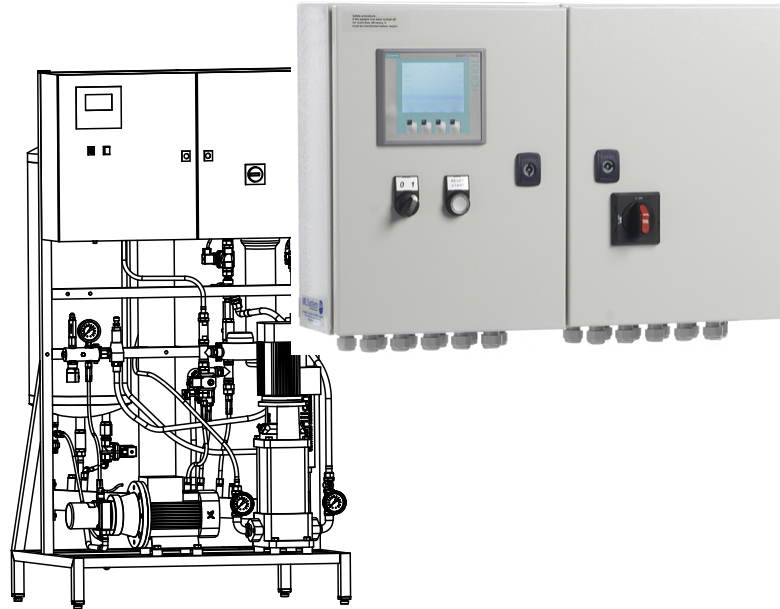


**IMPORTANT!** Read and save these instructions. This manual to be left with the equipment.



# CONTROLLER MANUAL

In-Duct Adiabatic Humidification System  
Nortec HP/HPRO  
Valid from SN 2016-xxx  
US version

# Thank you for choosing Nortec

Installation date (DD/MM/YYYY):

Commissioning date (DD/MM/YYYY):

Site:

Model:

Serial number:

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# 1 Introduction

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## 1.1 Notes on the controller manual

This manual is an addendum for the operation of the Nortec HP/HPRO controller and must be read in conjunction with the installation and operation manual for the Nortec HP and HPRO.

Every person operating the Nortec HP controller must have read and understood this controller manual, and the installation and operation manual of the Nortec HP.

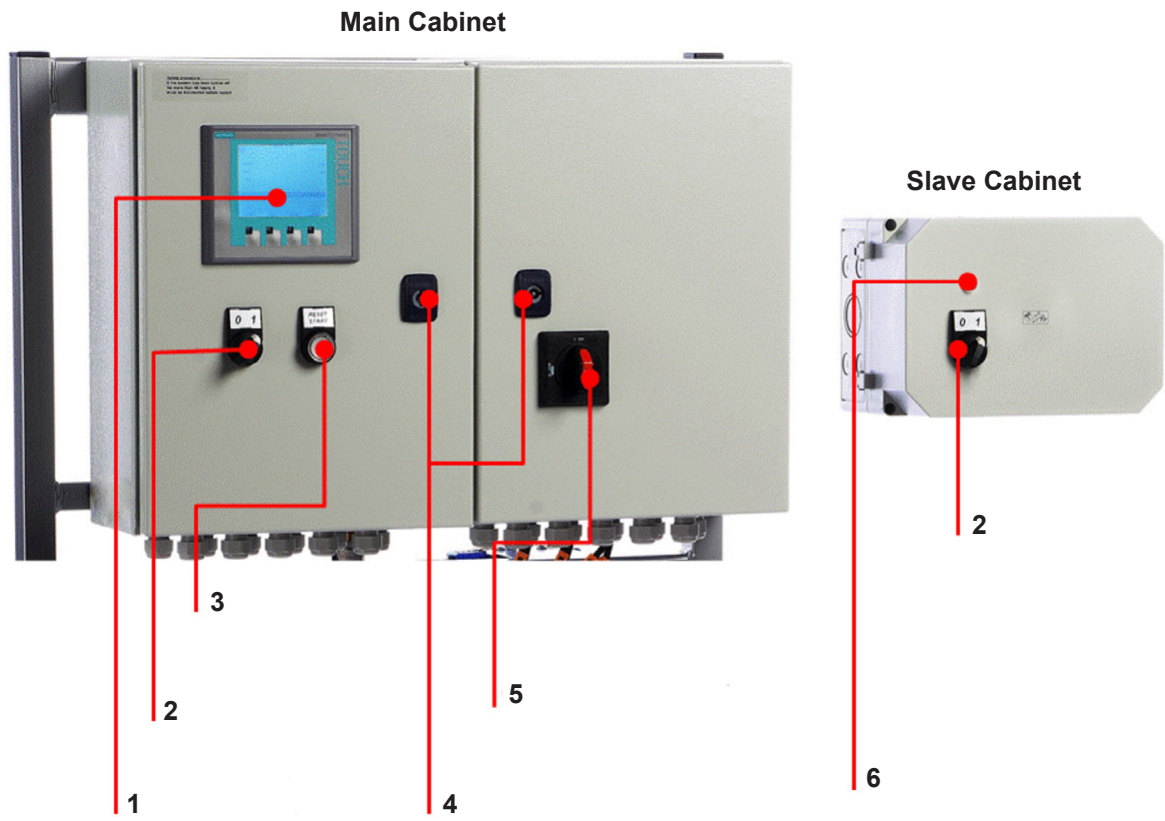
Knowing and understanding the contents of the manuals is a basic requirement for protecting the personnel against any kind of danger, to prevent faulty operation, and to operate the unit safely and correctly.

All safety notes in the installation and operation manual for the Nortec HP and HPRO must be observed and adhered to.

All work described in this controller manual **may only be carried out by well trained personnel which is authorized by the customer.**

If you have questions after reading this documentation, please contact your Nortec Humidity representative. They will be glad to assist you.

## 2 Overview cabinet



- 1 Touch screen (D2)
- 2 Humidification On/Off (S1)
- 3 Reset / Start (S2/P1)
- 4 Door locks
- 5 Main power switch (S3)
- 6 Status indicator (P1), Off: light off, On: light on, Alarm: light flashing

Figure 1: Overview cabinet

## 3 Equipment protection

### 3.1 Pressure switch (inlet water)

The HP and HPRO have a pressure switch which monitors the inlet water pressure.

