

# REFRIGERATED AIR DRYER

## SERVICE MANUAL

DIGI-PRO CONTROLLER

### WARRANTY NOTICE

Failure to follow the instructions and procedures in this manual or misuse of this equipment will VOID any warranty.



# 1. USER INTERFACE

During normal operation the display shows the evaporation temperature.

## 1.1. Showing machine status

1. To disable the Key Lock: Press and hold SET for 4 seconds
2. Press and hold the DOWN arrow for 4 seconds: the display will show Pb1.
3. Press and release the UP or DOWN arrows to select the setting you want to view:

- Pb1 heat exchanger probe
- hSE running hours for unit
- rhS reset running hours for unit
- hFI running hours for filter
- rhF reset running hours for filter
- rFI reset filter alarm

4. To reset the value, press and release SET, press and release the UP arrow to set

149 for rhF and rFI

171 for rhS

Then press and release SET: the display will show “- - -” flashing for 4 seconds.

# 2. OPERATION

During normal operation, the digital controller display shows the evaporation temperature.



Picture 1 Digi Pro Controller View

Using the Digi Pro controller as shown in the table below:

## 2.1 Menu Buttons



PROGRAM

To modify the parameters, press and release SET. This should be used by service team



POWER

This button is used for starting and stopping the dryer. Press and hold for 4 seconds to start or stop.



MENU

These buttons are used to navigate between screens and adjust values.



MANUAL DRAIN

This button is used for manual control of the drain output. Press and hold for 4 seconds to drain manually.



Please contact service when an alarm/warning occurs.

## 2.2 Mode Display



DRYER ACTIVE MODE

This mark indicates that the dryer is in an active state and drying.



AUTOMATIC DRAIN MODE

Shows if the drain system is activated.



ENERGY SAVING MODE

Shows if the energy saving mode is activated



CELSIUS UNIT MODE

Indicates that Celsius temperature is selected.



FAHRENHEIT UNIT MODE

Indicates that Fahrenheit temperature is selected.



COMPRESSOR STANDBY MODE

This mode shows that the dryer is ready for drying operation.



SERVICE MODE

This mode shows that the dryer has reached service time.

## 2.3 Alarm Display



Alarms / warnings are displayed on the digital screen. This means the dryer is not working under normal operating conditions or conditions which are outside the range of set values.

Alarm Code	Alarm Description	Reason for Alarm
tAL	Low Temperature Alarm	Refrigerant line temperature is lower than specified set values
tAH	High Temperature Alarm	Refrigerant line temperature is higher than specified set values
FIL	Filter Change Alarm	Filter element needs to be replaced
SEr	General Service Alarm	General service time of the dryer
HPr	High Pressure Alarm	Refrigerant line pressure is higher than specified set values
Pr1	Temperature Probe Alarm	Temperature sensor is faulty.
hFl	Running Hours Alarm	The dryer running hours allowed has been reached.



Please contact service if an alarm/warning occurs.

## 3. ALARMS

### 3.1 Alarm Output

- if a low temperature alarm occurs ( the display shows the code “tAL”)
- if a high temperature alarm occurs (the display shows the code “tAH”)
- if the filter needs changed (the display shows the code “FIL”)
- if a high pressure alarm occurs (the display shows the code”HP or HPr”)
- if a compressor or fan condenser alarm occurs (the display shows the code “COH or CSd”)
- if the compressor exceeds the running hours allowed ( the display shows the code “SEr” and the service LED lights up.)
- if the filter element exceeds the running hours allowed ( the display shows the code “FIL” and the service LED lights up.)

### 3.2 Device / Compressor Running Hours for SEr

Parameter sets to record the device running hours or the compressor running hours. When the running hours overtakes the hours, the display shows the code “SEr” alternated to the temperature read by the heat exchanger, LED service is lit and the device works normally. To show/cancel the compressor running hours have a look at chapter 1 “USER INTERFACE” (labels hSE and rHS).

### 3.3. Device/compressor runtime for FIL

Parameter sets to record the device runtime or the compressor runtime. When the runtime reaches set limit, the display shows the code "FIL" replacing the temperature read by the heat exchanger, service LED is lit and the device works normally. To show/cancel the compressor runtime have a look at chapter 1 "USER INTERFACE" (labels hSE and rHS).

