Control
Condair GS/GS...OC - C series

Gasfired steam humidifier

OPERATING INSTRUCTIONS

1119124 EN 1204

condair

Contents

1 Introduction

1.1 Notes on the operating instructions

Limitation

These operating instructions are an addendum to the installation, commissioning and service instructions for the Condair GS C series and for the Condair GS...OC C series and describe the operation of the Condair GS/GS...OC - C series control.

These operating instructions are meant for well trained personnel being sufficiently qualified.

Safekeeping

Please safeguard these operating instructions in a safe place, where they can be immediately accessed. If the equipment changes hands, the documentation must be passed on to the new operator.

If the documentation gets mislaid, please contact your Condair supplier.

Language versions

These operating instructions are available in various languages. Please contact your Condair supplier for information.

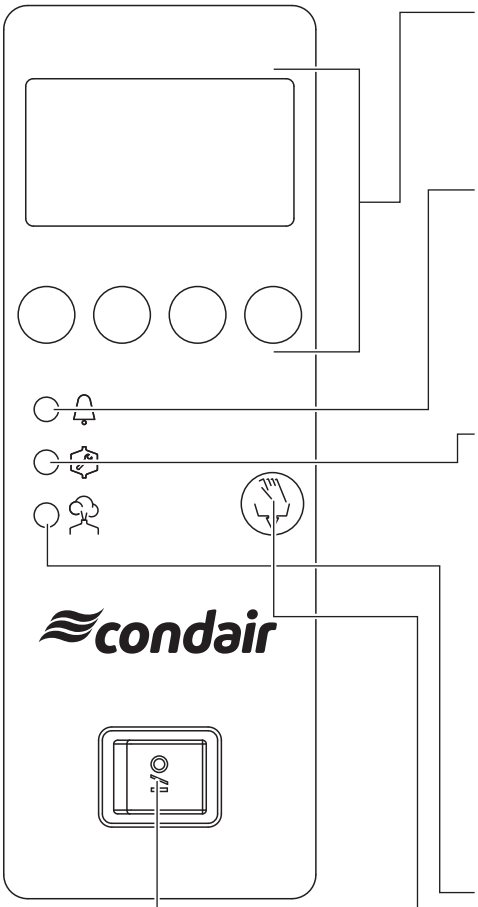
Copyright protection

1.2 Safety

Every person working with the Condair GS or Condair GS...OC must have read and understood these operating instructions as well as the installation, commissioning and service instructions of the corresponding unit (particularly the safety instructions).
Knowing and understanding the contents of the operating instructions of the Condair GS/GS...OC - C series control and the installation, commissioning and service instructions of the corresponding unit is a basic requirement for protecting the personnel against any kind of danger, to prevent faulty operation, and to operate the Condair GS/Condair GS...OC safely and correctly.

2 Operating the Condair GS/GS...OC control

2.1 Function of the display and operating elements



Display and control unit
Function: Configuration of the Condair GS/GS...OC.
Indication of operating parameters.
Reset of maintenance counter.

red LED “Fault”
Function: The LED lights in case of a severe malfunction of the unit (Fault status). Further operation is not possible any longer. A corresponding fault message is shown in the display, see chapter 6).

yellow LED “Maintenance”/“Warning”
Function: The LED lights in case of a temporary malfunction of the unit (Warning status) or if the maintenance is due. Further operation of the unit is still possible. A corresponding warning message is shown in the display, see chapter 6).

If he LED lights and simultaneously the green LED flashes, the external safety chain is open (ventilation interlock has triggered) . As soon as the safety chain is closed again, the indication disappears.

green LED “Humidification”
Function: The LED lights if the unit produces steam.

If the LED flashes and simultaneously the yellow LED lights, the external safety chain is open (ventilation interlock has triggered) . As soon as the safety chain is closed again, the indication disappears.

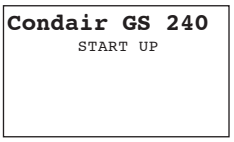
Drain key
Function: Manual draining of the water tank. After having pressed the drain key, the draining is controlled via the display and control unit.

Unit switch
Function: Switches the unit on and off. The switch is illuminated when the unit is running.

2.2 Switching on and off the Condair GS/Condair GS...OC

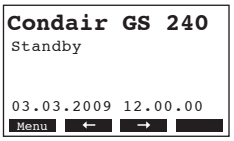
Note: For putting the Condair GS/GS...OC into operation and out of operation please follow the procedures described in the chapters 7.3 and 7.4 of the installation, commissioning and service instructions for the Condair GS/Condair GS...OC.

- **Switching on the Condair GS/Condair GS...OC**:
  - Switch on the external service switch in the power supply line.
  - Switch on the unit via the unit switch.



The control carries out a **system and level test**, during which all the LEDs light up.

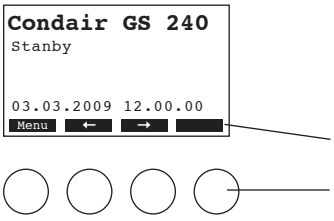
If a failure occurs on the system test, a corresponding error message is shown in the display.



After the system test the unit is in **normal operation mode**. The display shows the **standard operating display** (first page of the indication level). Note: The contents of the standard operating display depends on the actual operating status and on the configuration of the Condair GS/Condair GS...OC and can differ from the opposite display.

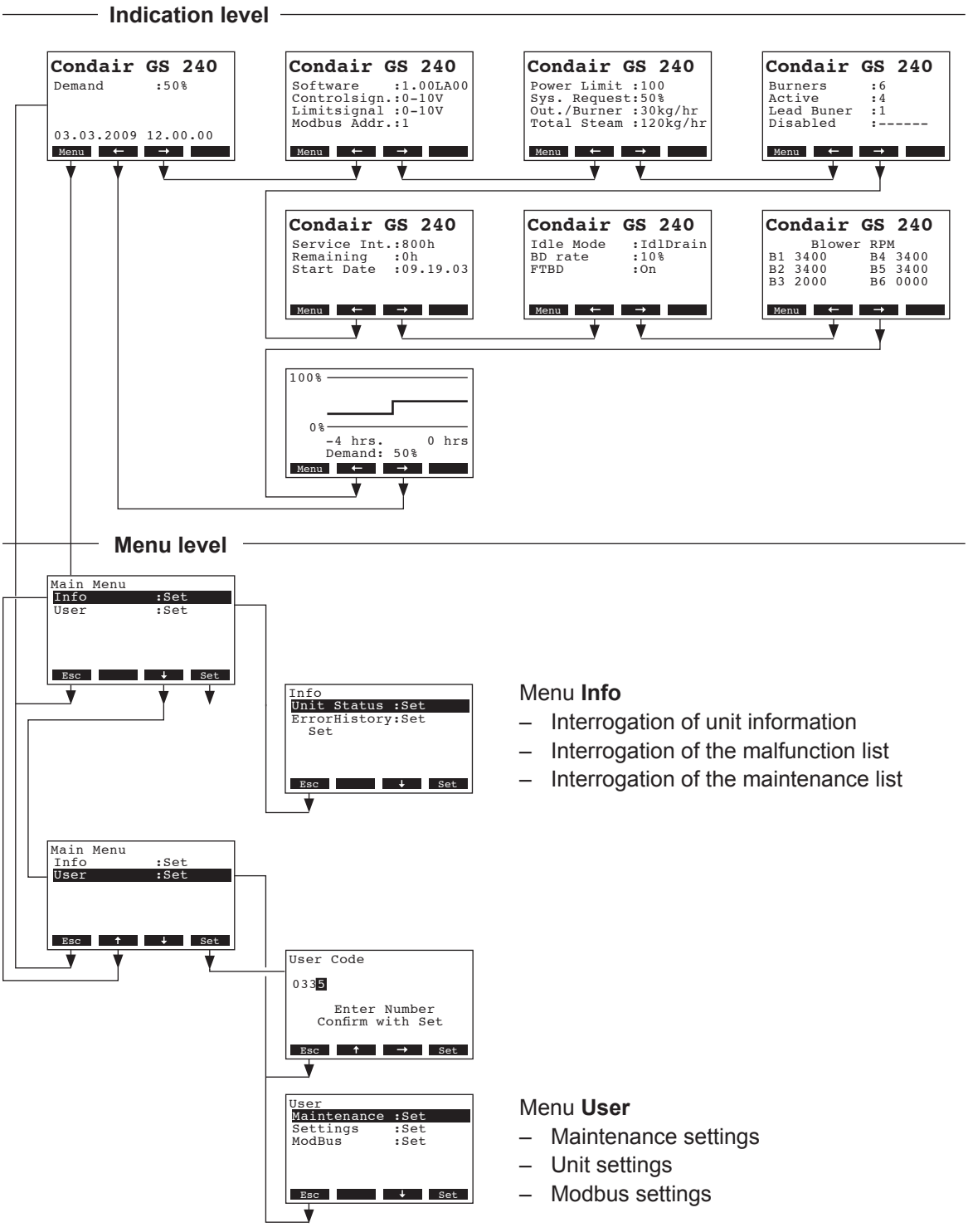
- **Switching off the Condair GS/Condair GS...OC**:
  - Switch off the unit via the unit switch. The display goes out.
  - Switch off the external service switch in the power supply line.

2.3 Operating of the operating and display unit



The operating and display unit is operated via the four keys located just below the display. The 4 status fields at the bottom of the display show the active keys the functions assigned to them.

2.4 Menu overview



Menu **Info**
- Interrogation of unit information
- Interrogation of the malfunction list
- Interrogation of the maintenance list

Menu **User**
- Maintenance settings
- Unit settings
- Modbus settings

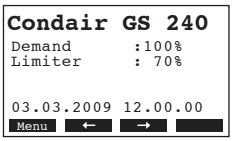
3 Interrogation functions

3.1 Interrogation of the operating information in the indication level

In the normal operating mode the operating and display unit is in the indication level. The indication level forms a loop that includes several pages holding operating information which can be accessed with the arrow keys. The various displays of the indication level are shown below.