If the inlet water pressure drops, the controller will stop the pump, thus protecting the pump(s) against dry running. If the water pressure drops, the screen will show “PM Water pressure too low”

### 3.2 Max. Hygrostat to protect against excessive humidification (option)

It is possible to connect a Max. Hygrostat to the control cabinet. If humidity levels rise to a value that exceeds the value set on the Max. Hygrostat, the system will stop and the alarm lamp flashes. The system will not restart until the alarm is acknowledged by pressing ‘Alarm reset’. If this function is not required, the input will short-circuit on the terminal block.

### 3.3 Temperature switch

The high-pressure pump is protected against overheating by a temperature circuit that measures the current temperature in the pump. The temperature limits can be set individually.

Default settings:

1. If the temperature exceeds 86 °F (30 °C), the control unit will initially attempt cooling by starting the water treatment part and filling up the tank with cold water. – If this makes the temperature drop to below 86 °F (30 °C), this function will reset and everything will continue unchanged. While the tank is being filled, the high-pressure pump will continue unaffected.
2. If instead the temperature continues to rise to above 104 °F (40 °C), the pump will stop and start emptying the tank of overheated water and produce new water in the tank. During this process and until the start level has been reached, the pump will remain idle with the alarm text displayed. The pump will start automatically once the start level has been reached.
3. If the temperature exceeds 122 °F (50 °C), the pump will stop immediately and must be reactivated via the reset button once the temperature has dropped again.

### 3.4 Phase sequence relay

The control unit is equipped with a phase sequence relay, which protects against incorrect connection of the supply cable. Both LEDs on relay E1, which is located in the cabinet to the right, must be lit.

When both LEDs are lit, the pumps will run correctly. The relay also protects against fuse breaking.

### 3.5 Description of Touch Screen

The screen is equipped with four F keys. Each of the keys is used to navigate between the different screen images. When these are used, the individual key's function is indicated in the description directly above the key.

The actual touch screen can be operated by gently tapping a finger or a fingernail against the required 'buttons' on the screen.

If you want to change a numerical value, press the relevant number key. This will make a numerical keyboard appear on which the new value can be entered. Remember to enter any comma that may be needed. In case you make an incorrect entry, this can be deleted by means of the Backspace button. Once a new value has been entered, press Enter at the bottom right of the image using the numerical keyboard.

### 3.6 Protection against unwanted changes

On the display, the control unit settings are protected against unwanted changes by means of passwords. The different user groups have different passwords and different rights.

- User – no password – can read operational information and alarms.
- Master – password 8599 – as above + option choices.
- Technician 8788, as above + service menu.

Additionally, there are areas of the screen that are protected by extra passwords, to which only ML System has access.

When a password is required in order to change parameters, a screen will appear where the password can be entered. Change to numerical keyboard by means of the key 0-9.

Once the password has been entered, the system will remain unlocked at the relevant level for five minutes.

## 4 Alarm messages

---

This page shows alarms and operational messages. The alarm display contains information about when an alarm was triggered and when it was reset. The page shows active alarms and previous alarms. Please note that the system does not have a backup memory, which means that previous alarms will be lost in case of power failure.

### 4.1 Alarm message display

#### **Max. Hygrostat**

Max. Hygrostat has dropped out because humidity is too high. The system has stopped and must be restarted once the humidity level has dropped.

#### **Water pressure too low**

The water pressure of the water inlet to the pump station is too low.

#### **Sensor error**

The signal from one of the humidity sensors is outside the expected range of 20 to 80 % RH. In order to ensure that it will be possible to start in very dry surroundings, the 20 % limit is reduced to 5 % RH for the first 10 minutes after the system is switched on. If an alarm is triggered, only the affected sections will be stopped.

#### **Emptying tank - water too hot**

The water is too hot – above 104 °F (40 °C). The tank will be emptied to start level and filled with cold water. The pump will run unchanged in the meantime.

#### **Stop - Pump too hot**

The water is too hot – above 122 °F (50 °C). The system has stopped and must be restarted once the temperature has dropped.

#### **Tank full (HPRO)**

The water level in the tank is too high.

- Lower the water level and reset the system.
- Check that the inlet valve closes tightly when the system is idle.

#### **FD error (not all pumps)**

Communication with frequency drive is lost.

- Check frequency drive has power
- Check the frequency drive display for error indications



### **Pressure too high (VFD versions only)**

High pressure above the high limit set point:

- Check whether the settings in 2.12 HP control are correct, and the pressure shown is approximately the same as on the analog manometer at the high pressure manifold shows. If the measured pressure differs from the analog manometer, this could indicate that the pressure transmitter is damaged.
- Check the pressure relieve valve is set correct and is working probably.
- Check high pressure valves are opening

### **Pressure too low (VFD versions only)**

High pressure below the low limit set point:

- Check for leaks, which could cause a pressure loss
- Check whether the settings in 2.12 HP control are correct, and the pressure shown is approximately the same as on the analog manometer at the high pressure manifold shows. If the measured pressure differs from the analog manometer, this could indicate that the pressure transmitter is damaged.
- Check the pressure relieve valve is set correct and is working probably.
- Check no nozzles are missing or flush valve is leaking.

## **4.2 Operational message display**

### **Water level below start level**

The water level in the tank is too low for the pump to start. Once an adequate level has been reached, the system will start automatically.

### **Pump will start automatically after delay**

The pump has been set on pause, e.g. after disinfection. The pump will start automatically after the expiry of the set time.

### **Service**

Pre-set service interval has been reached. System must be serviced!

### **UV lamp error**

The UV bulb or ballast is broken.

### **UV lamp soon to be changed**

Warning 3 weeks prior to UV lamp change / service.

### **UV lamp error too old**

Replace UV lamp and reset service interval.