### 3.4. Input change filter

The activation of this input triggers the display showing the code "FIL" alternated to the temperature read by the heat exchanger, LED service is lit and the device works normally. Restoring the normal operation works the same way as cancelling the filter runtime (look for label rFI)

### 3.5. High Pressure alarm

During this alarm the compressor is switched off.

### 3.6. Condenser Fan

If one output is configured as condenser fan, parameters are relevant, as follows.

If just one of the input terminal pairs, 11-10 or 9-10, is configured as fan activation, the input activation also activates the output.

If the input terminal pair 11-10 is configured as condenser probe, the fan will be switched on when the compressor is switched on; as soon as the compressor switches off, the fan keeps in being switched on for the time F1, then it works according to temperature F0 (the fan switches off when the temperature falls below the temperature F0 and switches on when the temperature rises above  $F0 + 2^{\circ}\text{C}/4^{\circ}\text{F}$ ).

If the condenser probe is in error, the fan is switched on if the compressor is switched on and is switched off if the compressor is switched off (in this last case the fan is switched off with the delay F1 since the compressor switches off).

If the input terminal pair 11-10 is configured as condenser fan and the input terminal pair 9-10 is configured as fan activation, input terminal pair 11-10 has priority over the input terminal pair 9-10.

If no input is configured to manage the fan, this is switched on if the compressor is switched on, and switched off if the compressor is switched off (in this last case the fan is switched off with the delay F1 since the compressor switches off).

In case of COH and CSd alarm the fan is switched on; the fan LED shows the status of the output.

### 3.7. Drain Test

Press and hold button UP 4 s: the relay will be turned on as long the button is pressed. When the button is released the valve restores its cyclical operation.

# Follow the steps below to reset the filter alarm:

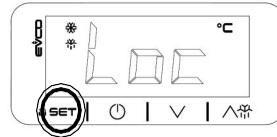
To reset the filter alarm, you need to enter the service domain and then access the “rHF” section. Please follow the steps carefully.

**Table 1 Steps to reset the filter alarm**

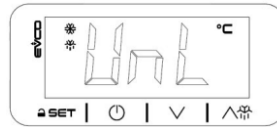
**1 Main page**  
To disable the Key Lock: Press and hold the SET button for 4 sec



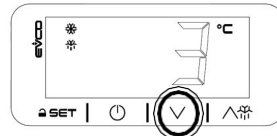
**2 Key Lock**  
“Loc” appears while holding the SET button for 4 sec



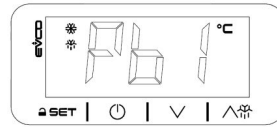
**3** “UnL” appears when key lock is released



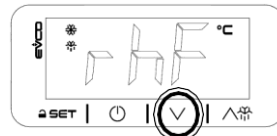
**4** To access service menu (Pb1): Press and hold the menu button for 4 sec.



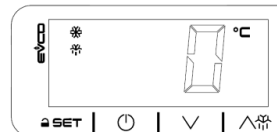
**5** “Pb1” appears when service menu is opened



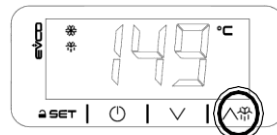
**6** To access “rHF”, use the menu keys



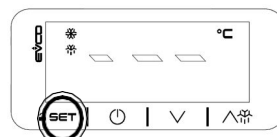
**7** Press the SET button to password section after access the “rHF” section.



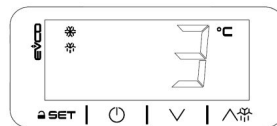
**8** Enter “149” in the password field



**9** The press and release button SET: the display will show “- - -” 4 sec flashing



**10** The main page appears after this operation

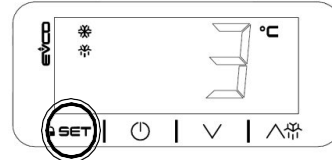


# Follow the steps below to reset the service alarm:

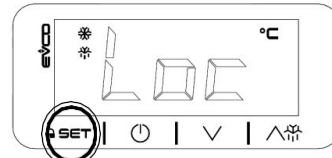
To reset the service alarm, you need to enter the service domain and then access the “rHS” section. Please follow the steps carefully.

