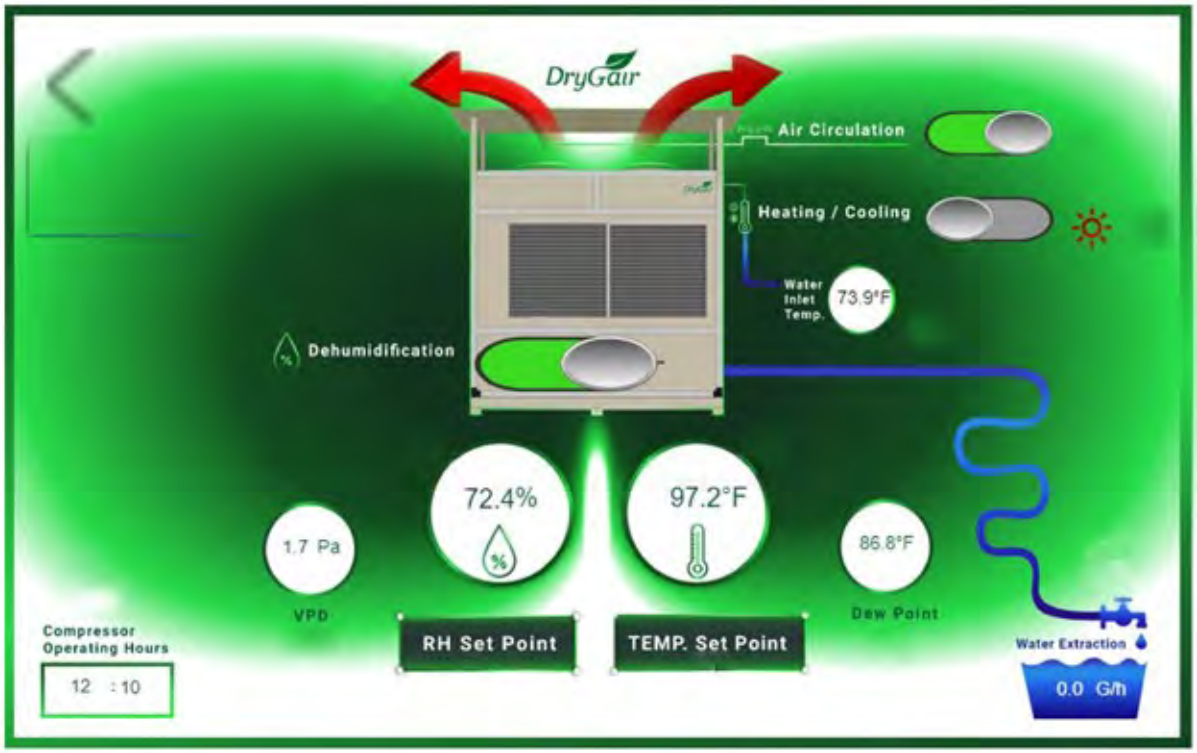

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Table of Contents

List of Figures

1. Introduction

This manual introduces the DryGair Smart DG interface, which lets growers monitor and control their DryGair units – remotely and locally.

Smart DG includes a physical interface that is attached to the unit, as well as a virtual interface that is accessible via a computer or a mobile device. Both systems provide growers with full control over their DryGair units, allowing them to collect climate data and operational data.

The Smart DG feature can be enabled and used on any DryGair dehumidification unit configured with the c.pCO programmable controller.

Please note that DryGair continuously develops and updates its machines to maximize their potential. This manual, though entirely up to date when issued, is subject to changes without notice.

1.1 Before You Begin

Before you begin working with the DryGair dehumidification unit, read the DryGair dehumidification Operation and Maintenance Manual, which provides information and procedures for installing and operating the unit, as well as maintenance, troubleshooting, and repair procedures.

When reading this manual, pay special attention to:

- The safety instructions.
- The conventions. They explain the symbols used in this manual.

Before beginning a procedure, read the process through to the end. A thorough understanding of the entire procedure will prevent unnecessary loss of time and error.

1.2 Further Information

For further information, contact DryGair at:

Email: info@drygair.com

Website: www.drygair.com

Online Technical Support Webpage: https://drygair.com/technical/

1.3 Conventions

The following conventions are used in this manual:

Warning

Information given in a "warning" message warns of the possible hazard to personnel and extreme risk to the unit.

Caution

Information given in a "caution" message refers to the safe operation of the unit and provides a warning where the possibility of damage to the equipment exists.

Note

Information given in a note describes how the part/unit functions or provides a tip on how best to use it.

2. Safety

DryGair Energies Ltd. believes that the safety of personnel working with and around the unit is the most important consideration. The DryGair unit is equipped with all the safety devices necessary to ensure risk-free use under standard conditions.

Machine installation, maintenance, and adjustments must be performed only by a qualified technician with expert machine knowledge, and that has read this manual.

Before operating the unit or performing maintenance operations, read and be familiarized with the safety information.

- Obey and follow all warnings and cautions given in this manual.
- Comply with all approved and established precautions for operating electrical and mechanical equipment.
- Only qualified and authorized personnel should perform maintenance or repair tasks.
- Verify the power, and any other connected facilities, are turned off and disconnected before beginning maintenance procedures, part replacements, or repairs.
- We advise strict observance of the work safety standard as defined by the authorities in each country.

DryGair cannot accept responsibility for injury to persons or damage to objects resulting from not observing safety standards.

2.1 Hazards

Danger: Electrical Shock Hazard. High voltage is present at points throughout the unit. Contact with high voltage can result in injury or death. Before performing any operation related to electricity, open the electric compartment cover, switch off the Main Power switch and switch off the Circuit Breaker. Doing so ensures no voltage is present.

Danger: Hot Surface Hazard. The heat exchangers and their pipes, and the compressor may have a high temperature during unit operation. Do not touch the compressor and the heat exchanger pipes and coils while the unit is operating. Verify the unit has cooled down before touching them.

Danger: Bodily Injury Hazard. Be careful not to drop any of the unit parts. Dropping the covers might cause bodily injury or damage to the parts.

2.2 Operation Safety Notes

The following safety practices must be complied with:

- **CAUTION** and **WARNING** notices posted on the machine and safety notes in this manual.
- Ensure that all control panels and electrical panels are covered.
- Do not start the unit if any of the safety covers are missing.
- **MOVING PARTS** – Do not touch the fans during unit operation.
- Do not permit smoking or food in the working area.
- Personnel operating the unit must not remove covers or panels.
- Although the electrical compartment is closed by a door, operator access to the compartment is strictly forbidden without explicit authorization.
- Ensure that all personnel operating the unit know where the main power switch is located and what to do in case of an electrical emergency.
- Locate approved types of fire extinguishers near the equipment.

2.3 Maintenance Safety Notes

Only authorized personnel are permitted to perform maintenance and repair tasks. Before performing such a task, read the instructions to ensure you understand them and that the required precautions and tools are available.

- For high mounted maintenance procedures, use a stable ladder to avoid high fall injuries.
- To avoid getting caught in moving parts, do not lubricate, repair, or adjust the machine while in operation unless expressly written in the manual. Stop the machine according to the machine stopping procedure before lubricating or performing other maintenance tasks.
- Secure the electrical wires and cables to prevent damage.
- The protecting doors and covers should not be opened during machine operation.
- Replace all safety shields after completing set-up, troubleshooting, and maintenance procedures.

3. Smart DG Overview

DryGair Dehumidification units configured with the c.pCO programmable controller can be connected to a Smart-hub and to one another, enabling remote communication between the DryGair user and the DryGair units.

The Smart-hub can also be connected to the internet, enabling online control and monitoring of all connected DryGair units and for data collection.