# 5 Operating the controller

## 5.1 Menu overview

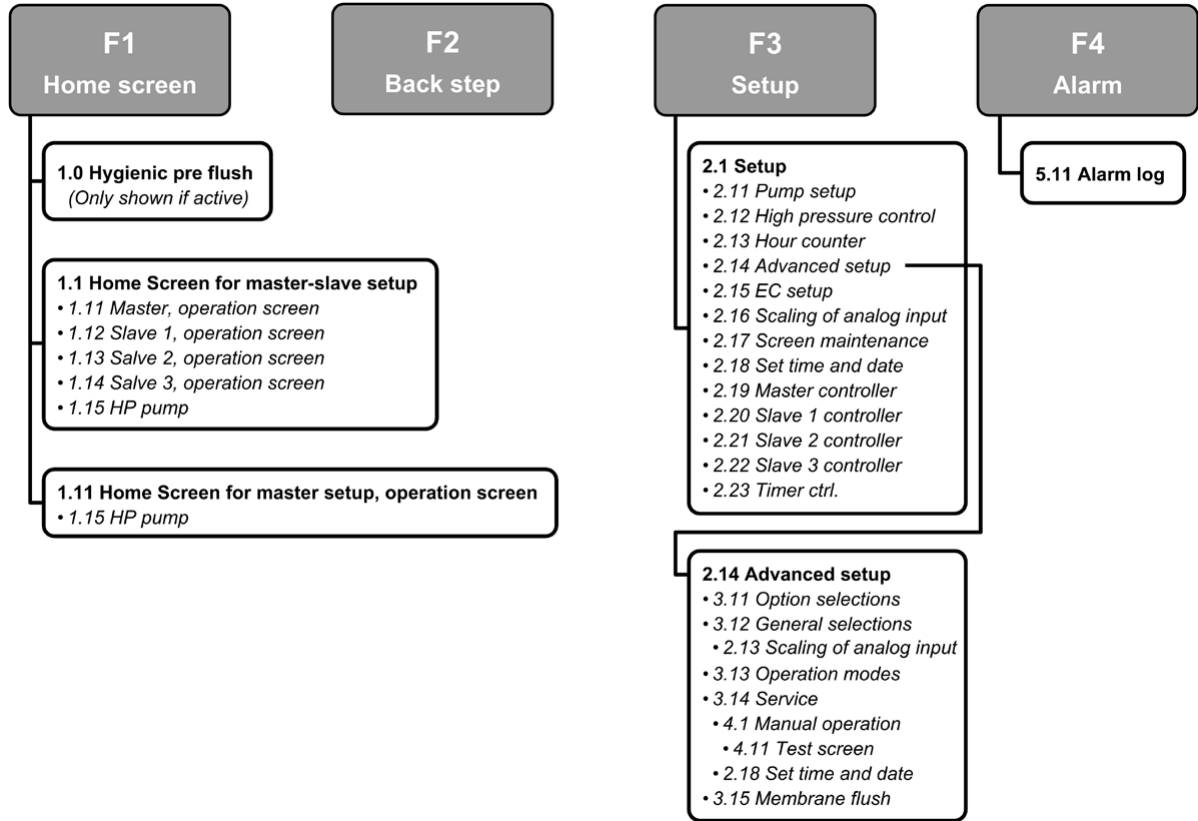
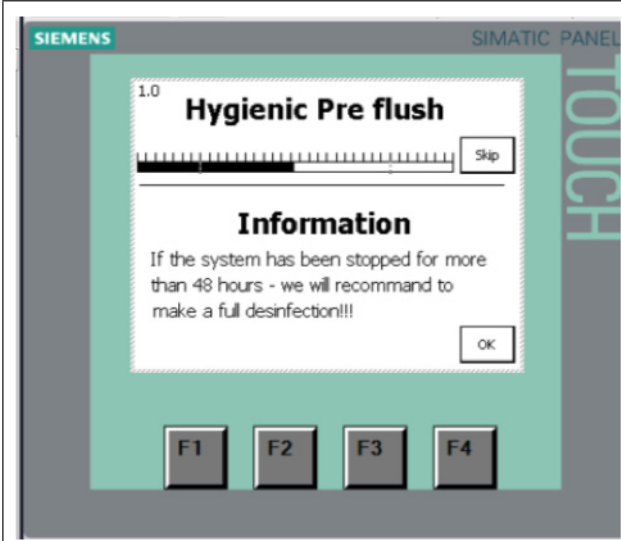
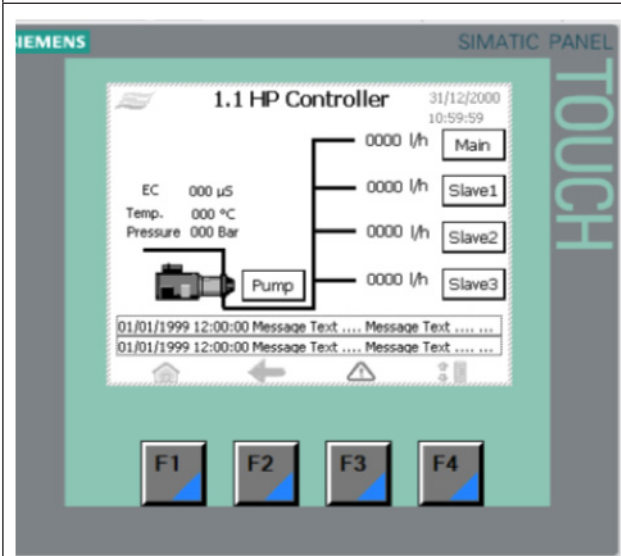


Figure 2: Menu overview

## 5.2 Display 1.0 - Hygienic pre flush

Display 1.0 - Hygienic Pre flush	
	<p>This screen appears every time the pump has been switched off for more than 48 hours and therefore not has been able to perform the continuous flush cycle (2.11).</p> <p>As default the hygienic pre-flushing time is set to 10 minutes (3,13)</p> <p>To start the pre-flush, switch on main power, when this screen appears turn Humidification on/off (S1) to 1 (On). This starts the high pressure pump and opens the MV5 flush valve/bypass valve.</p> <p>It is possible to manually skip the hygienic pre-flush by pressing skip, and entering operator password 8599.</p> <p>The remaining flush time is indicated by a status bar. After end of flush cycle the OK button is shown together with a warning to disinfect. Press OK to go to HP controller screen.</p>

## 5.3 Display 1.1 - HP Controller (F1 - home screen)

Display 1.1 - HP Controller (F1 - home screen)	
	<p>This screen is shown when the system is setup for slaves (3.12). If no slaves are chosen screen 1.11 is shown.</p> <p>Above the pump icon the current pump temperature is shown. If the pump is fitted with frequency drive or EC monitoring, measured values are shown here. Right to the pump icon is a link to more detailed pump data (1.15).</p> <p>If you press the wave logo in the upper left corner the language and units change (US imperial / SI metric).</p> <p>In the upper right corner time and date are shown.</p> <p>On the right side of the screen links to each spray unit and their individual loads are shown.</p> <p>In the bottom of the screen the latest two warnings or alarms are shown: By pressing the Reset/Start button on the main cabinet, these lines are erased and the alarm reset.</p>