**Table 2 Steps to reset the service alarm**

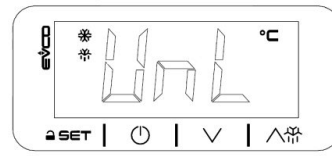
**1 Main page**  
To disable the Key Lock: Press and hold the SET button for 4 sec



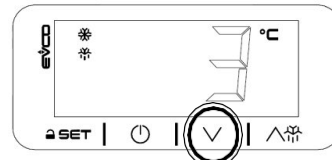
**2 Key Lock**  
“Loc” appears while holding the SET button for 4 sec



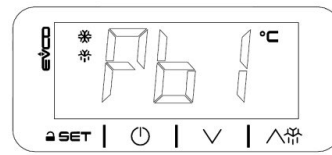
**3** “UnL” appears when key lock is released



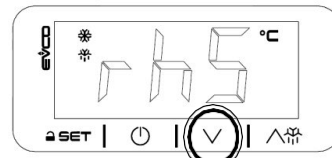
**4** To access service menu (Pb1): Press and hold the menu button for 4 sec.



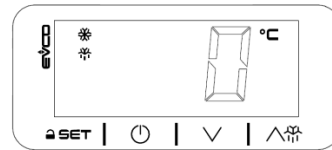
**5** “Pb1” appears when service menu is opened.



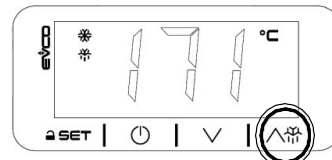
**6** To access “rhS”, use the menu keys



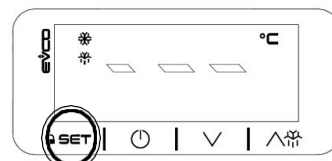
**7** Press the SET button to password section after access the “rHF” section.



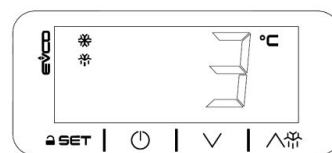
**8** Enter “171” in the password field



**9** The press and release button SET: the display will show “- - -” 4 sec flashing



**10** The main page appears after this operation



## 4.PARAMETERS

The controller includes parameters for controlling the dryer, such as temperature Set-points, time and operating hours. These parameters are used and changed only by the manufacturer.

Please contact the manufacturer if you have a need to change these parameters. The manufacturer will provide a key to change the parameter settings if necessary. The programming key changes some of the parameter settings of the controller not otherwise allowed. The manufacturer reserves the right to deny access to some parameters.

### 4.1. Programming Key Description

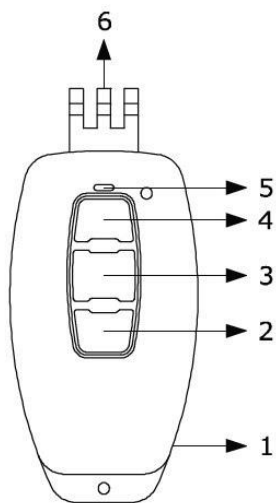


Table 3 Programming key function buttons

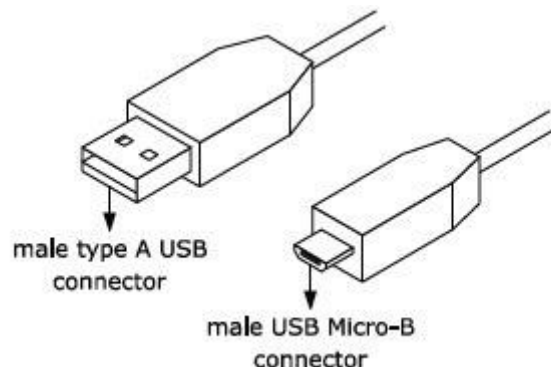
Port	Meaning
1	USB port
2	Not used
3	Enter Button
4	Clone Button
5	Signal LED
6	Connector

### 4.2. Use of the Programming Key

The programming key can be used with the controllers in the “DigiPro” series; Which is called “loading”. The loading takes 5 s at most; If the LED signal is not a flashing, the procedure will not be completed (or the LED will not flash).

The loading is allowed on the condition that the program on the key and that on the controller are the same; If this condition is not true, the programming key will signal that the procedure has not been completed successfully (or the LED is flashing to show red light for 1 s).

The programming key does not have its own power supply and must be powered using the USB port; A USB / male Micro-B USB cable (referred to as “USB cable”) is a USB port that can be plugged into a USB port.