Figure 1. The c.pCO programmable controller

The Smart DG offers an interactive platform that collects data from the DryGair units and enables control of one or more units in a growing space.

Smart DG is accessible through any online platform (PC, smartphone, etc.) through any web browser.

Figure 2. Smart DG (on smartphone)

3.1 The Smart DG Interface

The Smart DG browser interface offers the following capabilities:

- Real-time data monitoring of the relative humidity levels, greenhouse temperature, system operating status, water extraction, dewpoint and VPD measurements, and more.
- Real-time malfunction alerts and indications.
- Real-time monitoring and data export to improve cultivation. The data can be exported in the form of daily, weekly, or monthly graphs.
- For growers with heating and cooling units – remote update of the temperature setpoint.
- Mapping of all DG units in a growing space, with access to individual units, when connected to the internet.
- In growing facilities with a climate control system, the Smart DG interface will operate in remote mode. This mode provides the same monitoring tools but without the set point functions of the relative humidity or temperature.
- For growers working in "Local mode" – the possibility to remotely update the relative humidity setpoint, activate the air circulation fans, and activate dehumidification.

4. Smart DG Controller Operations

The following chapter explains the various operations that can be performed on the Smart DG controller with or without an internet connection.

Before you begin, make sure the unit is connected to electricity. Refer to the general operation manual for basic installation instructions (available on the DryGair website www.drygair.com).

4.1 Setting the Controller's Date and Time

Caution

There are screens related to system settings that changing them can impair the operation of the unit. Therefore, we recommend logging into the controller with a password only by a qualified DryGair technician.

To receive the password, contact DryGair.

All daily operations are available without the need for a password.

Manually set the date, day, and time of the unit's programmable controller, according to the following procedure.

1. Open the electrical compartment and locate the unit's controller.

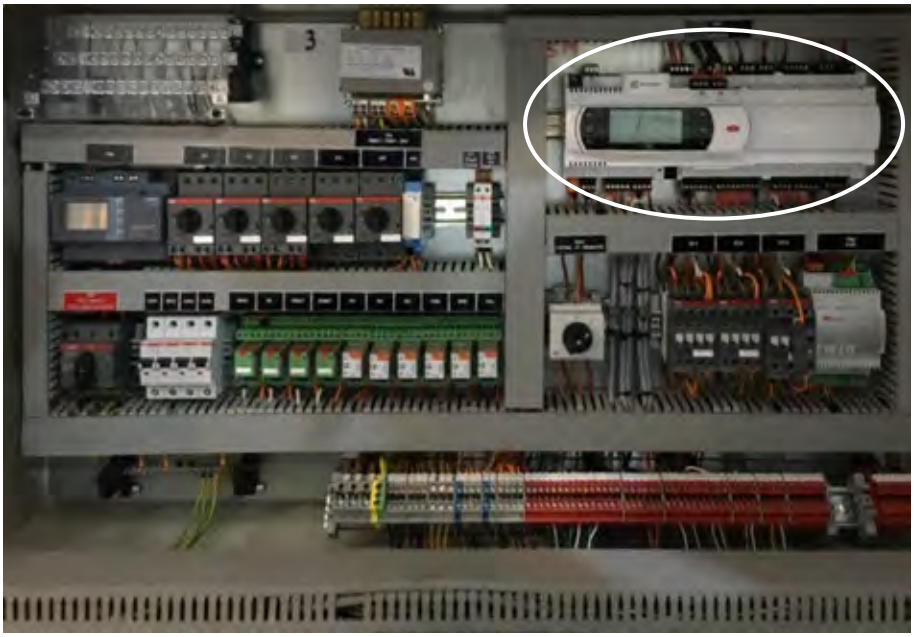


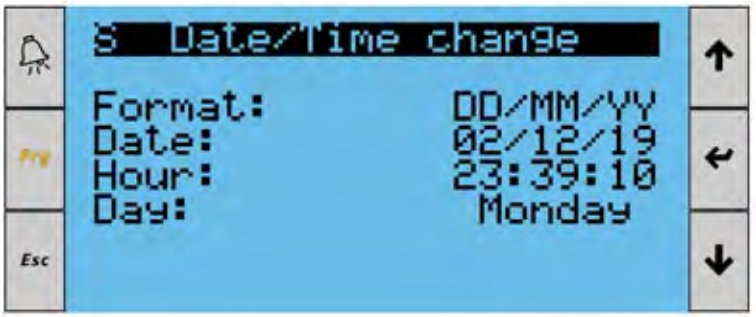
Figure 3. Electrical compartment

1. Press the **Prg** ( ) button to reach the Login Screen.
2. Use the **Up/Down** arrows to input the password.
3. Press the **Enter** ( ) button to move from number slot to number slot.

4. Press **Enter** to proceed to the **Main Menu**.

5. Scroll down with the arrows to "**3. Date & Time**" and press **Enter**.

6. Input the current **Date**, **Hour**, and **Day**, using the **Enter** button to move from one parameter to the next and the **Up/Down** arrows to change the values.



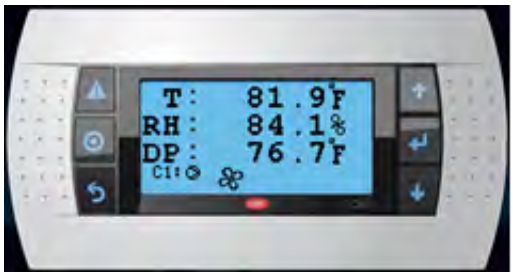
7. Press **Esc** (↩) to go back.

4.2 Changing the Setpoint - offline

To define a new set point in the smart DG sensor (when the unit is offline):

1. Turn on the display by pressing any button around the display.

The first display screen appears.



- **T** – Temperature [°C/°F]
- **RH** – Relative humidity [%]
- **DP** – Dew Point [°C/°F]

To change the set point, the unit needs to be set to Local (1).

2. Press the Down arrow and then press Enter (↵); a black square will blink next to the **RH S.P.**

3. Using the **Up/Down** arrows, choose the required set point:
   - Max. set point: 90%
   - Minimum set point: 45%
4. Press **Enter** to set the new set point.

4.3 Converting Temperature Units (°F/°C) - offline

To convert the temperature units when the unit is offline (°F to °C):

1. Press the **Prg**. button on the left side of the display.

2. Enter the password by using the **Up/Down** arrows on the right side of the display. After each number, press **Enter** to set the number.

3. Press the **Down** arrow and chose '**2. Parameters**'.

4. Press **Enter**.
5. Press the **Up** arrow to go to the '**G10**' page.

6. Press **Enter**.
7. Using the **Up/Down** arrows, select the required UI unit:
   - **USA** – Fahrenheit [°F]
   - **Canada** – Celsius [°C]
8. Press **Enter**. The screen will return to the main menu.
9. Repeat steps 3–7 to change the '**Unit tERA**' and '**Unit Modbus**'.
10. Press the **Esc** button on the bottom left side of the display to return to the main display.

4.4 Downloading Data From the Smart DG - offline

The Smart DG controller allows storing the information collected by the DryGair unit sensor. This information can then be downloaded using a USB flash drive (any USB flash drive can be used).

To export the Logfile via the system menu:

1. If a cable is connected to the USB port on the controller, unplug it.
2. Connect the USB flash drive to the DryGair controller.
3. Press the **Alarm** (⚠)+**Enter** (↵) buttons for 5 seconds.
4. Select the **Logger** menu.
5. Select the **Export** menu.
6. Press **Enter**.

4.5 Updating the Controller's Software Using a USB

If the unit is not connected to the internet, updating the software can be performed locally using a USB flash drive.