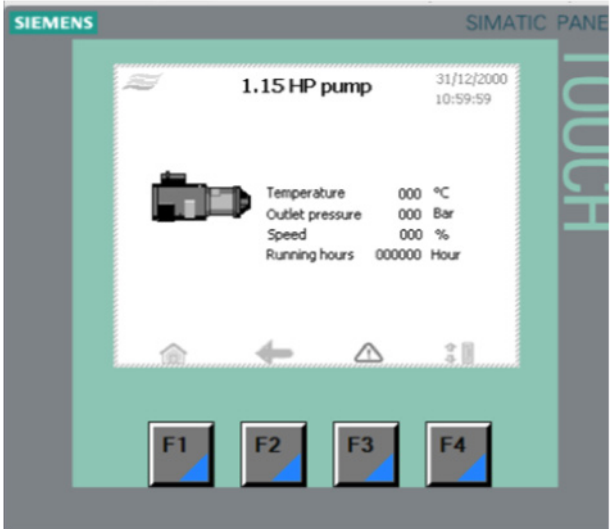
## 5.4 Display 1.11 - HP Controller (F1 - home screen)

Display 1.11 HP Controller (F1 - home screen)	
	<p>This screen is shown when the system is setup without slaves (3.12). If slave(s) are chosen screen 1.1 is shown.</p> <p>Above the pump icon current pump temperature is shown. If the pump is fitted with frequency drive or EC monitoring, measured values are shown here. Right to the pump icon is a link to more detailed pump data (1.15).</p> <p>If you press the wave logo in the upper left corner the language and units change (US imperial / SI metric).</p> <p>In the upper right corner time and date are shown.</p> <p>On the right side of the screen the current status for each step/valve is shown.</p> <p>In the bottom of the screen the latest two warnings or alarms are shown, by pressing the Reset/Start button on the main cabinet, these lines are erased and the alarm reset.</p>

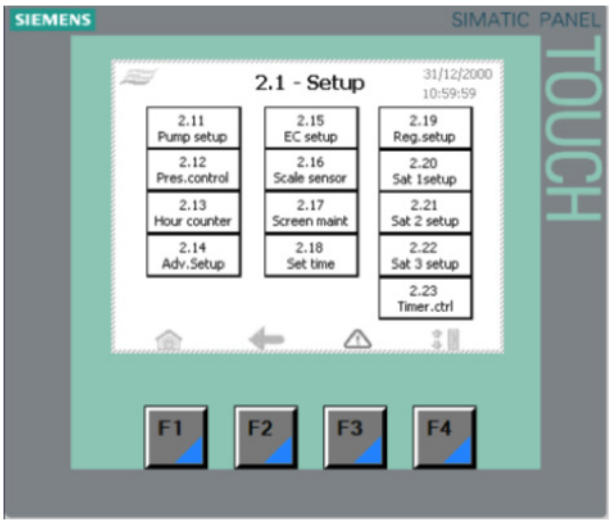
## 5.5 Display 1.12/1.13/1.14 - Slave 1...3

Display 1.12/1.13/1.14 Slave 1...3	
	<p>In the left corner incoming signals and set points according to the chosen method of regulation (3.13 Operation) are shown.</p> <p>Unit started/stopped indicates whether the start/stop switch on the slave cabinet is activated.</p> <p>On the right side of the screen the status for each valve/step is shown.</p>

## 5.6 Display 1.15 - High pressure pump

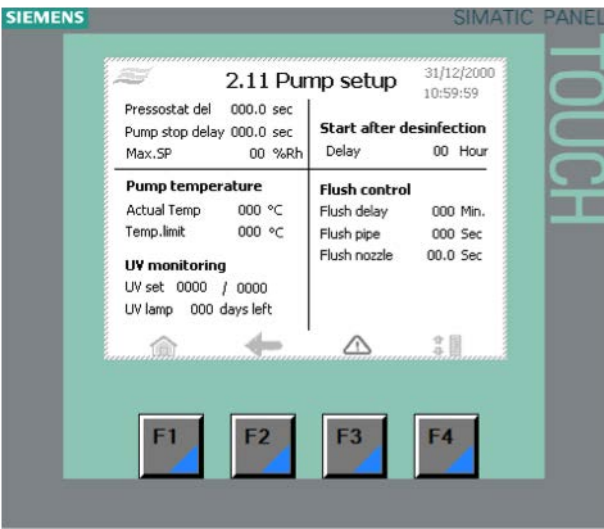
Display 1.15 HP pump	Operation information
	<p>Note: Some info is only available if pump has the optional hardware.</p>

## 5.7 Display 2.1 - Setup

Display 2.1 Setup	Press any link to enter a sub menu.
	

## 5.8 Display 2.11 - High pressure pump setup

### Display 2.11 Pump setup



**Pressostat del**  
Alarm delay for inlet pressure (PS1) 14.5 psi (1 bar).  
Default: 10 sec.

**Max.SP**  
Maximum allowed humidity, only shown if humidity controlled capacity has been chosen (3.13), if the entered value is exceeded system goes in alarm and stops the pump.

**Pump temperature**  
Shows actual pump temperature and it is possible to change the temperature limit of the pump.  
Default: 104 °F (40 °C)

**WARNING!**  
Raising the temperature limit above 104 °F (40 °C) may cause damage to the high pressure pump.

**Flush control**  
To reduce the risk of germs and harmful bacteria developing in the system, all the water in the system must be changed 2-4 times every 24 hours. This is done by opening MV REG and/or MV5 flush valves and running the pump for a short period at pre-set intervals. The flush sequence is only active if humidification itself is not enough to change the water. If the external clearance signal is off the pump only preforms flush thru the flush valve MV5. We strongly advice to always keep the system turned on in order to run the flush continuously and thereby reducing the risk of contaminating the system/air with harmful organisms.

- **Flush Delay**  
Sets the time in minutes, between each flush sequence.  
Default: 30 minutes.
- **Flush Pipe**  
Time the pump opens MV5 flush valve. The MV5 flush valve gives approximately 13.2 gph (50 L/h).  
Default: 10 sec.