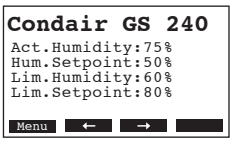
Info page 1: Standard operating display

The appearance of the standard operating display (info page 1) depends on the actual operating status and the configuration of the Condair GS/Condair GS...OC. The following displays are possible.



Standard operating display when the unit is controlled via an **external** controller:
- Standby (no humidity demand) or Demand in % (humidity demand present)
- Supply air limitation in %rh *

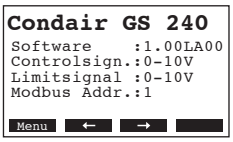
* this parameter appears only if external supply air limitation is activated



Standard operating display when the unit is controlled via the **internal** controller:
- Actual humidity in %rh
- Set nominal humidity %rh
- Actual humidity of supply air in %rh **
- Set supply air limitation in %rh **

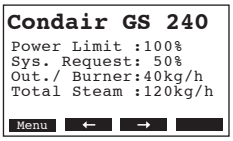
** these parameters appear only if internal supply air limitation is activated

Info page 2: Control Settings



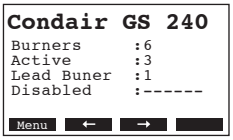
- Software version (1.00)/language version (LA00)
- Set control signal range (signal Y)
- Set control signal range for the supply air limitation (signal Z). Appears only if supply air limitation is activated.
- Set Modbus address of the unit

Info page 3: Performance data



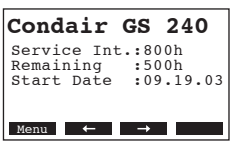
- Set power limitation in %
- Actual steam capacity in % of the maximum steam capacity
- Actual steam capacity per burner in kg/h
- Actual steam capacity of the unit in kg/h

Info page 4: Burner data



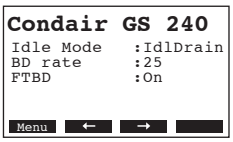
- Number of available (enabled) burners
- Number of currently active burners
- Number of the leading burner (this burner ignits first in the starting sequence when the units starts next time the steam production)
- Shows the currently enabled (–) and disabled (X) burners (example: “-X-X--” means burners 1,3,5 and 6 are enabled, burners 2 and 4 are disabled)

Info page 5: Maintenance settings



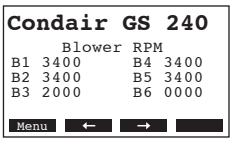
- Set maintenance interval time in h
- Time remaining until next maintenance in h
- Date the maintenance alarm has been reset last time by the user

Info Page 6: Drain settings



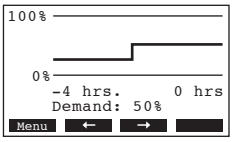
– Current setting for standby operation (IdlDrain: Idle drain function is activated, the tank is drained after the set idle time, KeepWarm: keep warm function is activated, IdleOnly: No function is activated for standby operation)
– Set draining rate per hour in % of the maximum steam capacity related to 100 % steam production
– Actual status of full tank draining (On: Tank is fully drained an refilled after the set operation time, Off: Full tank draining function deactivated)

Info Page 7: RPM indications of the fans



RPM indications of the fans.

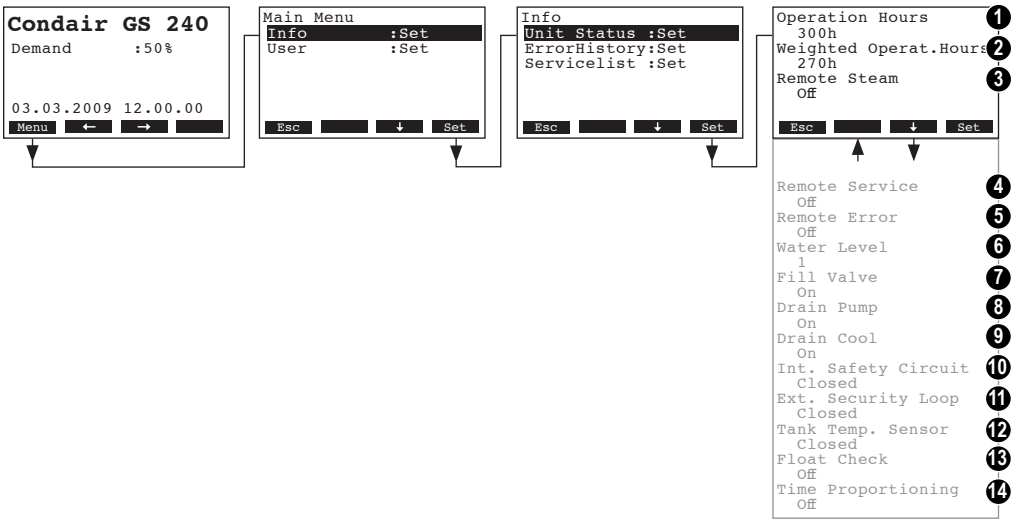
Info Page 8: Capacity diagram



Capacity diagram of the last four hours.

3.2 Interrogation of unit information

Select the list with the unit information:
Path: **Main menu > *Info* > *Unit Status***



Press **<↓>** and **<↑>** keys, in order to select the unit information available in the list:

1 Total operating hours since the initial commissioning

2 Total operating hours since the initial commissioning related to 100 % steam capacity

3 Actual status of the remote indication relay “Steam”

4 Actual status of the remote indication relay “Service”

5 Actual status of the remote indication relay “Error”

6 Actual level in the water tank determined by the level unit

7 Actual operating status of the fill valve

8 Actual operating status of the drain pump

9 Actual status of the drain cooling function

10 Actual status of the internal safety circuit

11 Actual status of the external safety circuit

12 Actual status of the temperature switch of the keep warm function

13 Actual status of the float check function

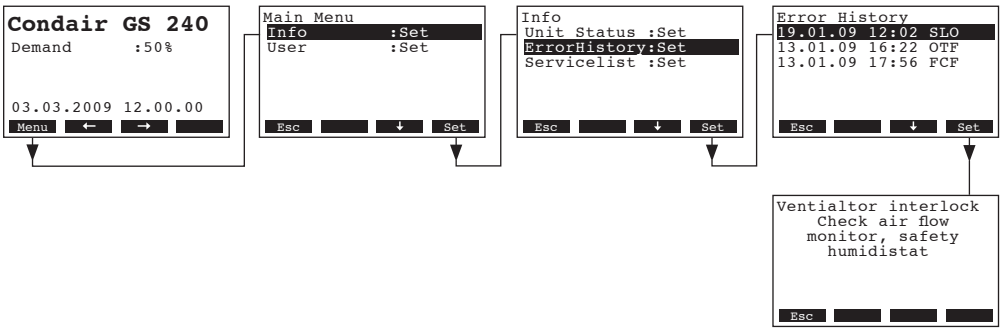
14 Actual status of the time proportioning function

Press the **<Esc>** key several times to quit the unit information list and to return to the standard operating display.

3.3 Interrogation of the malfunction history list

The warning or error messages generated by the last 20 malfunctions that occurred are saved in a malfunction history list and can be interrogated.

Select the malfunction history list:
Path: ***Main menu > Info > ErrorHistory***



The malfunction history list appears (the last malfunction that occurred is selected). Each entry consists of:

– the date and time of occurrence of the malfunction and
– the malfunction code (SLO, OTF --> see chapter 6)

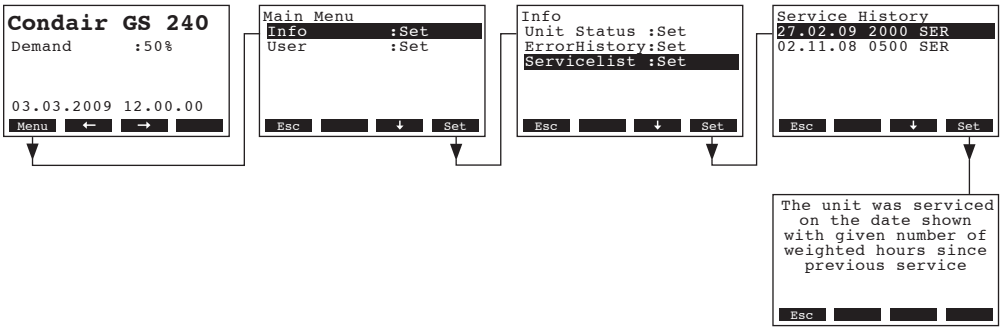
Press **<↓>** and **<↑>** keys, in order to select an entry in the list. Press the **<Set>** key, in order to display additional info text regarding the malfunction.

Press the **<Esc>** key several times to quit the malfunction history list and to return to the standard operating display.

3.4 Interrogation of the maintenance history list

Each time the maintencance message is reset an entry is automatically generated in the maintenace history list. The last 20 entries are saved in the maintenace history list of the Condair GS/Condair GS...OC and can be interrogated.

Select the maintenance history list:
Path: ***Main menu > Info > Servicelist***



The maintenance history list appears (the last entry is selected). Each entry consists of:
– the date of maintenance counter reset,
– the weighted operating hours since last maintenance counter reset and
– the service code

Press **<↓>** and **<↑>** keys, in order to select a entry in the list. Press the **<Set>** key, in order to display an info text regarding the maintenance entry.