If you choose to update the software locally, please contact DryGair to get the required update via a link or a USB flash drive.

Important:

- Before updating the c.pCO controller via a USB connection, check that the Host USB port is enabled in the system menu.
- Only use flash drives with the FAT file system.
- Do not use both USB ports on the controller at the same time.
- Do not use mass storage peripherals that have a current draw of more than 500 mA.

To update the controller software using the USB key:

1. Open the small door on the controller.
2. Insert the USB key.

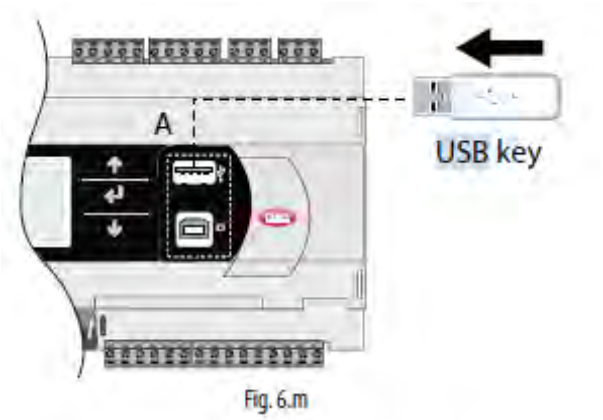


Fig. 6.m

The following screen will appear.

3. Press **Enter** to begin the software installation.
   "**Upload successful**" will appear on the next screen.

4. Press **Enter** to end the upload.
5. Press the **Prg**. button to enter the password.
6. Go to **parameters** and select screen **G09**.

7. Go to the second line (**Evd**) and change its value from **0** to **1**.
8. Press **Enter**.

To leave the screen, press the **Esc** button.

Note: By default, the water count and water temperature control are not set.

If you wish to set these parameters, do the following:

To set the water count and water temperature control

1. Go to **Parameters** and select screen **G02**.

2. Change the required parameter from **NO** to **YES**.

5. Smart DG Set-Up Procedure

The following are the basic set up steps for setting-up Smart DG units:

- Registering the Units (section 5.1)
- Activating the Smart-hub License (section 5.2)
- Assigning the Unit Address (section 5.3)
- Connecting the Units to the Internet (section 5.4).

5.1 Registering the Units and Creating a Customer Map

Each project and its units need to be registered in the Smart-hub controller, enabling the user to monitor, analyze, receive alerts, and control the DryGair Smart DG units.

To register each of the units in the Smart-hub controller, the distributor must fill out the following information sheet and send it to the DryGair team. (see Appendix A).

Customer Information	Customer Name:		
	Distributer Name:		
	Location:		
	Customer Username:	A	B
	Customer Password:	A	B
	Email Adresses for Alarm Notifications:		
Site Information	Site name:		
	Location: Country / State /City		
	Time zone (UTC)		
	Total No. of Units:		
Unit Information	Unit Serial Number		
	Unit Address: (the default controller adress is: 192.168.100.100 ,The last number should be canged between 101-110)		
	Unit name/ description:		

1. Notify the DryGair team of each Smart-hub serial number.

> ***Note***
> This process can take 2–3 business days. Therefore, it is advised notifying ahead of time.

2. Upon receiving the above information, the DryGair team will set up an account with the customer's details.
3. Once the Smart-hub and the units are connected to the internet network, the customer will be able to see the units online.

5.2 Activating the Smart-Hub License

1. Notify the DryGair team of each Smart-hub serial number.

> ***Note***
> This process can take 2–3 business days. Therefore, it is advised notifying ahead of time.

2. Upon receiving the above information, the DryGair team will set up an account with the customer's details.

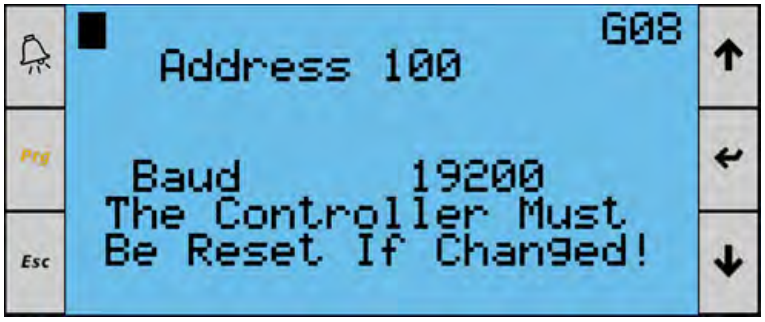
   Once the Smart-hub and the units are connected to the internet network, the customer will be able to see the units online.

5.3 Assigning the Unit Address

Each unit must be given an "Address" – a number between 101 and 115. This enables the DryGair cloud identify and communicate with the unit.

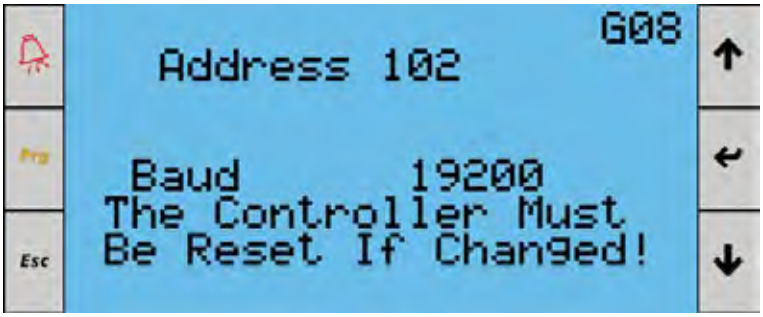
1. From the Main Menu screen, scroll down with the arrows to the line "**2. Parameters**" and press **Enter** (↵).

2. Use the **Up/Down** arrows to reach the screen "**G08**".



3. Press the **Enter** (↵) button twice to access the address input field.

   The black box will flash beside the word Address.



4. Use the **Up/Down** arrows to set the **Address** of the Unit – a number between 101 and 115 and press **Enter** (↵).
5. Write the unit number in the table with its relevant serial number, description, and location on the greenhouse map (see section 5.1).
6. Press the **Esc** button to exit.

5.4 Smart-Hub Description

Warning

This appliance must only be installed by service personnel with suitable technical training and experience and who are aware of the dangers they may be exposed to in the event of incorrect configuration. The operations described in this manual are for service personnel only.

5.4.1 Required Parts and Tools

5.4.1.1 Required Parts

Before performing any operation, check that the Smart-hub kit contains the following parts:

- The device itself.
- Powe supply and plugs kit.

Figure 4. Smart-hub parts

Caution

The product should be powered using a UPS line or with a UPS device to ensure power is supplied continuously to the device.

5.4.1.2 Required Tools

The following tools and items are required to install the Smart-hub:

- Flathead screwdriver.
- Phillips (crosshead) screwdriver.
- Screws for mounting the unit to a wall (see Figure 5):
  - Four M4.5×40 cap screws and eight flat washers.

5.4.2 Mounting Options

The Smart-hub can be installed in one of the following ways:

- **Horizontal desktop installation**

A

- **Wall mounting**

B

Figure 5. Smart-hub mounting

5.4.3 Ethernet Cable Connections

> ***Caution***
> To safeguard operators and the boards, disconnect power before performing any operations.

- **Ethernet Cable**: use shielded cable Cat.5e SFTP type.

There are two separated ethernet connections: **Field** and **Lan**.

> ***Note***
> A wrong connection between the field and LAN cables will cause malfunctioning of Boss communication.