	<ul style="list-style-type: none"> <li>- <b>Flush nozzle</b>  Time each REG valve REG1, 2, 3 or 4 opens.  The water sprays thru the nozzles and into the duct.  The system monitors if a nozzle line has been running in the last flush delay period. If not it will be flushed.  Start after disinfection  This function is used to delay start of humidification after end of disinfection.</li>   <li><b>UV monitoring (option)</b></li> <li>- <b>UV set</b>  This function is used to monitor that the UV light-bulb is working. The value to the left (0000/0000) shows the actual power consumption of the UV light bulb. If the power consumption drops below the manually entered value on the right, the system gives a warning. The entered value should be 15 % lower than the measured value.  E.g.: after changing the UV light bulb UV setting shows:  UV set 5654 / 7000 <ul style="list-style-type: none"> <li>• Press the 7000 and change to <math>(5654 * 0,85) = 4805</math></li> <li>• Press start/reset</li> </ul> </li> <li>- <b>UV Lamp xxx days left</b>  Counts down from 365 to 0. 21 days before countdown reaches 0 days the system gives a warning. At 0 days the system shows an alarm in the display. UV-timer can be reset / altered in 3.14 service.</li> </ul>
--	--

## 5.9 Display 2.12 - High pressure control

Display 2.12 High pressure control	
	<p>Only for pump units with frequency drive</p> <p><b>Limit</b> Set high and low pressure alarm limit and delays Default: Limit &lt; 1015 psi (70 bars). Delay 10 sec. Limit &gt; 580 psi (40 bars). Delay 10 sec.</p> <p><b>Pressure SP</b> Pressure set point for the frequency drive. Default: 1015 psi (70 bars) Note: The high pressure is also influenced by the mechanical pressure regulator R2.</p>

## 5.10 Display 2.13 - Hour counter

Display 2.13 Hour counter	
	<p>Shows running hours for the high pressure pump.</p>



## 5.11 Display 2.14 - Advanced setup

Display 2.14 Adv. setup	
	<p>Password protected menu.</p> <p>Press any link to enter a sub menu.</p>

## 5.12 Display 2.15 - EC setup (conductivity sensor)

Display 2.15 EC setup	
	<p>Only if the pump is fitted with EC sensor, conductivity measurement and alarm.</p> <p>In the left column, scaling of sensor            HIE: Highest electrical input            LOE: Lowest electrical input            HI: Highest reading in display            LA: Lowest reading in display</p> <p>In the right column the measured conductivity high/low alarm and warning settings</p>

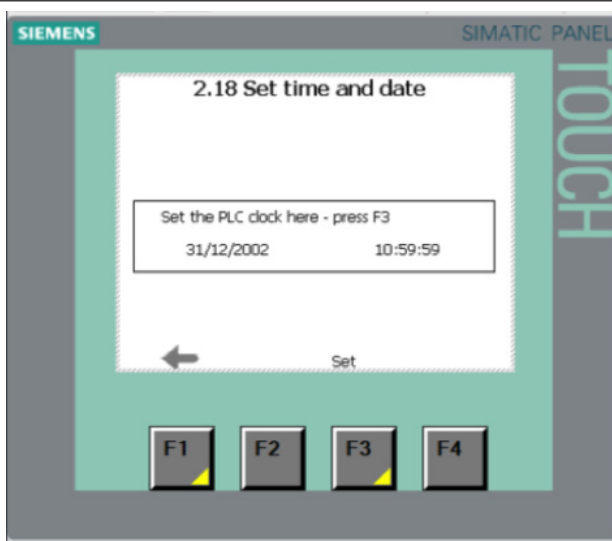
### 5.13 Display 2.16 - Scaling of humidity sensors

Display 2.16 Scaling of analog input						
	HIE	00.00	00.00	00.00	00.00	Volt
	LOE	00.00	00.00	00.00	00.00	Volt
	HI	000	000	000	000	%RH
	LO	000	000	000	000	%RH
	<p>(Only if the pump is regulated directly by Condair HP humidity sensors)</p> <p>HIE: Highest electrical input (volt)            LOE: Lowest electrical input (volt)            HI: Highest reading in display            LA: Lowest reading in display</p>					

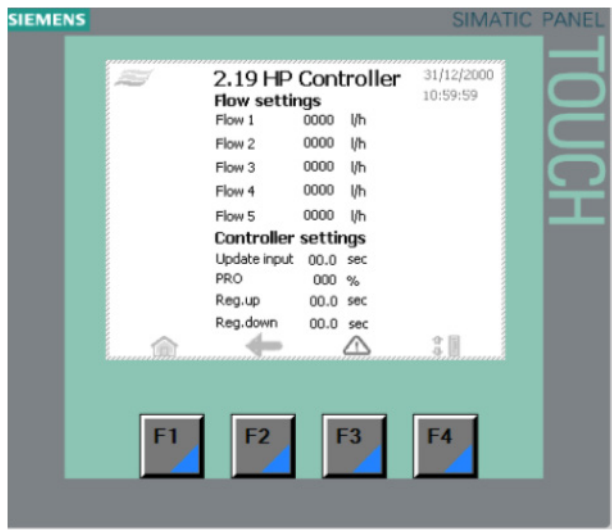
### 5.14 Display 2.17 - Screen Maintenance

Display 2.17 Screen Maintenance	
	<p>Calibrate screen: Adjusts the viewing angle, so you can stand upright and operate the screen. When calibrating do not lean forward in order to get a better glimpse. You will not get the desired effect.</p>

## 5.15 Display 2.18 - Set time and date

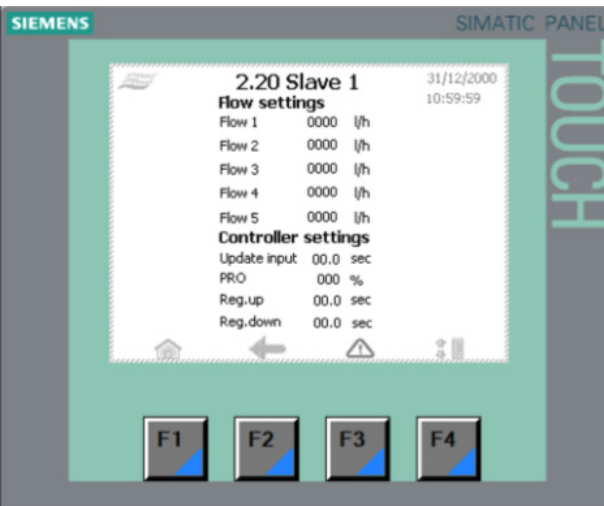
Display 2.18 Set time and date	
	<p>Tap the date/time or press set to set the clock or date.</p> <p>Time format will change according to the language chosen.</p>