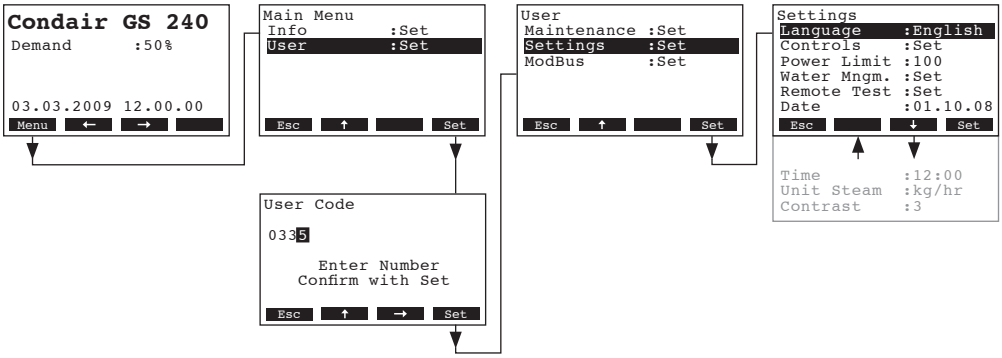
Press the **<Esc>** key several times to quit the maintenance history list and to return to the standard operating display.

4 Configuration

4.1 Unit settings

4.1.1 Launching the unit settings menu

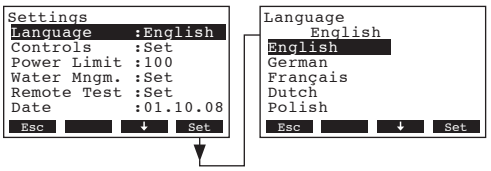
Select the unit settings menu:
Path: ***Main menu > User > Password entry: 0335 > Settings***



Press the **<↓>** and **<↑>** keys in order to select the individual settings in the settings menu. Detailed information on the different settings are found in the following chapters.

4.1.2 Selecting the dialogue language

Select "**Language**" in the unit settings menu, then press the **<Set>** key.

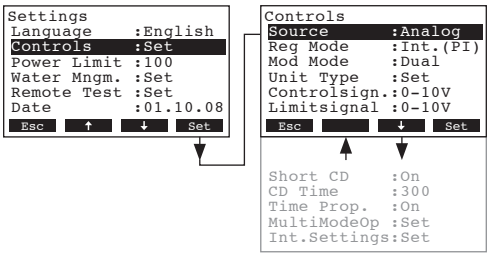


In the upcoming modification dialogue select the desired dialogue language. After confirmation, the unit automatically switches to the selected dialogue language.

Factory setting: **country specific**
Options: **divers languages**

4.1.3 Control settings

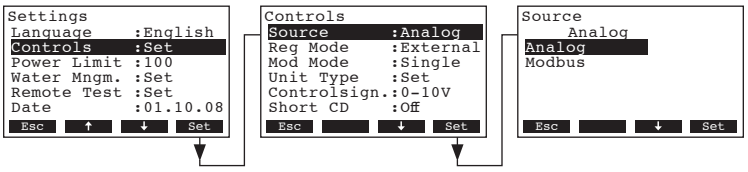
Select “**Controls**” in the unit settings menu, then press the **<Set>** key.



The display with control settings appears. The settings available depend on the selected signal source, the regulation mode and the modulation mode. The display above shows the maximum number of settings available. Please refer to the following chapters for further information on the individual control settings.

4.1.3.1 Selecting the singal source

Select “**Source**” in the control settings menu, then press the **<Set>** key.

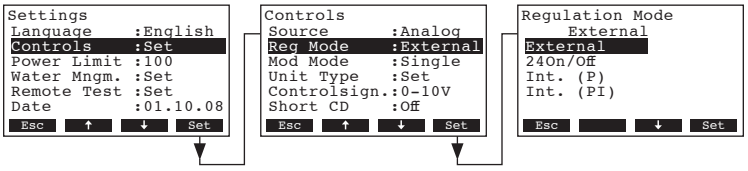


In the upcoming modification dialogue select the desired signal source.

Factory setting: **Analog**
Options: **Analog (internal or external controller)**, **Modbus**

4.1.3.2 Selecting the regulation mode

Select “**Reg Mode**” in the control settings menu, then press the **<Set>** key.

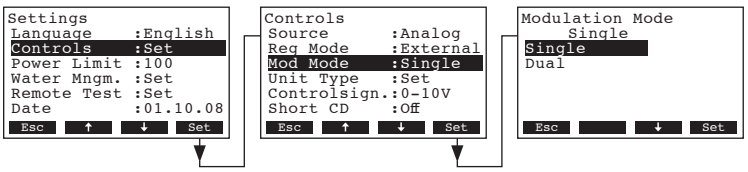


In the upcoming modification dialogue select the desired regulation mode.

Factory setting: **External**
Options: **External** (external continuous controller)
24VOn/Off (external On/Off humidistat)
Int. (P) (Internal P controller)
Int. (PI) (Internal PI controller)

4.1.3.3 Selecting the modulation mode

Select “**Mod Mode**” in the control settings menu, then press the **<Set>** key.

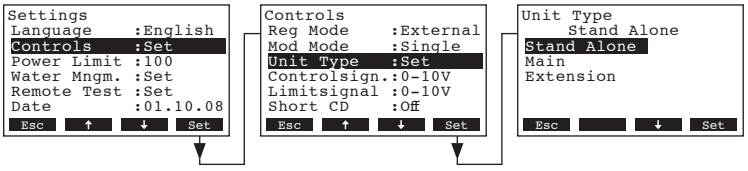


In the upcoming modification dialogue select the desired modulation mode.

Factory setting: **Single**
Options: **Single** (control with a single control signal (Y))
Dual (control with a control signal (Y) and a limit signal (Z))

4.1.3.4 Selecting the unit type

Select “**Unit Type**” in the control settings menu, then press the **<Set>** key.



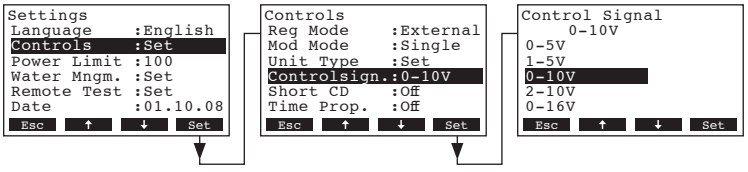
In the upcoming modification dialogue select the desired unit type.

Factory setting: **Stand Alone**
Options: **Stand Alone** (operation as stand alone unit)
Main (operation as Master unit in a multi-unit system)
Extension (operation as extension unit in a multi-unit system)

4.1.3.5 Selecting the control signal

Note: This setting is available only if the internal P or PI controller or external (continuous) controller is activated (see chapter 4.1.3.2).

Select “**Controlsign.**” in the control settings menu, then press the **<Set>** key.



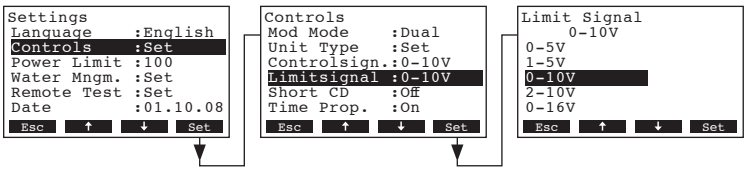
In the upcoming modification dialogue select the desired control signal.

Factory setting: **0–10V**
Options: **0–5V**, **1–5V**, **0–10V**, **2–10V**, **0–16V**, **3.2–16V**, **0–20mA**, **4–20mA**

4.1.3.6 Selecting the limit signal

Note: This setting is available only if the internal P or PI controller or external (continuous) controller is activated and the modulation mode (Mode Mode) is set to “Dual” (see chapters 4.1.3.2 and 4.1.3.3).

Select “**Limitsign.**” in the control settings menu, then press the **<Set>** key.



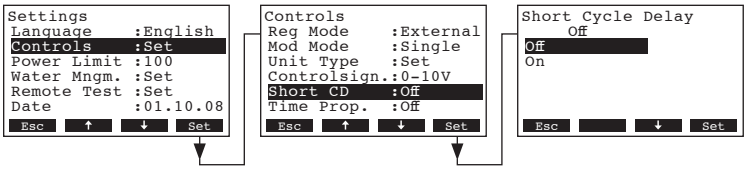
In the upcoming modification dialogue select the desired limit signal.

Factory setting: **0–10V**
Options: **0–5V**, **1–5V**, **0–10V**, **2–10V**, **0–16V**, **3.2–16V**, **0–20mA**, **4–20mA**

4.1.3.7 Switching on and off the short cycle delay function

The short cycle delay function reduces the number of ON/OFF cycles by forcing the system to wait for a set time before responding to a demand.

Select “**Short CD**” in the control settings menu, then press the **<Set>** key.



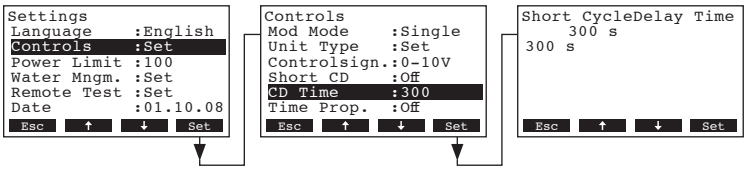
In the upcoming modification dialogue you can switch on or off the short cycle delay function.

Factory setting: **Off**
Options: **Off, On**

4.1.3.8 Setting the short cycle delay time

Note: This setting is available only if the short cycle delay (Short CD) function is activated (see chapter 4.1.3.7).

Select “**CD Time**” in the control settings menu, then press the **<Set>** key.



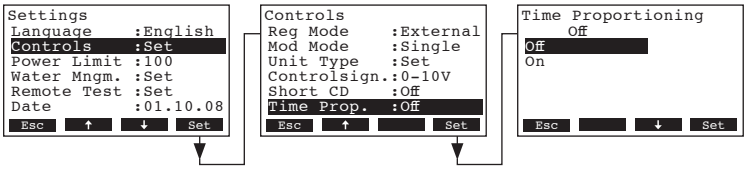
In the upcoming modification dialogue select the desired short cycle delay time.