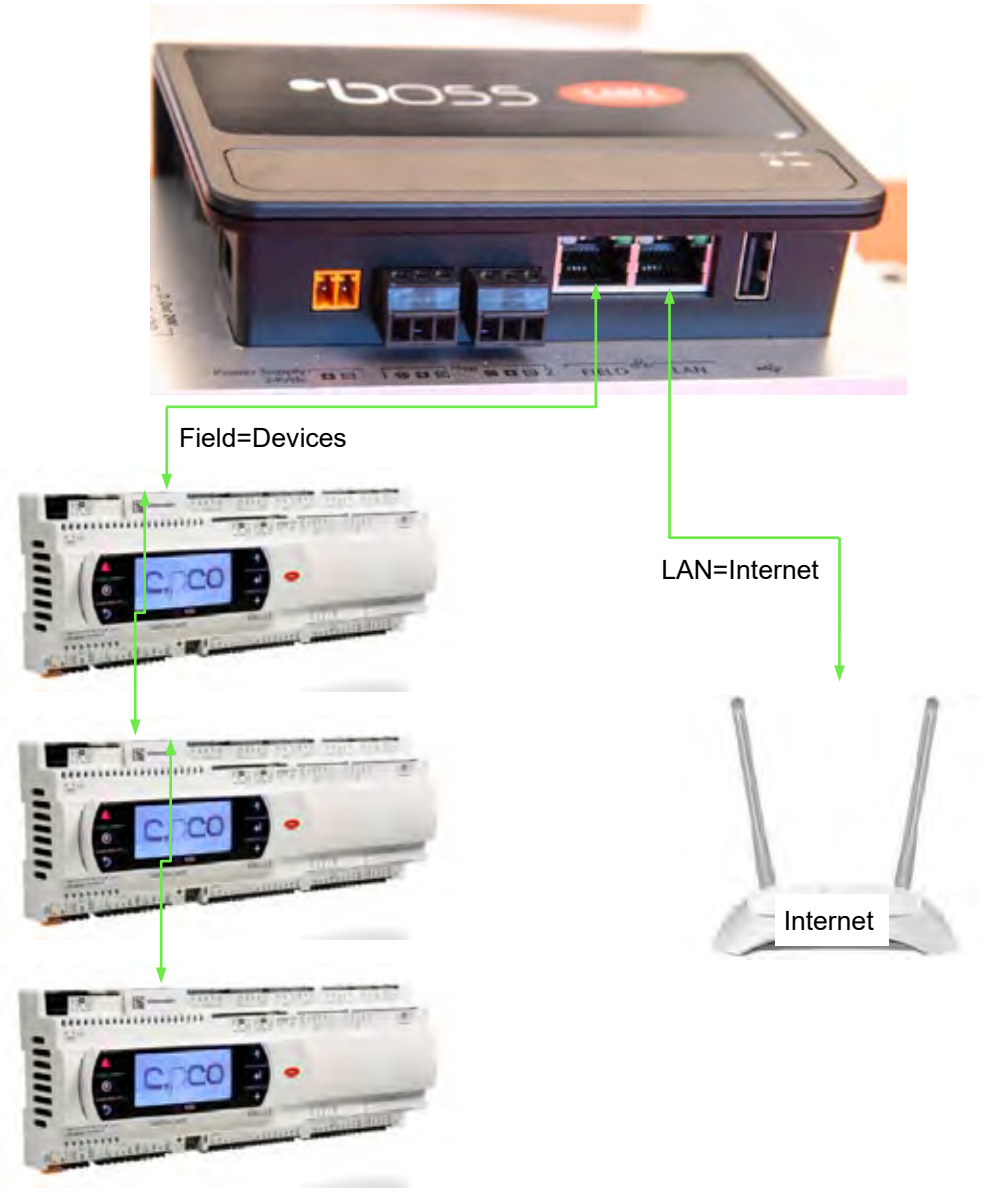


Figure 6. Smart-hub connections

5.4.4 Connecting the Power Supply

The power supply includes various plugs that can be connected to it, according to the wall outlet type.

Figure 7. Power supply and plugs

1. Connect the power supply plug to the power supply unit by sliding it from top to bottom.
2. Connect the power terminal to the Smart-hub.

Figure 8. Smart-hub power

3. Connect the power supply unit to electrical outlet.

5.4.5 Technical Specifications and Warnings

(ENG) TECHNICAL SPECIFICATIONS

boss-mini power supply	24VDC 1,5A max
Operating conditions:	from 5 to 40 °C
Storage conditions:	from -20 to 65 °C
3 digital outputs:	24 Vdc max 20mA
Serial ports:	1 (port 1) RS485 Master opto-isolated - 1 (port 2) RS485 Master not opto-isolated
USB ports:	1 standard HOST ports with type A connector on side
Internal battery:	ilithium battery 3V/210mAH CR2032
Compliance:	Directive 2014/35/EU (LVD) - Directive 2014/30/EU (EMCD) - Directive 2011/65/EU (RoHS)
	the system made up of boss mini and Carel temperature measuring devices compliant with EN13485 meets the requirements of EC regulation 37/2005 and specifically standard EN12830 on temperature recorders for the transport, storage and distribution of chilled, frozen, deep-frozen/quick-frozen food and ice cream (EN 12830, S, A, 1 or 2, range of measurement corresponding to the class of devices connected).
Pollution degree:	2 as per EN60950-1
Chassis material:	Chassis made of SEEC (Steel, electrogalvanized, cold-rolled) top and lateral casing in anodized aluminium
Dimensions:	143 x 100.94 x 30 mm
Index of protection:	IP20

Warning

The Smart-hub is not protected against water and dust!

CAUTION:

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

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.

FCC RF Radiation Exposure Statement:

1. This Transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
2. This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

CAUTION:

1. This product is intended to be supplied by an UL certified power supply or dc source suitable for use at minimum Tma 50 °C whose output meets SELV or ES1 and is rated 24Vdc, 1.5A min., if need further assistance, please contact CAREL INDUSTRIES SPA for further information
2. "CAUTION" Risk of explosion if the battery is replaced by an incorrect type
3. Never open the equipment. For safety reasons, the equipment should be opened only by qualified skilled person
4. Ensure to connect the power cord to a socket-outlet with earthing connection

5.5 Connecting the Units to the Internet

The Smart-hub controller and the units must be connected to an internet network to work with the online DryGair cloud. Connect the Internet cable to the LAN port of the Smart-hub.

Warning

Make sure the unit is not connected to power when working within the electrical compartment, as this is a safety hazard!

5.5.1 Connecting the Smart DG Units to the Smart-Hub Controller

Use an RJ45 Cat.5e SFTP shielded Ethernet cable to connect between the Ethernet port of the controller and the Field port of the Smart-hub controller. The cable length must not exceed 100 m.

Note:

All communication cables should be threaded through the internal hole on the bottom left side of the electrical compartment and run along the bottom of the electrical compartment, preferably behind the wires leading to the terminal blocks.

The communication cables must not come in direct contact with the power supply line, which runs through a hole in front of the communication cable hole, to avoid communication EMC Installation guidelines.