## 5.16 Display 2.19 - HP Controller

Display 2.19 HP Controller	
	<p><b>Flow settings</b> Enter value in l/h for each step valve. e.g. <i>flow 1: 6*4,5 l/h nozzles = 27 l/h</i> <i>flow 2: 12*4,5 l/h nozzles = 54 l/h</i> <i>flow 3: 24*4,5 l/h nozzles = 108 l/h</i></p> <p><b>Controller settings</b></p> <ul style="list-style-type: none"> <li>- Update input (direct control cap.) Sampling time for the input signal.</li> <li>- PRO (humidity control cap.) Proportional band standard 20%. For a more aggressive regulation lower PRO to e.g. 15%.</li> <li>- Reg.up Delay time for step jumps up.</li> <li>- Reg.down Delay time for step jumps down</li> </ul> <p>If the system switches steps on and off rapidly, raising the delay time could correct this.</p>

## 5.17 Display 2.20/2.21/2.22 - Slave 1...3

**Display 2.20/2.21/2.22 Slave 1...3**



**Flow settings**  
Enter value in l/h for each step valve.  
e.g.  
*flow 1: 6\*4,5 l/h nozzles = 27 l/h*  
*flow 2: 12\*4,5 l/h nozzles = 54 l/h*  
*flow 3: 24\*4,5 l/h nozzles = 108 l/h*

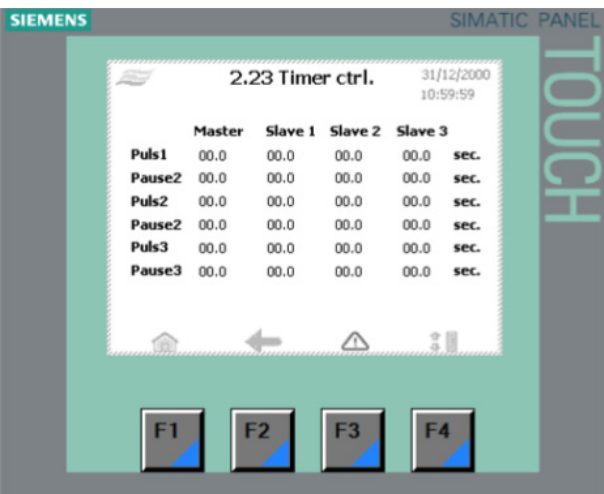
**Controller settings**

- Update input (direct control cap.)  
Sampling time for the input signal.
- PRO (humidity control cap.)  
Proportional band standard 20%. For a more aggressive regulation lower PRO to e.g. 15%.
- Reg.up  
Delay time for step jumps up.
- Reg.down  
Delay time for step jumps down.

If the system switches steps on and off rapidly, raising the delay time could correct this.

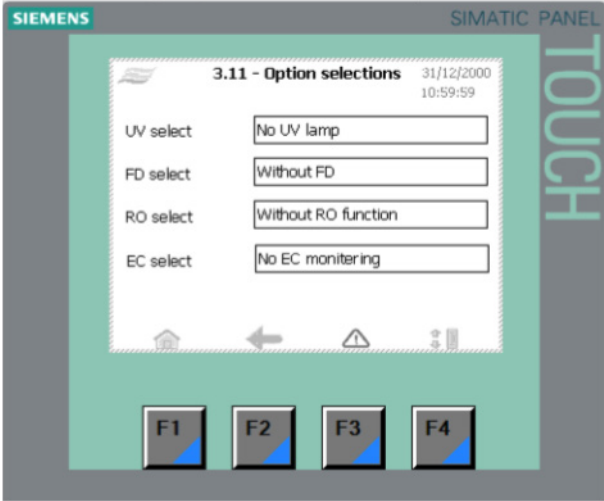
## 5.18 Display 2.23 - Timer Control

**Display 2.23 Timer ctrl.**

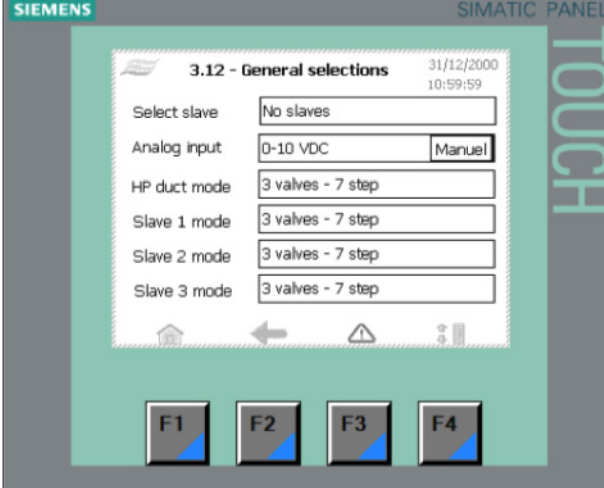


Timer controlled capacity can be chosen under general selections 3.13. In this mode the HP can be set to open each valve with a time interval.  
This can be a useful feature when commissioning.

## 5.19 Display 3.11 - Option selections

Display 3.11 Option selections	
	<p>UV select (Ultra Violet lamp)</p> <ul style="list-style-type: none"> <li>- No UV lamp</li> <li>- UV Monitoring</li> </ul> <p>FD select (Frequency Drive)</p> <ul style="list-style-type: none"> <li>- Without FD</li> <li>- With FD</li> </ul> <p>RO select (Reverse Osmosis)</p> <ul style="list-style-type: none"> <li>- Without RO function</li> <li>- With RO function</li> </ul> <p>EC select (Conductivity monitoring)</p> <ul style="list-style-type: none"> <li>- No EC monitoring</li> <li>- EC monitoring + alarms (option)</li> </ul> <hr/> <p><i>EC monitoring + al + RV/CO<sub>2</sub> (not selectable)</i></p> <p><i>EC monitoring + al + MB + RV/CO<sub>2</sub>(not selectable)</i></p> <p>al=            Alarms</p> <p>RV/CO<sub>2</sub>= Raw water mixer / CO<sub>2</sub> for conductivity control</p> <p>MB=            Mix Bed filtration (ultra-pure water)</p>