Factory setting: **300 seconds**
Setting range: **1 ... 2000 seconds**

4.1.3.9 Switching on and off the time proportioning function

The time proportioning function allows to produce steam below 25% system request (or less than 10kg/h) with an ON/OFF control.

Select “**Time Prop**” in the control settings menu, then press the **<Set>** key.



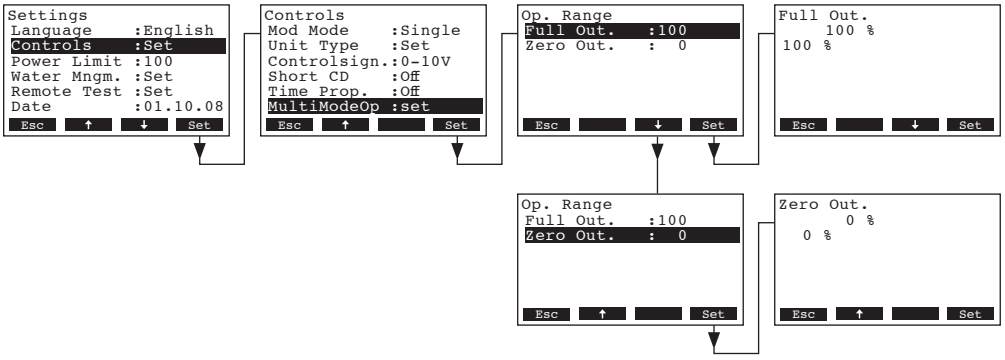
In the upcoming modification dialogue you can switch on or off the time proportioning function.

Factory setting: **Off**
Options: **Off (no steam is produced below 25 % system request), On**

4.1.3.10 Setting operating range for multiple units operation

Note: This setting is available only if the unit type is set to Master or Extension (see chapter 4.1.3.4).

Select “**MultiModeOp**” in the control settings menu, then press the **<Set>** key. Then, Select “**Full Out.**” to set the upper output limit or select “**Zero Out.**” to set the lower output limit, then press the **<Set>** key.

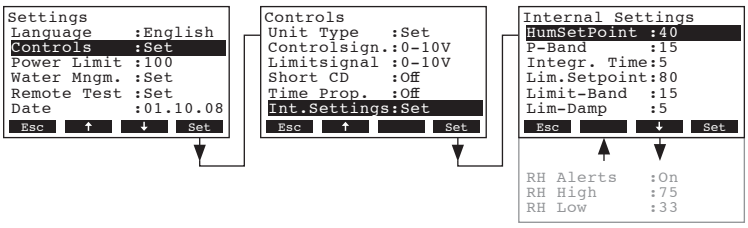


In the upcoming modification dialogue set the upper or lower limit for the operating range of the corresponding unit.

4.1.3.11 Configuring internal control settings

Note: The menu item internal settings is available only if the regulation mode is set to “Int. (P)” or “Int. (PI)” (see chapter 4.1.3.2).

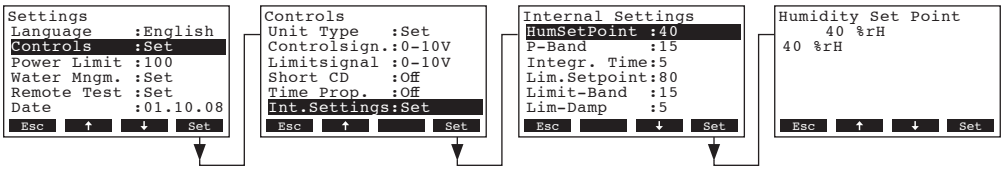
Select “**Int.Settings**” in the control settings menu, then press the **<Set>** key.



The display with the internal settings appears. The settings available depend on the selected modulation mode. The display above shows the maximum number of settings available. Please refer to the following chapters for further information on the individual internal control settings.

4.1.3.11.1 Setting the humidity setpoint

Select “**HumSetpoint**” in the internal control settings menu, then press the **<Set>** key.

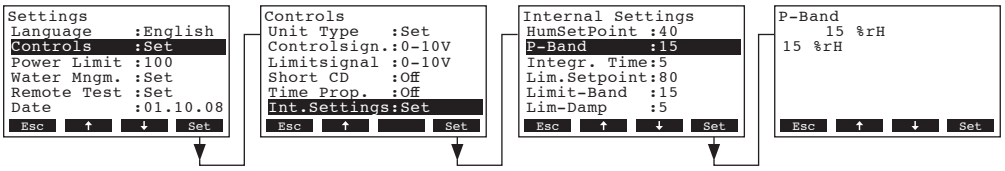


In the upcoming modification dialogue set the desired humidity setpoint.

Factory setting: **40%rH**
Setting range: **15 ... 95%rH**

4.1.3.11.2 Setting the proportional range in % for the internal P/PI controller

Select “**P-Band**” in the internal control settings menu, then press the **<Set>** key.



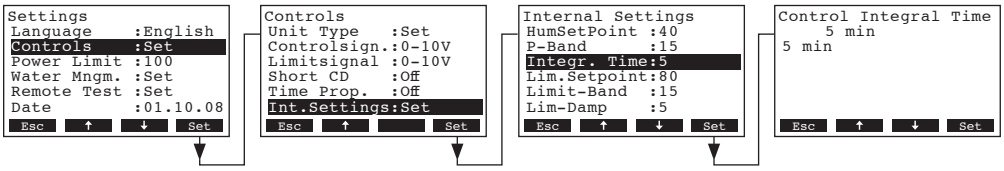
In the upcoming modification dialogue set the desired proportional range in % for the internal P/PI controller.

Factory setting: **15 %**
Setting range: **6...65 %**

4.1.3.11.3 Setting the integral time in minutes for the internal PI controller

Note: This setting is available only if the internal PI controller is activated (see chapter 4.1.3.2).

Select “**Integr. Time**” in the internal control settings menu, then press the **<Set>** key.



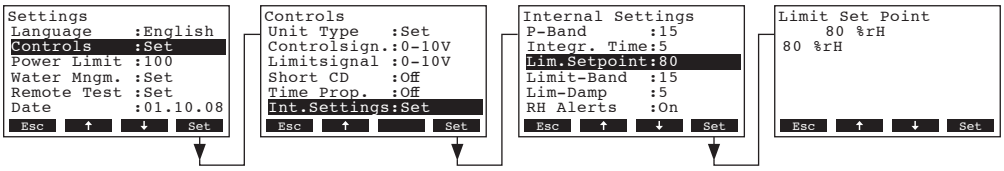
In the upcoming modification dialogue set the desired integral time in minutes for the internal PI controller.

Factory setting: **5 minutes**
Setting range: **1...60 minutes**

4.1.3.11.4 Setting the upper limit value in %rh for the supply air limitation

Note: This setting is available only if the modulation mode is set to “Dual” (see chapter 4.1.3.3).

Select “**Lim.Setpoint**” in the internal control settings menu, then press the **<Set>** key.



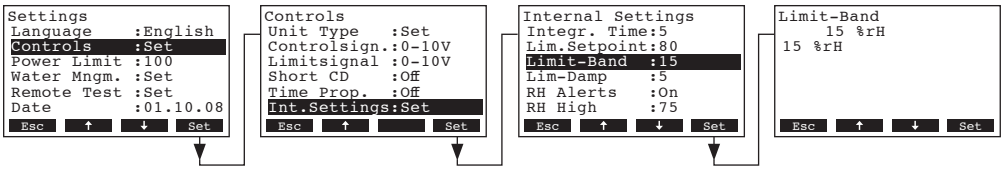
In the upcoming modification dialogue set the desired upper limit value in %rh for the supply air limitation.

Factory setting: **80 %rh**
Setting range: **15 ... 95 %rh**

4.1.3.11.5 Setting the limit range in %rh for the supply air limitation

Note: This setting is available only if the modulation mode is set to “Dual” (see chapter 4.1.3.3).

Select “**Limit-Band**” in the internal control settings menu, then press the **<Set>** key.



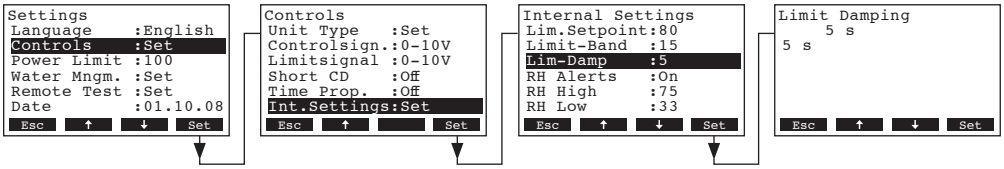
In the upcoming modification dialogue set the desired limit range value in %rh for the supply air limitation.

Factory setting: **15 %rh**
Setting range: **6 ... 20 %rh**

4.1.3.11.6 Setting the damping time for the limit signal in seconds

Note: This setting is available only if the modulation mode is set to “Dual” (see chapter 4.1.3.3).

Select “**Lim-Damp**” in the internal control settings menu, then press the **<Set>** key.

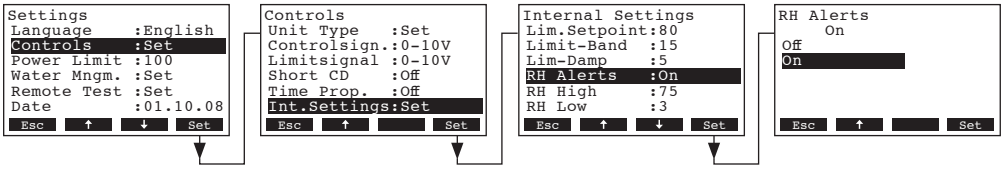


In the upcoming modification dialogue set the desired damping time for the limit signal in seconds to eliminate regulation peaks.

Factory setting: **5 s**
Setting range: **1 ... 20 s**

4.1.3.11.7 Switching on and off the humidity alert function

Select “**RH Alerts**” in the internal control settings menu, then press the **<Set>** key.