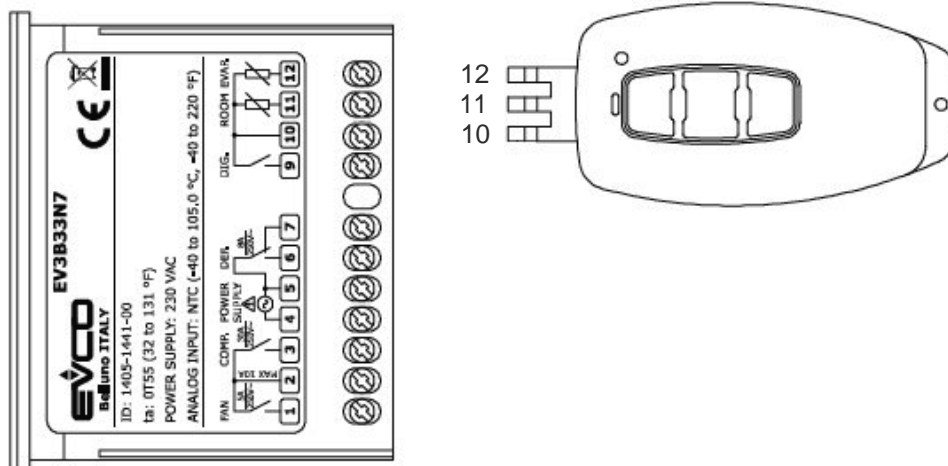


## Warnings;

- make sure about that the device operating conditions,
- do not operate on the controller terminal blocks using electrical or pneumatic screw drivers,
- if the controller has fixed screw connection terminal blocks, never screw the screw connectors to connect the programming key,
- if the device was taken from a cold to a warm place, humidity could condense inside; wait for about an hour before powering it,
- for repairs and information regarding the device contact the EVCO sales network,

## Follow the Steps Below to Use Programming Key:

1. Make sure the controller is not powered.
2. If the controller has removable screw connection terminal blocks, unscrew at the maximum opening the screw connectors of the analog and digital inputs of the controller terminal block and remove possible cables previously wired.
3. Put to the bottom the connector of the programming key in the connectors of the analog and digital inputs of the controller terminal block paying attention the terminal on the left of the programming key connector coincides with the common terminal of the controller analog and digital inputs.
4. If the controller has removable screw connection terminal blocks, screw the screw connectors of the analog and digital inputs of the controller terminal block moderating the clamping the most possible.
5. Connect one end of the USB cable to the USB port of the programming key.
6. Connect the other end of the USB cable to the USB port of the Personal Computer (or to the USB port of the USB power supply; in this case also put the plug of the USB power supply in a socket).
7. press and release the programming button of the programming key: the signal LED shows red light flashing a few seconds, after which shows green light firmly 1 s.
8. Disconnect the ends of the USB cable.
9. If the controller has fixed screw connection terminal blocks, remove the programming key; if the controller has removable screw connection terminal blocks, remove the controller terminal block.



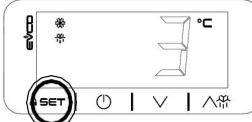
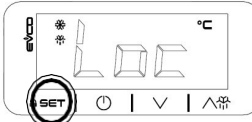
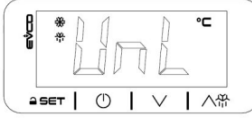
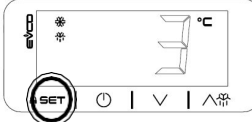
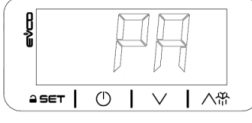
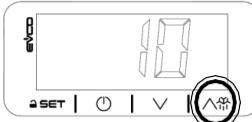
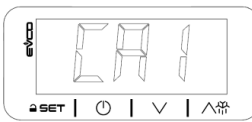
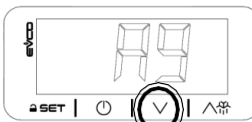


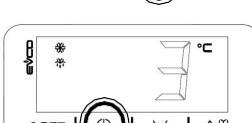
Picture 4 Digi Pro controller and programming key connection

## Follow the steps below to change the Filter Alarm Parameters:

For the filter alarm duration, you need to enter the parameter field and then access the “A9” section. Please follow the steps carefully.