## 5.20 Display 3.12 - General selections

Display 3.12 General selections	
	<p>Select Slave</p> <ul style="list-style-type: none"> <li>- No Slave</li> <li>- 1 Slave</li> <li>- 2 Slaves</li> <li>- 3 Slaves</li> </ul> <p>Analog input</p> <ul style="list-style-type: none"> <li>- 0-10 VDC</li> <li>- 2-10 VDC</li> <li>- 4-20 mA (Note: Insert 500 Ω resistor between input terminals)</li> <li>- 0-20 mA (Note: Insert 500 Ω resistor between input terminals)</li> <li>- 0-10 VDC scaled 20-80 %RH (humidity sensor signal)</li> <li>- 4-20 mA scaled 20-80 %RH (humidity sensor signal)</li> <li>- Manuel scaling (3,121 Manuel scaling)</li> </ul> <p>HP duct mode / Slave mode</p> <ul style="list-style-type: none"> <li>- 3 valves – 7 steps</li> <li>- 4 valves – 15 steps</li> <li>- 5 valves – 31 steps</li> </ul>

## 5.21 Display 2.16 - Scaling of analog input

Display 2.16 Scaling of analog input																																			
	HIE:	Highest electrical input, pre-set 10 V.																																	
	LOE:	Lowest electrical input, pre-set 0 V.																																	
	HI:	Highest reading in display. Adjust this value up or down, until measured value (EC) shows correct value corresponding to the handheld and calibrated conductivity tester used by the installer.																																	
	LO:	Lowest reading in display. Should be pre-set to 0.																																	
	<table border="1"> <thead> <tr> <th></th> <th>Sect.1</th> <th>Sect.2</th> <th>Sect.3</th> <th>Sect.4</th> <th></th> </tr> </thead> <tbody> <tr> <td>HIE</td> <td>00.00</td> <td>00.00</td> <td>00.00</td> <td>00.00</td> <td>Volt</td> </tr> <tr> <td>LOE</td> <td>00.00</td> <td>00.00</td> <td>00.00</td> <td>00.00</td> <td>Volt</td> </tr> <tr> <td>HI</td> <td>000</td> <td>000</td> <td>000</td> <td>000</td> <td>%RH</td> </tr> <tr> <td>LO</td> <td>000</td> <td>000</td> <td>000</td> <td>000</td> <td>%RH</td> </tr> </tbody> </table>							Sect.1	Sect.2	Sect.3	Sect.4		HIE	00.00	00.00	00.00	00.00	Volt	LOE	00.00	00.00	00.00	00.00	Volt	HI	000	000	000	000	%RH	LO	000	000	000	000
	Sect.1	Sect.2	Sect.3	Sect.4																															
HIE	00.00	00.00	00.00	00.00	Volt																														
LOE	00.00	00.00	00.00	00.00	Volt																														
HI	000	000	000	000	%RH																														
LO	000	000	000	000	%RH																														

## 5.22 Display 3.13 - General selections

Display 3.13 General selections	
	<p>Duct hum control</p> <ul style="list-style-type: none"> <li>– Direct controlled capacity (default)</li> <li>– Humidity controlled capacity</li> <li>– Timer controlled capacity</li> </ul> <p>Bypass valve (flush valve)</p> <ul style="list-style-type: none"> <li>– Valve set 1</li> <li>– Valve set 2 (slave1)</li> <li>– Valve set 3 (slave2)</li> <li>– Valve set 4 (slave3)</li> </ul> <p>To secure the most effective flushing of the system choose the valve set farthest away from the pump station.</p> <p>Pre-flush</p> <ul style="list-style-type: none"> <li>– No pre-flush</li> <li>– 1 minute pre-flush</li> <li>– 5 minutes pre-flush</li> <li>– 10 minutes pre-flush (default)</li> <li>– 20 minutes pre-flush</li> </ul>

## 5.23 Display 3.14 - Version & password

Display 3.14 Version & password (technician menu)	
	<p>Username</p> <p>Show / change logon profile</p> <p>Maintenance interval</p> <p>Enter maintenance intervals by pressing <i>0000 days</i> and enter the number of days between maintenance. Press reset button after completing service and the pre-set countdown interval starts over again.</p> <p>Nortec recommends that the system is serviced every 180 days according to service instructions.</p> <p>UV reset</p> <p>Reset the UV service timer interval.</p> <p>Log off</p> <p>Locks all password protected menus.</p> <p>Set time</p> <p>Tap the date/time or press set, to set the clock or date.</p> <p>Time format will change according to the language chosen.</p> <p>Clock: 24 hour</p> <p>Date: dd/mm/yyyy</p> <p>Manual (operation)</p> <p>Go to the 4.1 manual operation</p>

## 5.24 Display 3.15 - Select membrane flush

Display 3.15 Select membrane flush	
	<p>Always perform a membrane flush in the following situations:</p> <ul style="list-style-type: none"> <li>- first time the RO system is set into operation</li> <li>- after changing RO membrane(s)</li> <li>- if RO has been shut off for a longer period.</li> </ul> <p>Condair recommends that the system is disinfected if it has been shut off for more than 48 hours.</p>

## 5.25 Display 4.1 - Manual operation

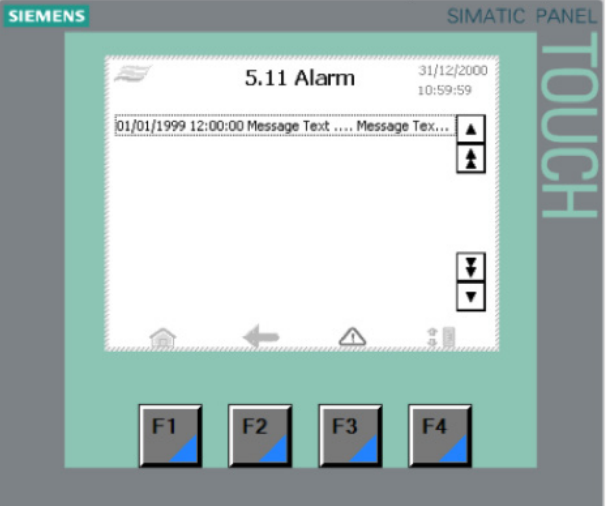
<b>Display 4.1 Manuel operation</b>			
Operate valves on master and each slave unit.		The Pump button starts the high pressure pump.	
		Go to manual operation of the pump unit by pressing the 4.11-Test button in the lower right corner.	