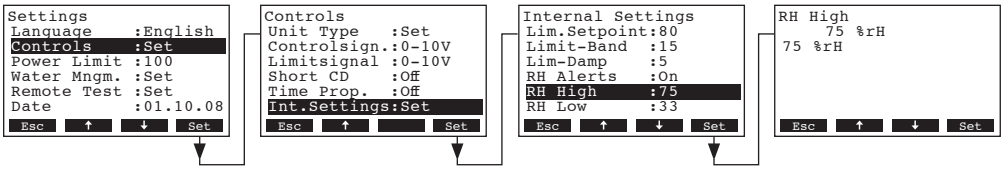
In the upcoming modification dialogue you can switch on or off the humidity alert function.

Factory setting: **On**
Options: **On, Off**

4.1.3.11.8 Setting the upper humidity alarm value

Note: This setting is available only if the humidity alert function is activated (see chapter 4.1.3.11.7).

Select “**RH High**” in the internal control settings menu, then press the **<Set>** key.



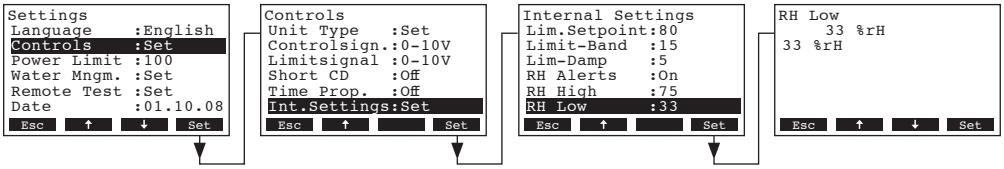
In the upcoming modification dialogue set the desired upper humidity alarm value for tirggering a humidity alert.

Factory setting: **75 %rH**
Options: **20 ... 95 %rH**

4.1.3.11.9 Setting the upper humidity alarm value

Note: This setting is available only if the humidity alert function is activated (see chapter 4.1.3.11.7).

Select “**RH Low**” in the internal control settings menu, then press the **<Set>** key.

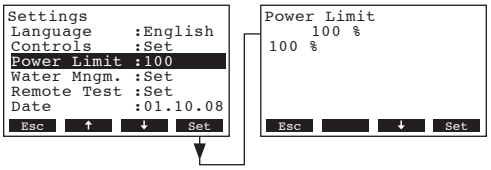


In the upcoming modification dialogue set the desired lower humidity alarm value for tirggering a humidity alert.

Factory setting: **33 %rH**
Options: **20 ... 95 %rH**

4.1.4 Setting the capacity limitation

Select “**Power Limit**” in the settings menu, then press the **<Set>** key.

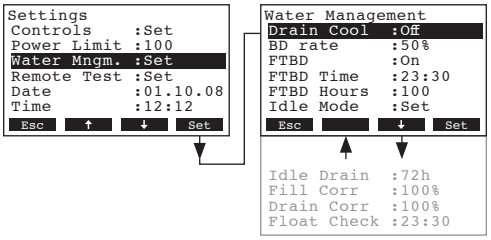


In the upcoming modification dialogue set the desired capacity limitation in % of the maximum capacity of the humidifier.

Factory setting: **100 %**
Setting range: **30...100 %**

4.1.5 Water management settings

Select “**Water Mngm.**” in the settings menu, then press the **<Set>** key.

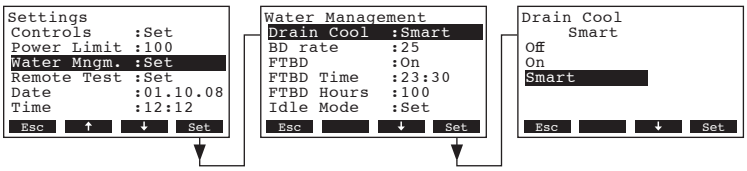


The water management settings menu appears.
Press the **<↓>** and **<↑>** keys in order to select the individual settings and press the **<Set>** key to call up the modification dialogue for the selected setting. Please refer to the following chapters for further information on the individual water management settings.

4.1.5.1 Selecting the type of drain water cooling

This function lets you specify the type of drain water cooling according to local plumbing codes.

Select “**Drain Cool**” in the water management menu, then press the **<Set>** key.



In the upcoming modification dialogue you can select the type of drain water cooling.

Factory setting: **Smart**

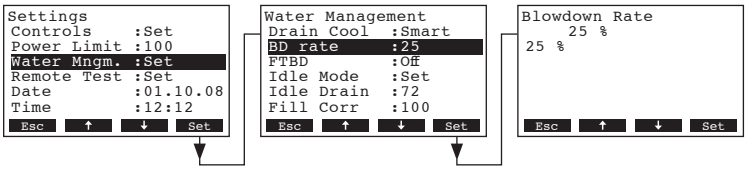
Options: **Smart**: the humidifier has a tank sensor that communicates the water temperature to the controller. If the water is hot during drain cycle the fill valve will be activated.

On: whenever the drain pump is activated, the fill valve is activated too. This setting wastes a lot of water since it will activate the fill valve even if the drain water is cool.

Off: the drain water is never tempered. This setting can be used where plumbing code permit.

4.1.5.2 Setting the tank draining rate

Select “**BD Rate**” in the water management menu, then press the **<Set>** key.



In the upcoming modification dialogue set the tank draining rate in % of the steam production.

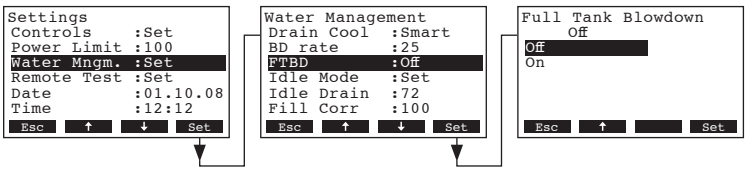
Factory setting: **25 %**

Setting range: **1 ... 50 %**

4.1.5.3 Switching on and off full tank draining function

If the full tank draining function is activated the tank is automatically drained after certain time (see chapter 4.1.5.5) and at a certain time of the day (see chapter 4.1.5.4).

Select “**FTBD**” in the water management menu, then press the **<Set>** key.



In the upcoming modification dialogue you can switch on or off the full tank draining function.

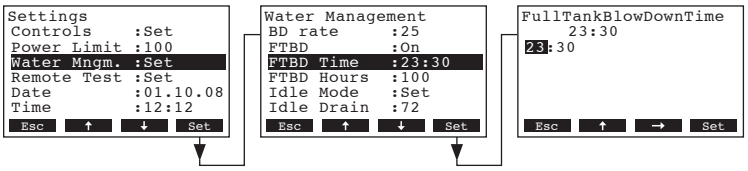
Factory setting: **Off**

Options: **Off, On**

4.1.5.4 Setting the time of day for full tank draining

Note: This setting is available only if the full tank draining function is activated (see chapter 4.1.5.3).

Select “**FTBD Time**” in the water management menu, then press the **<Set>** key.

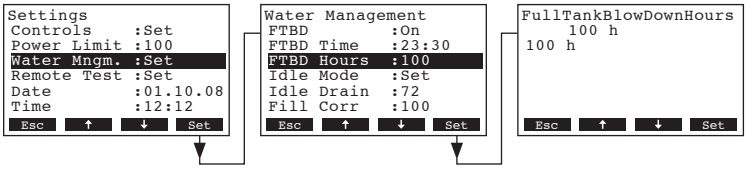


In the upcoming modification dialogue set the time of day at which the full tank draining should be started (format: hh:mm).

4.1.5.5 Setting the period of time in operation for full tank draining

Note: This setting is available only if the full tank draining function is activated (see chapter 4.1.5.3).

Select “**FTBD Hours**” in the water management menu, then press the **<Set>** key.

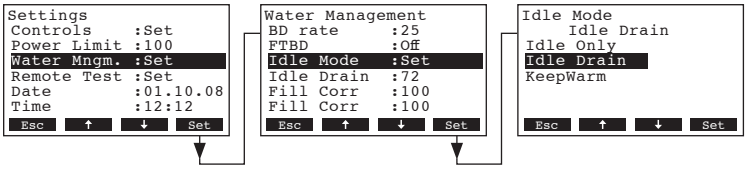


In the upcoming modification dialogue set the period of time in operation after which an automatic full tank draining takes place.

Factory setting: **100 hours**
Setting range: **10 ... 400 hours**

4.1.5.6 Setting the idle mode

Select “**Idle Mode**” in the water management menu, then press the **<Set>** key.



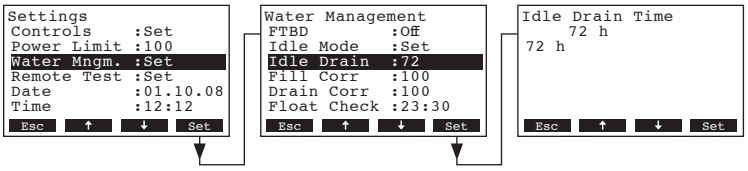
In the upcoming modification dialogue set the desired idle mode.

Factory setting: **Idle Drain**
Setting range: **Idle Only , Idle Drain, KeepWarm**

4.1.5.7 Setting the period of time in idle mode for tank draining

Note: This setting is available only if Idle Mode is set to “Idle Drain” (see chapter 4.1.5.6).

Select “**Idle Drain**” in the water management menu, then press the **<Set>** key.



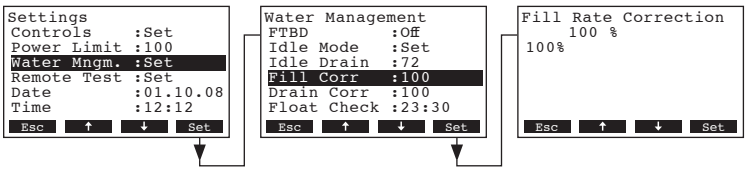
In the upcoming modification dialogue set the period of time in idle mode after which an automatic tank draining takes place.