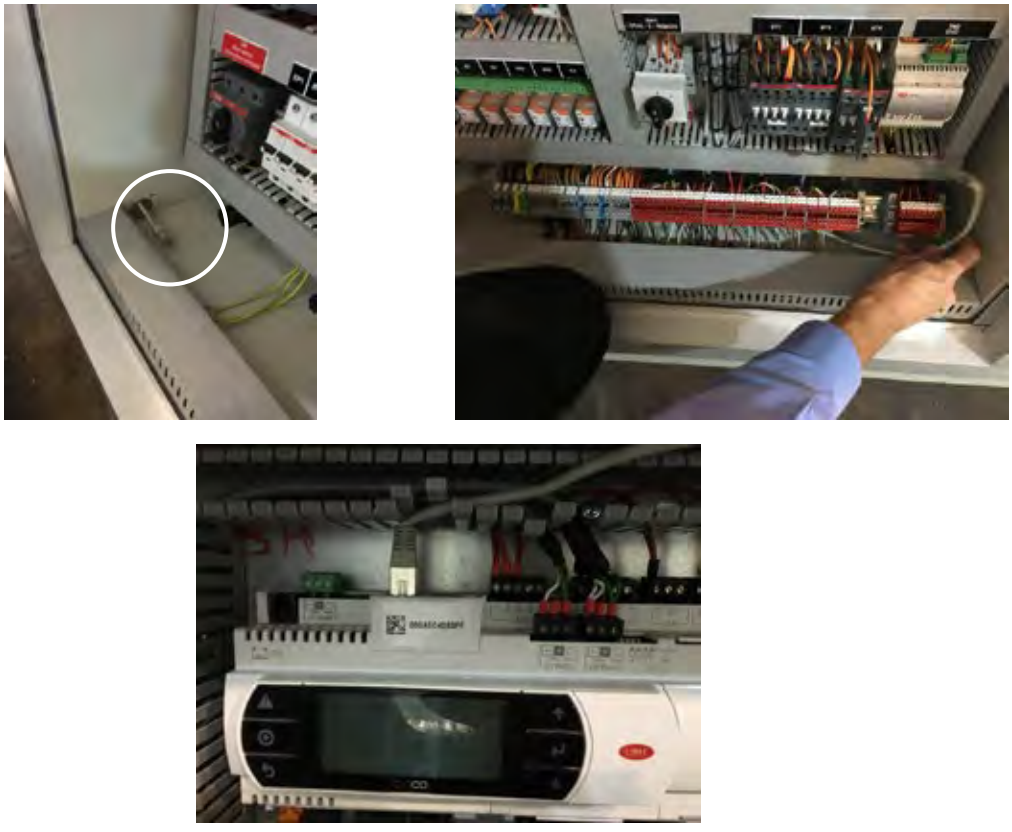


Figure 9. Cable routing

Note:

If there are firewalls on the customer's internet network, additional actions will be required to enable access to the internet.

Usually, ports 80 and 443 should be opened, and it should be validated that the No Proxy Server is enabled.

If you have any difficulties, consult your IT provider. Alternatively, you can connect the unit to an independent network with a separate internet network.

5.5.2 Connecting Multiple Units

For the signal to transmit properly between the units and the Smart-hub controller, the units must be connected to each other in "**Daisy chain topology**".

The Smart DG units should be connected one to the other, and the final unit in the series should be connected to the Smart-hub, which is connected to the internet.

To connect the units:

1. Determine and map out the Daisy chain topology, ensuring that all units are in Daisy chain topology and not in a parallel circuit.

Figure 10. Daisy chain topology

   Use RJ45 Cat.5e SFTP shielded Ethernet cables to connect one unit to the next (both ports can be used as in/out).

2. Connect the units to each other in a Daisy Chain Topology.

6. Smart DG Online Interface

Smart DG units that are connected to the internet and registered with the DryGair team can be accessed online via the DryGair Cloud, a website that can be accessed from any computer, phone, tablet, etc.

This platform provides access to real-time data on the unit's operation status and parameters and offers the grower remote operation control of the units.

6.1 Logging In to the DryGair Online Interface

After submitting the customer and unit information to the DryGair team, an account will be created, and the DryGair team will send a link to connect.

A login link is also available on the DryGair homepage (www.drygair.com).

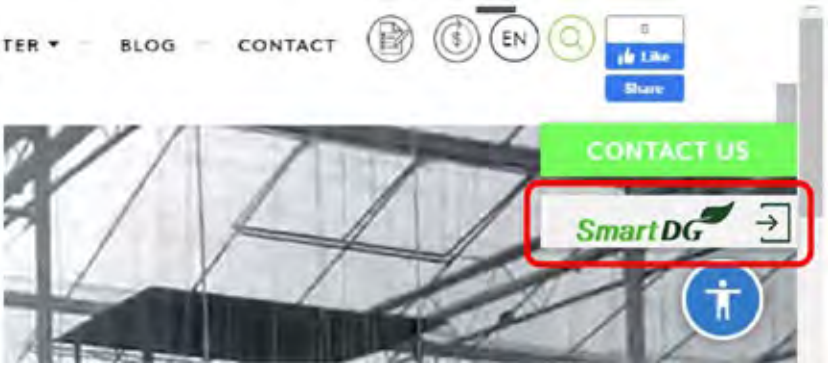


Figure 11. DryGair homepage

This link leads to a sign-in page on the DryGair cloud online interface.

Figure 12. DryGair cloud login screen

1. Enter the **Username** and the **Password** and press **Login**. The **Username** and **Password** are provided on the information sheet to login.

2. Select the Smart-hub controller to log in to. Each Smart-hub can control up to 15 units.
3. Press the green box (under the connection tab) to enter the Smart-hub.

Figure 13. Remote Pro screen

Signing in leads to the DryGair Cloud homepage, where a map of the greenhouse with the unit names will appear.

Figure 14. DryGair Cloud homepage

Clicking on a unit will lead to the unit's page, which gives information and measurements about the status of the unit.

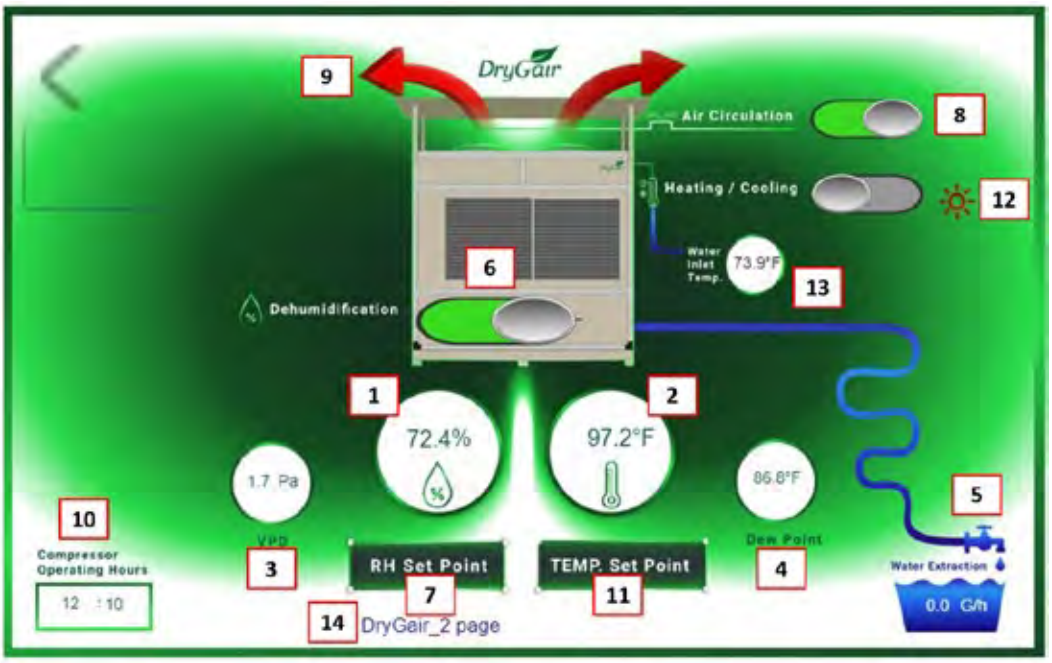
6.2 Remote Monitoring and Controlling

The Smart DG unit can operate in one of three modes, as selected by the Mode Selector switch found inside the electrical compartment.