## 5.26 Display 4.11 - Test screen

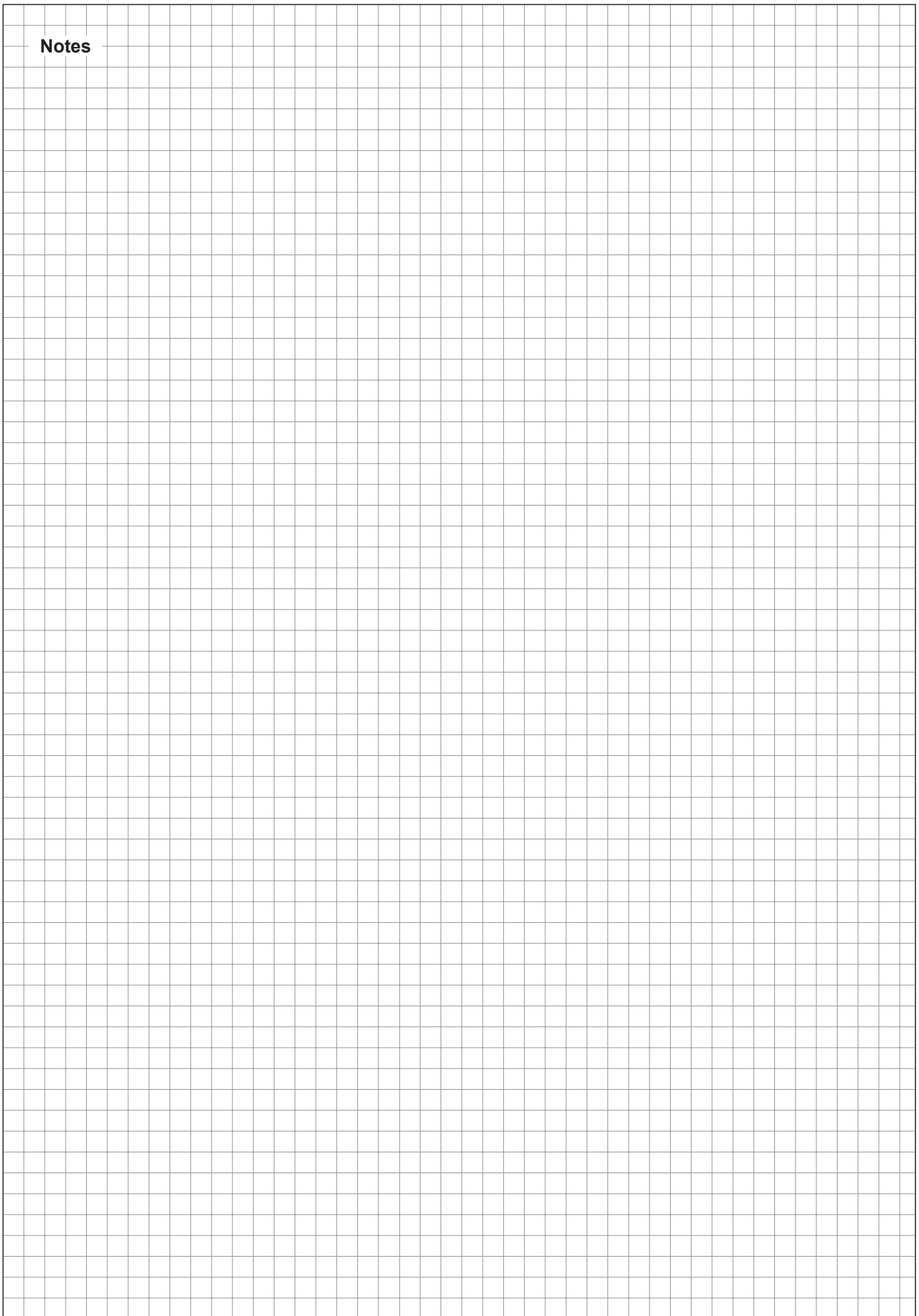
<b>Display 4.11 Test screen</b>	
Operates valves.	
Start/stop pump(s).	



## 5.27 Display 5.11 - Alarm

Display 5.11 Alarm	
	Shows alarms and warning history.

**Notes**



# Warranty

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Nortec Humidity Inc. and/or Nortec Humidity Ltd. (hereinafter collectively referred to as THE COMPANY), warrant for a period of two years after installation or 30 months from manufacturer's ship date, whichever date is earlier, that THE COMPANY's manufactured and assembled products, not otherwise expressly warranted, are free from defects in material and workmanship. No warranty is made against corrosion, deterioration, or suitability of substituted materials used as a result of compliance with government regulations.

THE COMPANY's obligations and liabilities under this warranty are limited to furnishing replacement parts to the customer, F.O.B. THE COMPANY's factory, providing the defective part(s) is returned freight prepaid by the customer. Parts used for repairs are warranted for the balance of the term of the warranty on the original humidifier or 90 days, whichever is longer.

The warranties set forth herein are in lieu of all other warranties expressed or implied by law. No liability whatsoever shall be attached to THE COMPANY until said products have been paid for in full and then said liability shall be limited to the original purchase price for the product. Any further warranty must be in writing, signed by an officer of THE COMPANY.

THE COMPANY's parts or materials that are considered consumables, including but not limited to: cylinders, filters, nozzles, membranes, media, gaskets, O-rings, etc. are NOT covered by the warranty.

THE COMPANY makes no warranty and assumes no liability unless the equipment is installed in strict accordance with a copy of the catalog and installation manual in effect at the date of purchase and by a contractor approved by THE COMPANY to install such equipment.

THE COMPANY makes no warranty and assumes no liability whatsoever for consequential damage or damage resulting directly from misapplication, incorrect sizing or lack of proper maintenance of the equipment.

THE COMPANY makes no warranty and assumes no liability whatsoever for damage resulting from freezing of the humidifier, supply lines, drain lines, or quality of the water used.

THE COMPANY retains the right to change the design, specification and performance criteria of its products without notice or obligation.

THE COMPANY's limited warranty on accessories, not of the companies manufacture, such as controls, humidistats, pumps, etc. is limited to the warranty of the original equipment manufacturer from date of original shipment of humidifier.

## **Extended Warranty**

Extended warranties are available to purchase under the conditions listed above.



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