When making these adjustments, be careful of the timing on the controller. The standard timing is 6000 hours. For this, the value that should be entered in A9 is 60. The controller evaluates the entered values by multiplying by 100. For example;  $60 \times 100 = 6000$  h.

Table 4 Steps to change the filter alarm parameter

- |   |   |
|---|---|
| <p>1. <b>Main page</b><br/>To disable the Key Lock: Press and hold the SET button for 4 sec.</p>    |    |
| <p>2. <b>Key Lock</b><br/>“Loc” appears while holding the SET button (4 sec)</p>                    |    |
| <p>3. “UnL” appears when key lock is released</p>   |    |
| <p>4. To access parameters menu (PA):<br/>Press and hold the SET button for 4 sec.</p>              |   |
| <p>5. “PA” appears when parameter menu is opened.<br/>Press the SET key to enter the password.</p>  |  |
| <p>6. Enter “10” in the password field,<br/>use the menu keys.</p>                                  |  |
| <p>7. After the password is confirmed, it is entered in the parameter section.</p>                  |  |
| <p>8. To access “A9”, use the menu keys.</p>  |  |
| <p>9. Standard filter time appears on the screen.<br/>Note! <math>60 \times 100 = 6000</math> h</p> |  |
| <p>10. Press the Set key after entering the new filter time.<br/>Use the menu keys.</p>             |  |
| <p>11. After the process is complete, you can return to the main menu with the OFF button.</p>      |  |



## Follow the steps below to change the Drain Time Parameters:

For the drain times it is necessary to enter the parameter field and then access the sections “u2” and “u3”. Please follow the steps carefully.

Note that when these values are changed, the time of evacuation closed time is in minutes and the time of evacuation opened time is in seconds.

Table 5 Steps to change the Drain time parameters

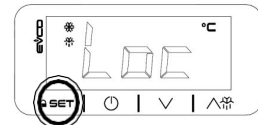
**1. Main page**

To disable the Key Lock: Press and hold the SET button for 4 sec.

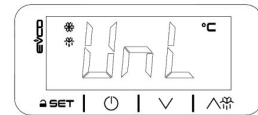


**2. Key Lock**

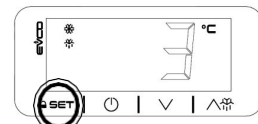
“Loc” appears while holding the SET button (4 sec)



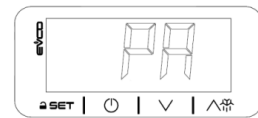
3. “UnL” appears when key lock is released



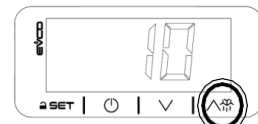
4. To access parameters menu (PA):  
Press and hold the SET button for 4 sec.



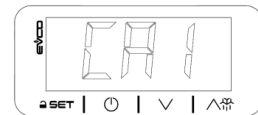
5. “PA” appears when parameter menu is opened.  
Press the SET key to enter the password.



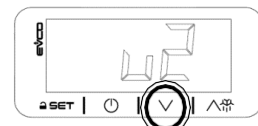
6. Enter “10” in the password field, use the menu keys.



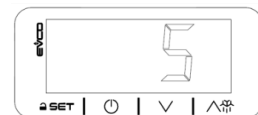
7. After the password is confirmed, it is entered in the parameter section.



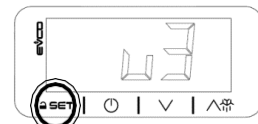
8. To access “u2”, use the menu keys.  
Press the SET button to enter the parameter.



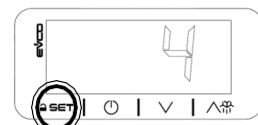
9. This value is the drain system’s on-time. Standard time is 5 seconds. Please enter the new time , then press the SET button.



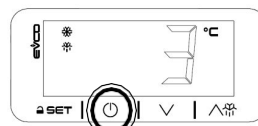
10. To access “u3”, use the menu keys.  
Press the SET button to enter the parameter. Use the menu keys.



11. This value is the drain system’s off-time.  
Standard time is 4 minutes.  
Please enter the new time , then press the SET button.



12. After the process is complete, you can return to the main menu with the off button.



# 5. ELECTRICAL CONNECTION

EV3B23\* and EV3B33\* have the same electrical connection; EV3B23 relay K1 is rated 16 A, EV3B33 relay K1 is 30 A.