- **Mode 0 – OFF**.
- **Mode 1 – Local mode**. The unit is controlled by the unit's controller in the electric compartment. In this mode, the grower can dictate unit operation and set points either manually on the controller or remotely by using the DryGair Cloud interface (when connected to the internet).
- **Mode 2 – Remote mode**. The unit is connected to a climate control system, and its operation and set points are dictated by the parameters specified in the climate control system.

Depending on the selected operation mode (**Mode 1**/**Mode 2**), the DryGair Cloud interface will offer different options for controlling and monitoring the unit and display a separate unit page based on the selected operation mode.

6.2.1 Available Online Functions in Mode 1 (Local Mode)



The following functions are available on the online DryGair Cloud interface for Smart DG units working in Mode 1 (Local Mode):

1. **Real-time relative humidity measurement**. As measured by the unit's humidity sensor.
2. **Real-time temperature measurement**. As measured by the unit's temperature sensor.
3. **Real-time VPD measurement**. As calculated according to the unit's sensor.
4. **Real-time Dew Point measurement**. As calculated according to the unit's sensor.
5. **Water removal**. Hourly average water removal rate. This feature takes constant measurements of the water extracted by the unit (an optional feature that requires an additional water meter kit, see Appendix B).
6. **Turn on/off dehumidification**. Use the toggle button to turn dehumidification on/off. According to the need, as dictated by the humidity setpoint, turning dehumidification on activates the compressor to extract humidity.

   Note: The air circulation switch must be toggled "on" to activate dehumidification. See number 8.
7. **Change desired relative humidity setpoint**. Clicking the RH Set Point button opens a window where the desired relative humidity set point can be entered.

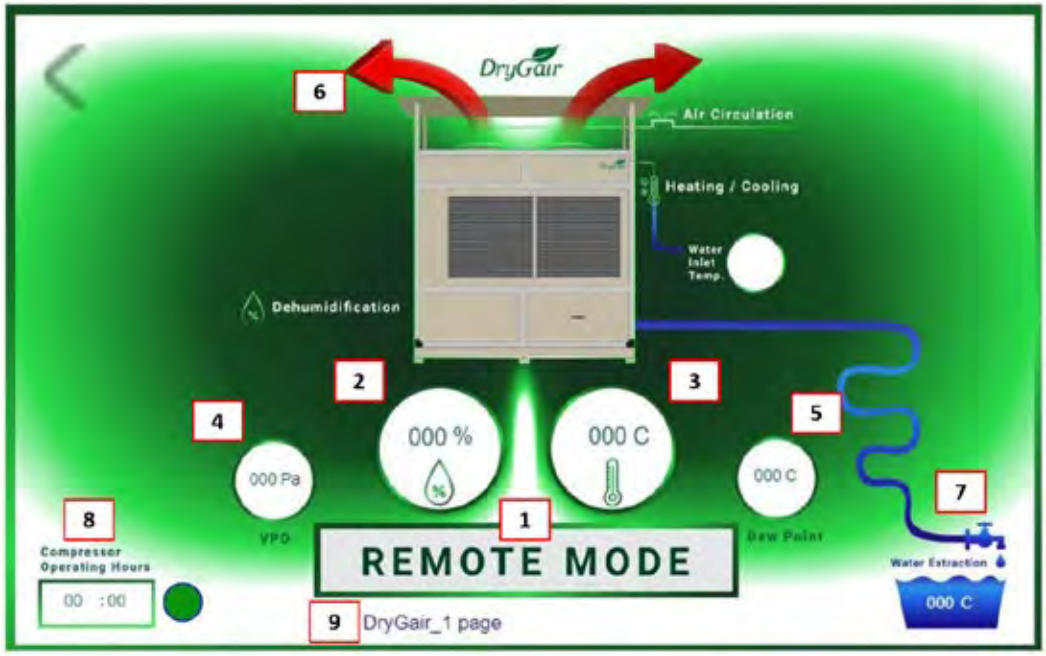
8. **Turn on/off air circulation**. Use the toggle button to turn the unit's fans on/off.
9. **Fan on arrow indication**. When the flashing red arrows are present, the unit's fans are on.
10. **Compressor Operating hours**. Measures the total amount of hours the compressor was on. The time recalibrates to 0 every day at noon. When the compressor is on, a green dot will appear on the right of the time box.

11. **Change the desired temperature setpoint** (**for units with the combined heating and cooling option only**). Clicking the Temperature Set Point button opens a window where the desired temperature set point can be entered. This feature requires that the external hot/cold water source is actively supplying water at the appropriate temperature.

12. **Turn heating/cooling on/off** (**for units with the combined heating and cooling option only**). Toggle the button to allow the hot/cold water supply to enter the unit's hot/cold water coil. When this option is activated, the coil will distribute hot/cold air to the greenhouse, under the condition that the unit fans are on (see number 8) and that the appropriate water temperature is being supplied to the coil. Depending on the supplied water temperature, the unit will be in either heating mode, as indicated by a red sun to the right of the toggle, or in cooling mode, as indicated by a blue snowflake.
13. **Water inlet temperature** (**for units with the combined heating and cooling option only**). The temperature of the water entering the unit from an external hot/cold water supply.
14. **Unit Name**. The name of the unit, as designated in the unit information document (see section 5.1).

6.2.2 Available Online Functions in Mode 2 (Remote Mode)

When the unit is operating in remote mode, control over the unit's operation is dictated by the climate control system to which the unit is connected to. In this case, a REMOTE MODE icon will appear at the bottom of the unit's home screen, and certain control parameters that are available in local mode will not be available.



The following functions are available on the DryGair cloud online interface for Smart DG units working in Mode 2 - Remote Mode:

Remote mode indication. The unit is operating in Mode 2-Remote mode and is controlled by the climate control system.

1. **Real-time relative humidity measurement**. As measured by the unit's humidity sensor.
2. **Real-time temperature measurement**. As measured by the unit's temperature sensor.
3. **Real-time VPD measurement**. As measured by the unit's sensor.
4. **Real-time Dew Point measurement**. As measured by the unit's sensor.
5. **Fan on arrow indication**. When the flashing red arrows are present, the unit's fans are on.
6. **Water removal**. Hourly average water removal rate. This feature takes constant measurements of the water extracted by the unit (an optional feature that requires an additional water meter kit, see Appendix B).
7. **Compressor Operating hours**. Measures the total amount of hours the compressor was on. The time recalibrates to 0 every day at noon. When the compressor is on, a green dot will appear on the right of the time box.
8. **Unit Name**. The name of the unit, as designated in the unit information document (see section 5.1).

6.2.3 Malfunction Alarms

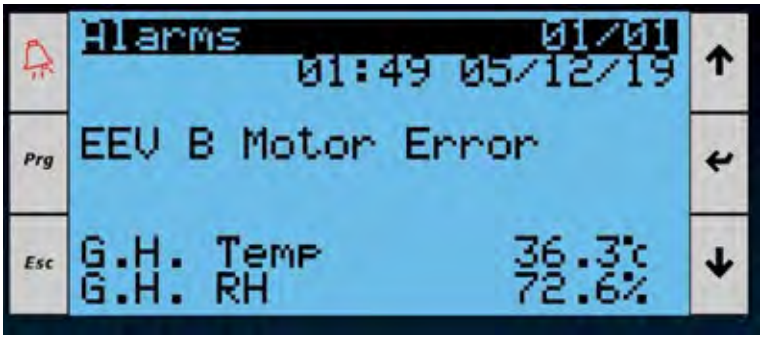
If there is a malfunction in the unit, and the unit is connected to the internet, an email notification will be sent to the email address registered on the user's account.