Factory setting: **72 hours**
Setting range: **10 ... 100 hours**

4.1.5.8 Setting the fill rate correction

This function is used to adjust the fill rate.
Note: Adjustments must only be made by factory trained personnel.

Select “**Fill Corr**” in the water management menu, then press the **<Set>** key.



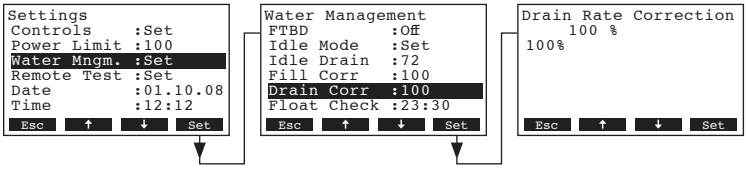
In the upcoming modification dialogue set the fill correction in % of factory set filling rate.

Factory setting: **100%**
Setting range: **50 ... 200 %**

4.1.5.9 Setting the drain rate

This function is used to adjust the drain rate.
Note: Adjustments must only be made by factory trained personnel.

Select “**Drain Corr**” in the water management menu, then press the **<Set>** key.



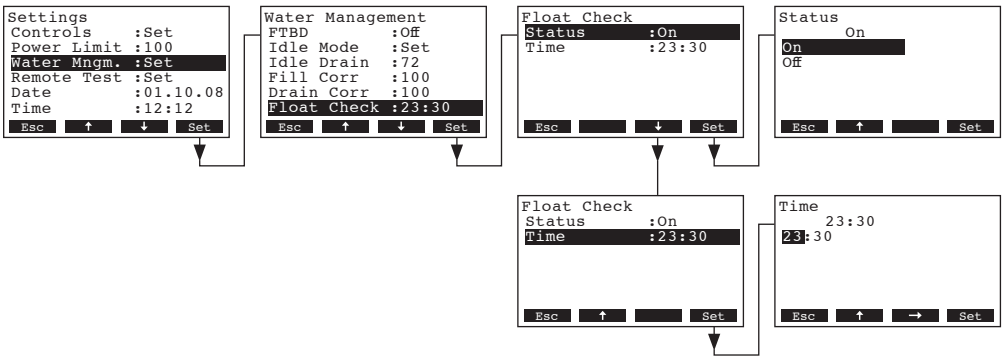
In the upcoming modification dialogue set the drain correction in % of factory set draining rate.

Factory setting: **100%**
Setting range: **50 ... 200 %**

4.1.5.10 Configuring float check function

With this functions you can activate and deactivate the float check function and if activated specify the hour of the day at which a float check takes place. Float checks are important to ensure the water level detection system is operating correctly. The float check also tests the fill and drain system and will report any problems detected.

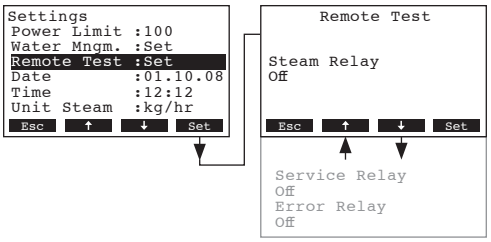
Select “**Float Check**” in the water management menu, then press the **<Set>** key.



In the upcoming float check submenu select "Status" to activate or deactivate the float check function or select "Time" to set the hours of day at which the float check should be started (format: hh:mm).

4.1.6 Performing remote relay tests

With the test functions under “**Remote Test**” you can check the function of the relays “Steam”, “Service” and “Error”.

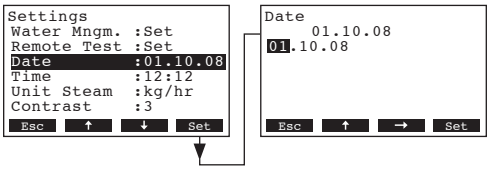


Select “**Remote Test**” in the settings menu, then press the **<Set>** key.

The list with the remote relay tests appears. Press the **<↓>** and **<↑>** keys in order to select the desired relay test and press the **<Set>** key to activate/deactivate the corresponding relay for testing. When switching on a relay, the respective front panel LED lights up.

4.1.7 Setting the date

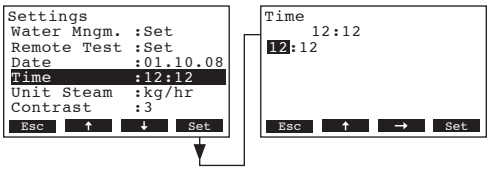
Select “**Date**” in the settings menu, then press the **<Set>** key.



In the upcoming modification dialogue set the actual date (format:“dd.mm.yy”).

4.1.8 Setting the time

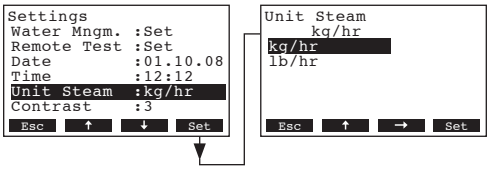
Select “**Time**” in the settings menu, then press the **<Set>** key.



In the upcoming modification dialogue set the actual time (format:“hh.mm”).

4.1.9 Setting the unit for steam production

Select “**Unit**” in the settings menu, then press the **<Set>** key.

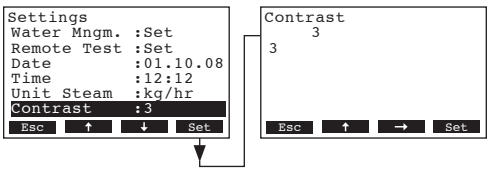


In the upcoming modification dialogue set the desired unit for the steam production.

Factory setting: **kg/hr**
Options: **kg/hr, lb/hr**

4.1.10 Setting the display contrast

Select “**Contrast**” in the settings menu, then press the **<Set>** key.



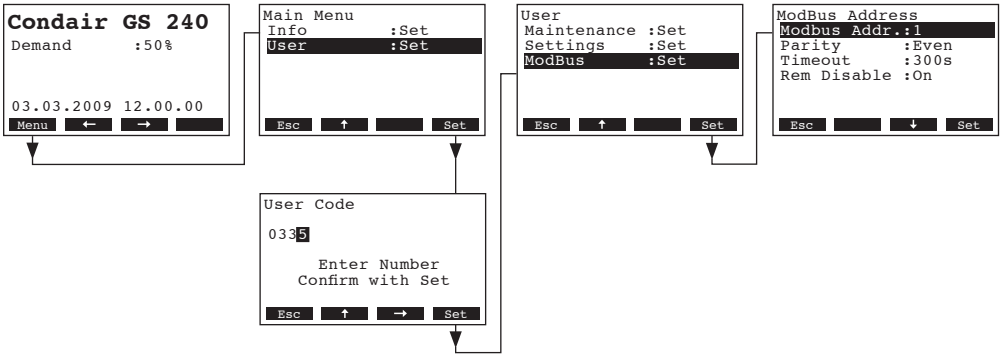
In the upcoming modification dialogue set the desired value for the display contrast.

Factory setting: **3**
Setting range: **0** (weak) **...10** (display turns black)

4.2 Modbus settings

Note: For detailed information on Modbus settings please also consult the separate documentation on Modbus communication of the Condair GS/ Condair GS...OC (available from you Condair supplier).

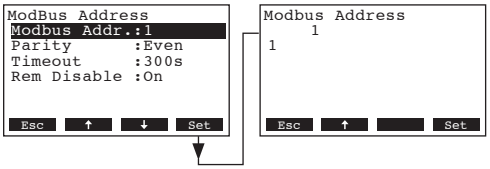
Select the Modbus menu:
Path: ***Main menu > User > Password entry: 0335 > Modbus***



The Modbus settings menu appears.
Press the **<↓>** and **<↑>** keys in order to select the individual settings and press the **<Set>** key to call up the modification dialogue for the selected setting. Please refer to the following chapters for further information on the individual Modbus settings.

4.2.1 Setting the Modbus address

Select "**Modbus Addr.**" in the Modbus settings menu, then press the **<Set>** key.

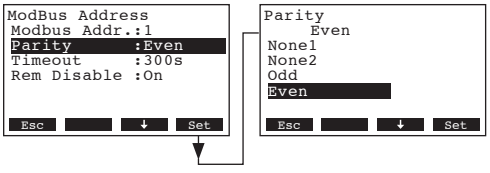


In the upcoming modification dialogue select the desired Modbus adress bit for the unit.

Factory setting: **1**
Setting range: **1 ... 247**

4.2.2 Setting the parity

Select "**Parity**" in the Modbus settings menu, then press the **<Set>** key.

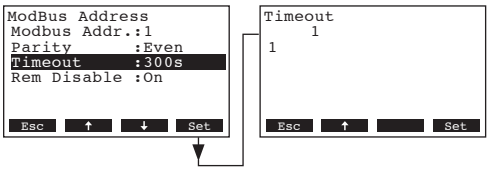


In the upcoming modification dialogue select the desired parity bit for the data transmission.

Factory setting: **Even**
Options: **None1, None2, Odd, Even**

4.2.3 Setting the timeout

Select “**Timeout**” in the Modbus settings menu, then press the **<Set>** key.

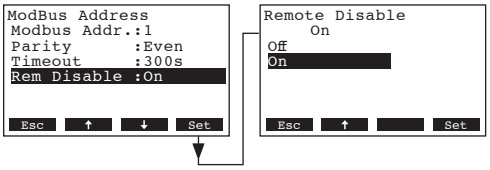


In the upcoming modification dialogue select the desired time out time for the data transmission.

Factory setting: **1 s**
Setting range: **1 ... 600 s**

4.2.4 Swichting on and off the remote disabling function

Select “**Rem Disable**” in the Modbus settings menu, then press the **<Set>** key.



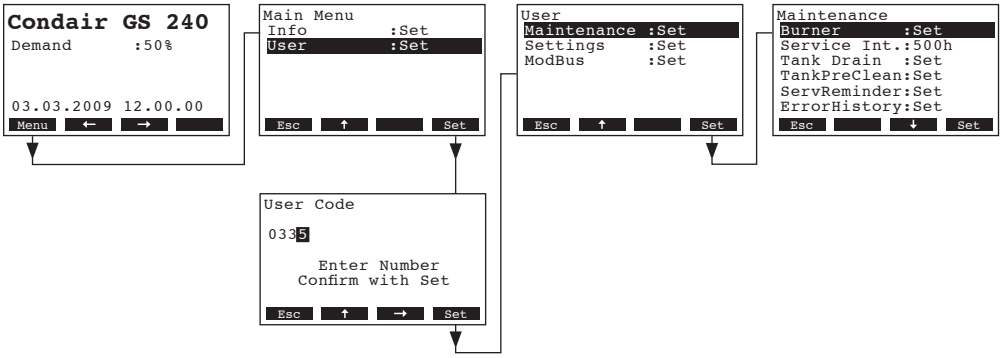
In the upcoming modification dialogue you can switch On (remote disabling activated) or Off (remote disabling activated) the remote disabling function.

Factory setting: **On**
Options: **On** (remote disabling activated)**, Off** (remote disabling deactivated)

5 Service functions

5.1 Launching the maintenance settings menu

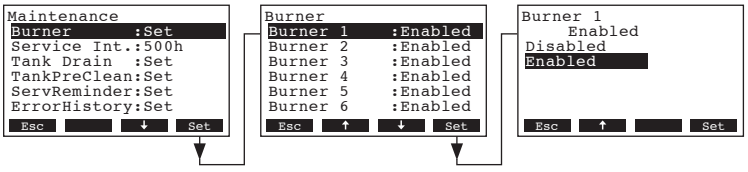
Select the maintenance settings menu:
Path: ***Main menu > User > Password entry: 0335 > Maintenance***



The Maintenance settings menu appears.
Press the **<↓>** and **<↑>** keys in order to select the individual settings in the maintenance menu.
Detailed information on the different settings are found in the following chapters.

5.2 Enabling/Disabling an individual burner

Select "**Burner**" in the maintenance settings menu, then press the **<Set>** key.

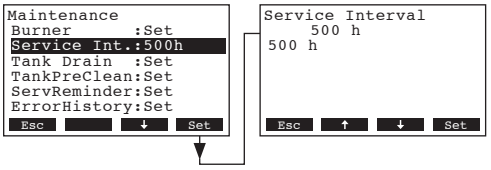


In the upcoming modification dialogue you can enable or disable the selected burner.

Factory setting: **Enabled**
Options: **Enabled, Disabled**

5.3 Setting the maintenance interval time

Select "**Service Int.**" in the maintenance settings menu, then press the **<Set>** key.



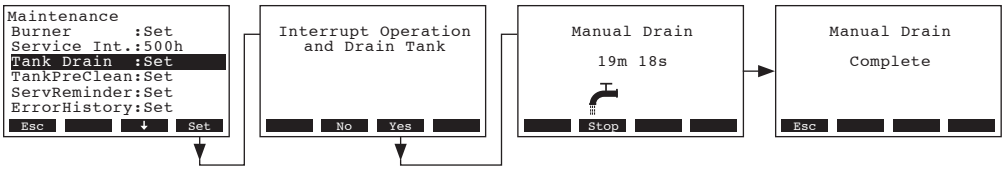
In the upcoming modification dialogue set the desired maintenance interval time in hours.

Factory setting: **500 h**
Options: **100 ... 3000 h**

5.4 Performing the tank drain function

With the tank drain function you can initiate a tank draining cycle. The tank drain function activates the drain pump in order to drain the tank for a fixed time (depending on unit size).

Select “**Tank Drain**” in the maintenance settings menu, then press the **<Set>** key.



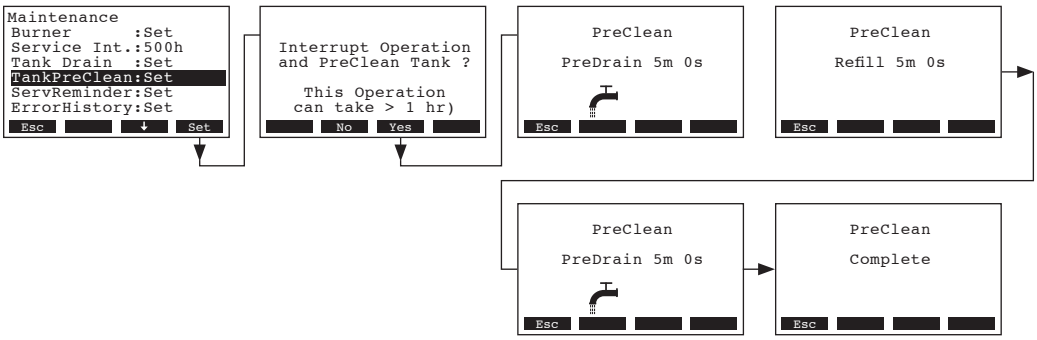
You are asked whether you want to stop operation and drain the tank. Press the **<Yes>** key. The tank draining starts. During the tank drain cycle the display confirms the tank is drained along with the time remaining to complete the cycle. A corresponding message is displayed when the tank is empty. To interrupt the drain cycle press the **<Stop>** key.

Press the **<Esc>** key several times to quit the tank draining function and to return to the standard operating display.

5.5 Performing the tank pre-clean function

With the tank pre-clean function you can initiate a tank cleaning cycle. The tank pre-clean function activates the drain pump in order to drain the tank for a fixed time (depending on unit size), then the fill valve is activated to partially fill the tank with cold water. Upon completion of the fill cycle the tank is drained once again. This removes any accumulated minerals and cools down the tank for maintenance.

Select “**TankPreClean** ” in the maintenance settings menu, then press the **<Set>** key.



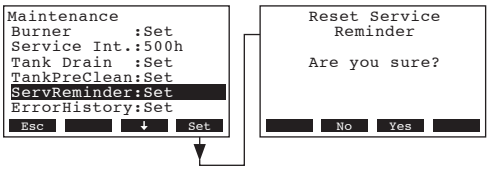
You are asked whether you want to stop operation and drain the tank. Press the **<Yes>** key. The pre-clean functions starts. During the tank pre-clean cycle the display confirms the tank is drained and filled along with the time remaining to complete the procedure.
To interrupt the drain cycle the humidifier must be switched off and then on again. A corresponding message is displayed when the pre-clean function is finished.

Press the **<Esc>** key several times to quit the pre-clean function and to return to the standard operating display.

5.6 Resetting the maintenance counter

After completing maintenance work, the **maintenance counter** must be reset with this function

Select “**ServReminder**” in the maintenance settings menu, then press the **<Set>** key.



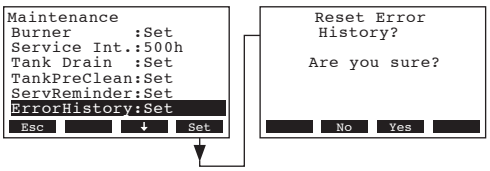
The reset dialogue shows up in the display. Press the **<Yes>** key to reset the **maintenance counter**.
Note: Press the **<No>** key if you wish to abort the reset procedure.

To return to the standard operating display press the **<Esc>** key several times.

5.7 Resetting the error history

The error history can help you to find the cause of a malfunction. Therefore, use the error history reset function carefully.

Select “**ErrorHistory**” in the maintenance settings menu, then press the **<Set>** key.



The reset dialogue shows up in the display. Press the **<Yes>** key to reset the **error history**.
Note: Press the **<No>** key if you wish to abort the reset procedure.

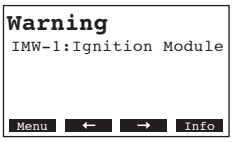
To return to the standard operating display press the **<Esc>** key several times.

6 Fault elimination

6.1 Fault indication

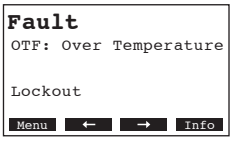
Malfunctions during operation are indicated by a corresponding **Warning** or **Fault** message in the display of the control unit (each warning and fault message is stored in the error list):

– **Warning messages** (additionally to the warning message the **yellow LED lights**)



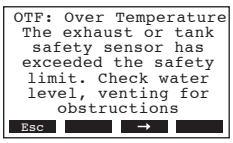
Further operation is still possible. The control of the Condair GS/Condair GS...OC checks whether there is a temporary problem (e.g. gas supply interrupted for a short time) or whether it can resolve the problem by taking necessary measures. If the cause of the malfunction disappears of its own accord or if the control can repair the malfunction, the alarm message will automatically switch off. If the cause of the malfunction does not disappear even after a longer period of time, a fault message is triggered.

– **Fault message** (additionally to the fault message the **red LED lights**)



Further operation is not possible any longer, the unit is blocked. To eliminate the malfunction see chapter 6.3.
Note: After eliminating the malfunction the fault message must be reset (see chapter 6.4).

By pressing the **<Info>** key additional information can be displayed for each warning and/or fault message.