There will also be alarm notifications in the unit and on the DryGair Cloud online interface.

6.2.3.1 In the unit

- The fault indication light in the electrical compartment will turn red.

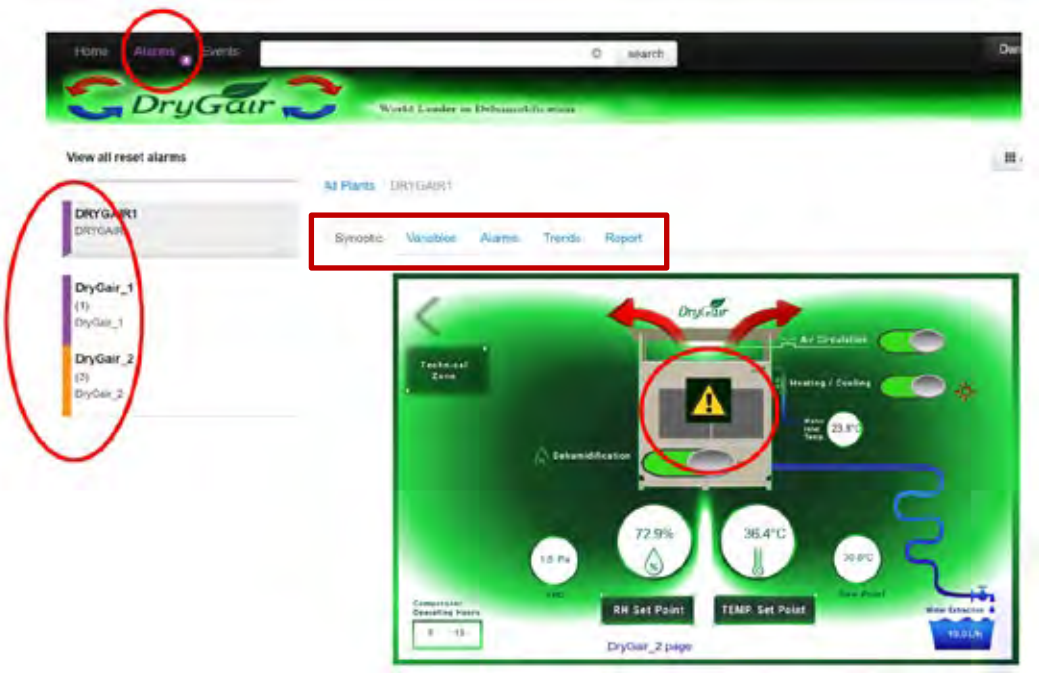
- The Alarm ⚠ button on the upper left of the controller will flash (red). Pressing the Alarm button will display a description of the alarm.



See Appendix C below for a list of possible alarms.

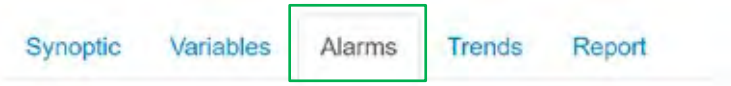
6.2.3.2 On the DryGair Cloud Online Interface

If the unit is connected to the internet on the DryGair Cloud online interface.

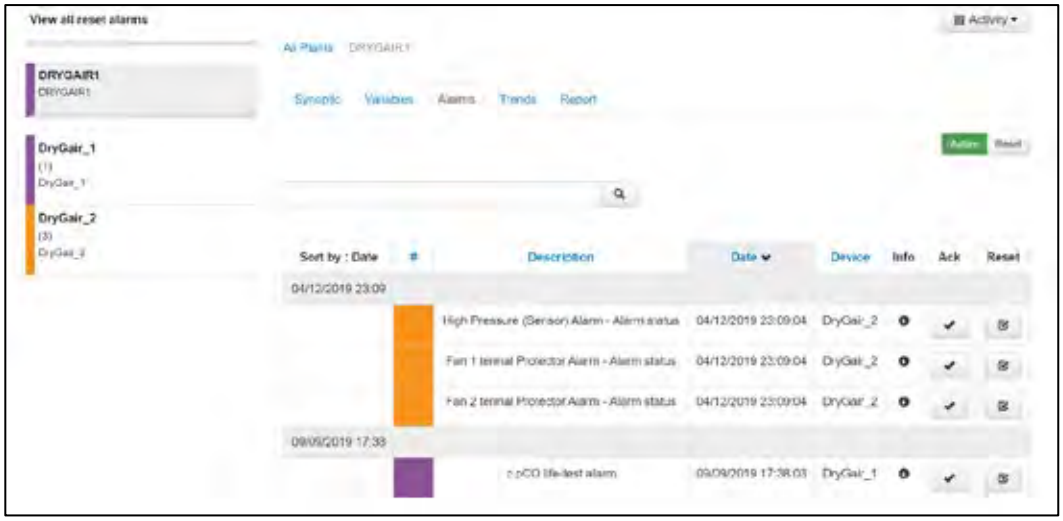


- The tab labeled "Alarms" on the homepage top bar will feature a number in a colored circle indicating the number of activated alarms.
- On the list of units, located on the left side of the website (only visible when not in full-screen mode), there will be a colored stripe next to the unit name.
  - Purple – indicates that there is a loss of connection between the controller and the internet/ Smart-hub.
  - Orange – indicates an alarm in the unit.
- On the unit's homepage, a yellow triangle with an exclamation point will appear on the unit.

Click on the Alarms tab (make sure you are not in full screen) to see the alarm description on the DryGair Cloud online interface.



A description of the activated alarm(s) is displayed, including information on which unit has an alarm and when the alarm was activated.



For a list of alarm descriptions, see Appendix C below.

For additional troubleshooting, consult the unit's operation manual, the technical page on the DryGair website (www.drygair.com), or contact the DryGair team.

7. Appendices

Appendix A. Smart-Hub Account Customer and Unit Information Setup

A.1. Empty Form

Customer Information	Customer Name:										
	Distributer Name:										
	Location:										
	Customer Username:	A	B								
	Customer Password:	A	B								
	Email Adresses for Alarm Notifications:										
Site Information	Site name:										
	Location: Country / State /City										
	Time zone (UTC)										
	Total No. of Units:										
Unit Information	Unit Serial Number										
	Unit Address: (the default controller adress is: 192.168.100.100 ,The last number should be canged between 101-110)										
	Unit name/ description:										

A.2. Filled-out form

Customer Information	Customer Name:	Joy Farm									
	Distributer Name:	Bellpark									
	Location:	California									
	Customer Username:	Andy	Bob								
	Customer Password:	A1234	B1234								
	Email Adresses for Alarm Notifications:	andy@joy.com	bob@joy.com								
Site information	Site name:	Joy Farm									
	Location: Country / State /City	USA, California, Sun City									
	Time zone (UTC)	UTC -7									
	Total No. of Units:	3									
Unit Information	Unit Serial Number	1555555	1555556	1555557							
	Unit Address: (the default controller adress is: 192.168.100.100 ,The last number should be canged between 101-110)	192.168.100. 101	192.168.100. 102	192.168.100 .103							
	Unit name/ description:	North	South	East							

Note

The Password must have at least 8 characters, contain both uppercase and lowercase letters, and have digits and punctuation.

Appendix B. Water Extraction Meter

The water extraction meter can be installed for an additional cost and provides live feedback on the water extracted from the DryGair unit.

The meter is an advanced and highly accurate ultrasonic water meter, which provides consumption values at a high resolution.

Figure 15. Water Meter

Technical Specifications

- Electronics & battery sealed
- Cable length: 1.3m
- Environmental operation: min –20 °C/max +60 °C
- Storage: min –20 °C / max +70 °C
- Protection rating: IP68
- Configurable - Pulse per 1/10/100/1000 liter

Output Characteristics

Outputs type	Bi-Directional Solid-State Relay
On-Resistance max.	35 [Ω]
Minimum pulse width	10 [msec]
Load current (AC/DC)	120 [mA]
Total power dissipation max.	800 [mW]
Max voltage AC/DC	36 [V]

B.1. Connecting the Water Extraction Meter

> ***Note***
> To ensure water flow and avoid air bubbles, the water meter must be installed at a slope.

1. Connect the water meter to the water drainage tube of the DryGair unit, as illustrated in the following Figure 16.

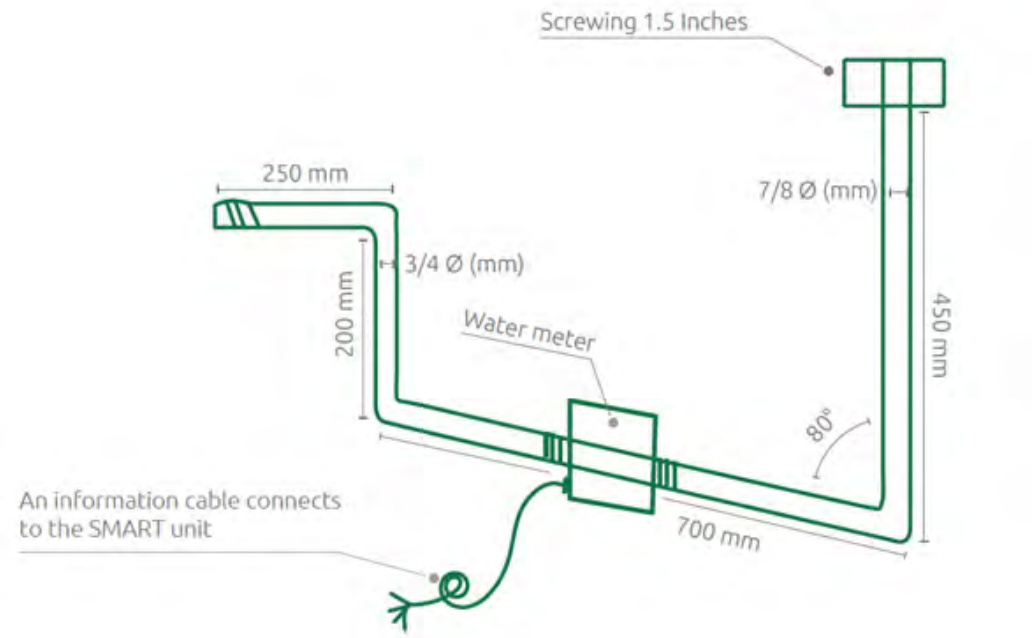


Figure 16. Installing the water meter

2. Route the information cable from the water meter into the DryGair electrical compartment.
3. Connect the orange cable to socket #74.
4. Connect the red cable to socket #75

Figure 17. Installed water meter

To configure the water meter:

1. Go to the physical Smart DG interface.
2. Go to the protected menu.
3. Enter the "**Parameters**" section.
4. Press the **Down** ( ) button to reach screen **G02** and press **Enter** ( ).
5. Use the **Up/Down** arrow buttons to toggle the "**Water Counter**" operation switch from **No** to **Yes**.
6. Press the **Enter** button four (4) times.
7. Press the **Esc** button to return to the main menu.

Appendix C. List of Alarm Descriptions

Controller Display (max 22 characters)	Clous Display	Reset type
Memory writes error	Memory writes error	User reset
Al retain	Al retain	Auto reset
Al Err retain write	Al Err retain write	Auto reset
Ret Temp Sens Broken	Temp Sensor Broken Alarm	User reset
Hum Sens Broken	Humidity Sensor Broken Alarm	User reset
HP Sens Broken	High Pressure Sensor Broken Alarm	User reset
LP Sens Broken	Low Pressure Sensor Broken Alarm	User reset
Oil Sens Broken	Oil Pressure Sensor Broken Alarm	User reset
Comp1 HP (Presostat)	High Pressure Presostat Alarm	User reset
Comp1 HP (Sensor)	High Pressure (Sensor) Alarm	User reset
Comp1 LP (Presostat)	Low Pressure Presostat Alarm	Auto reset until counter
Comp1 LP (Sensor)	Low Pressure (Sensor) Alarm	Auto reset until counter
Comp1 OPP (Presostat)	Low Pressure (Presostat) Alarm	User reset
Phase Monitor Alarm	Electric Supllay Alarm	Auto reset
Low SupeHeat - VlvA	Low SuperHeat Alarm 1	Auto reset
Low SupeHeat - VlvB	Low SuperHeat Alarm 2	Auto reset
LOP - Valve A	Lop Alarm 1	Auto reset
LOP - Valve B	Lop Alarm 2	Auto reset
MOP - Valve A	Mop Alarm 1	Auto reset
MOP - Valve B	Mop Alarm 2	Auto reset
EEV A Motor Error	EEV1 Coil Dameged Or Not Connected Alarm	Auto reset
EEV B Motor Error	EEV2 Coil Dameged Or Not Connected Alarm	Auto reset
Low suct. temp. VlvA	Low Suction Temp 1 Alarm	Auto reset
Low suct. temp. VlvB	Low Suction Temp 2 Alarm	Auto reset
High condesing temp.	Automatic generated by Alarm editor	Auto reset
EVD Prb S1 error	Low Pressure Sensor Broken Alarm EVD1	Auto reset
EVD Prb S2 error	Suction Temp Sensor Broken Alarm 1	Auto reset
EVD Prb S3 error	Low Pressure Sensor Broken Alarm EVD2	Auto reset
EVD Prb S4 error	Suction Temp Sensor Broken Alarm 2	Auto reset
Battery discharge	Automatic generated by Alarm editor	Auto reset
EEPROM Alarm	Automatic generated by Alarm editor	Auto reset
Incomplete closing	Automatic generated by Alarm editor	Auto reset
Emergency closing	Automatic generated by Alarm editor	Auto reset
Firmware not compatible	Automatic generated by Alarm editor	Auto reset
Configuration Error	Automatic generated by Alarm editor	Auto reset
EVD offline	EVD1 Not Connected Alarm	Auto reset
Comp1 OL Alarm	Compressor Over Load Alarm	Auto reset
Fan 1 OL Alarm	Fan 1 Over Load Alarm	Auto reset
Fan 2 OL Alarm	Fan 2 Over Load Alarm	Auto reset
Fan 1 Internal Protc	Fan 1 termal Protector Alarm	Auto reset
Fan 2 Internal Protc	Fan 2 termal Protector Alarm	Auto reset

Controller Display (max 22 characters)	Clous Display	Reset type
High temperature Alarm	High temperature Alarm	Auto reset
Low DewPoint Alarm	low DewPoint Alarm	Auto reset
Water In sens Broken	Water Inlet Temp Sensor Broken alarm	Auto reset
Water Out sens Broken	Water Outlet Temp Sensor Broken alarm	Auto reset
Comp1 OPP (sensor)	Compressor Low Oil pressure	User reset
Coil Temp sens Broken	coil Sensor Broken alarm	Auto reset
Comp1MpAlm	Compressor motor protector	Auto reset
HH_ALM_Hum	High humidity	Auto reset
LL_ALM_Hum	Low humidity	Auto reset
HH_ALM	High temperature	Auto reset
LL_ALM	Low temperature	Auto reset