6.2 Warning messages

Warning message	Description of malfunction	Trouble shooting
IMW-X: Ignition Module	The ignition module X has not ignited within 4 minutes after activation. **Corrective action by unit**: the unit will index the next available burner in the sequence.	1. Check problematic burner through combustion chamber sight port for red hot igniter and flame. 2. If igniter is not red hot check igniter connection. Replace igniter if necessary. 3. If igniter is red hot but now flame is visible, check for 24 VAC at gas valve. 4. Verify that gas supply line is connected and gas line open. 5. If flame is visible, check electric connection of flame sensor. Ensure supply voltage L1 is not wired to N.
APW-X: Air Proving open	Air proving switch X has opened during operation of the unit. **Corrective action by unit**: unit will interrupt operation and retry max. three times. After third try a fault is generated.	1. Make sure air proving switch is properly connected to driver board. 2. Make sure pressure tubes are secure. 3. Make sure air flows into blower during blower operation. If no suction is detectable, the blower might need to be replaced. 4. Perform diagnostic output test on blower RPM to verify that air proving switches remain closed during operation 5. If air proving switch does not close during operation it might need to be replaced.
AOW-X: Air Proving open	The air proving switch was open during the ignition sequence. **Corrective action by unit**: unit will interrupt operation and retry max. three times. After third try a fault is generated.	1. Make sure air proving switch is properly connected to driver board. 2. Make sure pressure tubes are secure. 3. Make sure air flows into blower during blower operation. If no suction is detectable, the blower might need to be replaced. 4. Perform diagnostic output test on blower RPM to verify that air proving switches remain closed during operation 5. If air proving switch does not close during operation it might need to be replaced.
BHW-X: Blower RPM high	The speed of blower X has been higher than the speed of the leading blower for more than five seconds. **Corrective action by unit**: the unit continues to monitor the blower speed.	1. Make sure blower in question is correctly connected and it is receiving correct voltage. 2. Check operation of blowers in the diagnostic output test for abnormalities. 3. Make sure there are no restrictions on lead blower. Lead blower speed could be reduced due to wear. 4. Check if blower can be turned by hand without mechanical resistance.

Warning message	Description of malfunction	Trouble shooting
BLW-X: Blower RPM low	The speed of blower X has been lower than the speed of the leading blower for more than five seconds. **Corrective action by unit**: the unit continues to monitor the blower speed	1. Make sure blower in question is correctly connected and it is receiving correct voltage. 2. Check operation of blowers in the diagnostic output test for abnormalities. 3. Set blower in question as lead blower and see if other blowers get Blower High Warning. 4. Blower speed is decreasing due to wear. Unit is safe to operate but output is reduced. 5. Order new blower.
HMW: Service due	The maintenance interval time has elapsed. **Corrective action by unit**: the unit will continue to run for 72 hours before a fault is generated	Service the unit according the maintenance instructions.
FTW: Fill timeout	The fill valve has been activated for a certain period of time but the the unit is still at float level zero. **Corrective action by unit**: fill valve remains activated. A fault message is triggered if the float level remains at zero after next time window.	1. Make sure that drain pump, auxiliary drain valve or manual drain switch are not activated. 2. Make sure that the water supply line is open and the water supply meets the requirements (10 L/min ; 3-8bar). 3. Check fill valve using the diagnostic output test. 4. Check wiring to float board and fill valve. 5. Clean water assembly of the unit.
RHHW: RH to high	The measured relative humidity is higher than the “RH high” setting. **Corrective action by unit**: none. The humidifier remains in standby mode until the measured relative humidity drops below setpoint.	1. Check that “RH high” setting is correct for the application. 2. Make sure sensor is not influenced by other sources of humidity (wash basin, Sink, etc.). 3. Check the location of sensor (too close to steam distributor?) 4. System might be oversized. Try to limit capacity of the unit.
RHLW: RH to low	The measured relative humidity is lower than the “RH low” setting. **Corrective action by unit**: none. The humidifier should be operating unless it is in standby or lockout mode.	1. Check that “RH low” setting is correct for the application. 2. Is humidifier in lockout or standby? Investigate why humidifier is not operational. 3. Check that sensor is not near a door or window or in any location that may give a false reading 4. System could be undersized. Check power limit settings. 5. Check that all burners are operational.
RHW: RH signal defect	The RH signal input is lower than 3% **Corrective action by unit**: the operation is interrupted until an input signal higher than 3% is received.	1. Check connection between sensor and unit. 2. Check that sensor is functional 3. Check control settings of the unit. 4. Make sure controls are located such that they provide accurate readings.

Warning message	Description of malfunction	Trouble shooting
NSW: Extended missing	There is no communication between master and extension unit. **Corrective action by unit**: the operation is interrupted until a signal is received.	1. Check that one of the units is configured as master. 2. Check connection between master and extension unit.
RDW: Modbus disable	The unit has been intentionally disabled through the Building Management System. **Corrective action by unit**: none. The unit was intentionally disabled.	1. Enable unit through building management system (BMS) 2. If unit cannot be enabled remotely, try enabling unit under Modbus
NBW: No bruners	All burners have been disabled via the control software. Operation of the humidifier is not possible.	Activate burners via the control software.

6.3 Fault messages

Fault message	Description of malfunction	Trouble shooting
IMF-X: Ignition failed	All burners have produced an ignition module failure. No burners are available to produce steam. Unit unsafe to operate. Recover the problem before restarting unit.	1. Make sure gas supply is connected and open. 2. Check for correct gas supply pressure as indicated on the rating plate. 3. Check that igniter turns red hot during ignition sequence. 4. If igniter is red hot but no flame is visible, check for 24 VAC at gas valve. 5. If flame is visible, check connection to flame sensor. Ensure supply voltage L1 is not wired to N.
AOF-X: AirProving open	The corresponding air proving switch did not close during blower start-up after 3 attempts. Unit unsafe to operate. Recover the problem before restarting unit.	1. Make sure air proving switch is properly connected to driver board. 2. Make sure pressure tubes are secure. 3. Make sure air flows into blower during blower operation. If no suction is detectable, the blower might need to be replaced. 4. Perform diagnostic output test on blower RPM to verify that air proving switches remain closed during operation 5. If air proving switch does not close during operation it might need to be replaced.
ACF-X: Airproving closed	The corresponding air proving switch was closed while the blowers were inactive. The unit will remain in fault mode until the problem is recovered or the unit is reset.	1. Make sure air proving switch is properly connected to driver board. 2. Make sure pressure tubes are secure. 3. Perform output test in diagnostic menu to ensure switches close and open with blower operation. 4. Check/Replace air proving switch.
BNF-X: Blower fault	The corresponding blower is not operating or the measured speed is below 500 RPM while the blower is running. Unit unsafe to operate. Recover the problem before restarting unit.	1. Check electrical connections. Make sure both feedback and power are connected. 2. Make sure relay is operating. Check voltage on both sides of relay. 3. Check if a RPM reading is shown in RPM info screen for the corresponding fan. 4. Check if blower is operating. If operating, feedback signal could be a problem. 5. If blower is not operating, check power supply
GVF-X: Gas valve fault	The corresponding gas valve was energized out of sequence or when not expected to be energized. Unit unsafe to operate. Recover the problem before restarting unit.	1. Ensure electronics are connected according to the wiring diagram 2. Check connections to ignition modules. 3. Verify adequate supply voltage.

Fault message	Description of malfunction	Trouble shooting
FTF: Fill timeout	The fill valve has been activated for an extended period of time without reaching float level 1. The unit cannot operate without accurate float level reading. Unit unsafe to operate. Recover the problem before restarting unit.	1. Make sure that drain pump, auxiliary drain valve or manual drain switch are not activated. 2. Make sure that the water supply line is open and the water supply meets the requirements (10 L/min ; 3-8bar). 3. Check fill valve using the diagnostic output test. 4. Check wiring to float board and fill valve.
DCF: Drain check	Drain pump is activated for extended period of time without changing float level. Unit needs to drain for optimal performance.	1. Back pressure from drain lines can slow draining of unit. 2. Drain pump may be obstructed. Clean drain pump. 3. Make sure that float level sensor is connected and that levels change during filling. 4. Check that drain pump is powered.
FCF: Fill check	Fill valve is activated with water level between 1 to 5 for an extended period of time without increasing a float level. The unit cannot operate without accurate float level reading.	1. Make sure water supply line is connected and shutoff valve is open. 2. Fill valve blocked or fill valve not connected to power supply. 3. Make sure float level sensor is connected and levels change during draining.
FIF: Fill inconsistent	On startup the unit registers that the float levels do not increase logically from level 1 to level 5. The unit cannot operate without accurate float level reading.	1. Units float level sensor is malfunctioning. Check all connections. 2. Check if floats are blocked.
FLF: Float level	More than one float level is registering at the same time. The unit cannot operate without accurate float level reading.	1. Make sure water supply line is connected and shutoff valve is open. 2. Fill valve blocked or fill valve not connected to power supply. 3. Make sure float level sensor is operating correctly.
KWF: KW timeout	Keep warm function is activated but tank temperature has not increased within the specified time. Unit cannot operate in this condition.	1. Check temperature of the tank (hot or cold). 2. If hot, examine electrical connection to temperature sensor. 3. Make sure that at least one burner is active and not all burners were deactivated by mistake.
OTF: Over Temperature	The exhaust temperature or the tank safety sensor has exceeded the safety limits. Unit cannot operate in such condition.	1. Check float level sensor (float level sensor of the unit is malfunctioning, a level is indicated, although no water is in the tank). 2. Check/clean the water tank (too much lime deposits in the water tank prevent the heat exchange, thus an accumulation of heat in the heat exchanger result). 3. Make sure exhaust line open and free of obstructions. 4. Check connections to driver board of unit.

Fault message	Description of malfunction	Trouble shooting
HMF: Service required	The humidifier maintenance interval and the 72 hour time window for cleaning has expired. **Unit cannot operate in such condition.**	**Unit must be serviced immediately according instructions. If unit continues to operate damage of unit components may result.**
Flash R/W	CPU can't write or read any data on the CPU.	Check if battery is low or CPU board is defective
Clock R/W	CPU can't get any clock data.	Check if battery is low or CPU board is defective

6.4 Resetting the fault indication (red LED lights)

To reset the fault indication:

Disconnect the Condair GS/ Condair GS...OC from the mains. Wait approx. 5 seconds, then reconnect the unit to the mains.

Note: If the malfunction has not been eliminated, the fault indication reappears after a short while.

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