

AirC Control System

Operation instructions

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Original instructions

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1. Introduction

1.1. Copyright

The contents of this manual can be changed without prior notice.



NOTE

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1.2. About this manual

This supplementary manual contains important information and guidelines for the operation of the control system in the delivered dehumidifier. It must be used together with the User manual for the dehumidifier to make a complete documentation.

Details about the dehumidifier is available in the User manual. Do not operate the dehumidifier without reading also the User manual.

Important user information such as intended use and safety information is also available in the User manual for the dehumidifier.



NOTE

Some of the options described are not available for all types of dehumidifiers.

2. Control system

2.1. General

This section provides an overview of the setup of the advanced built-in microprocessor control system. The microprocessor and related components have already been set up at the factory for your particular application with the exception of the means to communicate the required input to the microprocessor.

On delivery, the control system is preset with standard settings, which can be adjusted on site during installation and commissioning.

The microprocessor monitors outside ambient conditions and space conditions. It can then automatically energize dehumidification to maintain desired space conditions.

The unit can optionally be monitored and turned on by a Building Management System (BMS) using a Modbus communication protocol. The Munters AirC controller has support for Modbus RTU through 2/3-wired RS-485 interface and Modbus TCP/IP through Ethernet.

Optionally, the individual functions can be controlled directly by an outside source. A thermostat/humidistat or a BMS is used to give signals to turn on the unit.

Where this method of control is used, the microprocessor still monitors and protects the internal functions.

The Munters AirC control system consists of the controller, HMI and several sensors. The controller is powered by a 24 VAC transformer.

There are four different access levels:

- Level 0: Viewing of all operational settings and values.
- Level 1: Operator login.
- Level 2: Service login.
- Level 3: System configuration.

2.2. Humidity control alternatives

There are two possibilities for humidity control. The selected option is set up when the unit is configured.

2.2.1. Humidity setpoint

The unit is controlled by an internal, adjustable setpoint which can be in one of three different formats:

- percent relative humidity (%RH)
- calculated dew point (temperature)
- calculated absolute humidity (g/kg)

The setpoint can be set from the HMI, through Modbus communication or by an external analog input. The analog input can be configured as 0-20 mA, 4-20 mA or 0-10 V.

2.2.2. External setpoint

The reactivation heater is directly controlled by an external analog signal, 0-20 mA, 4-20 mA or 0-10 V. In this way, the dehumidification capacity of the unit is controlled between 0 and 100 %. The incoming signal is converted to a setpoint for heater control.

2.3. Loop controllers

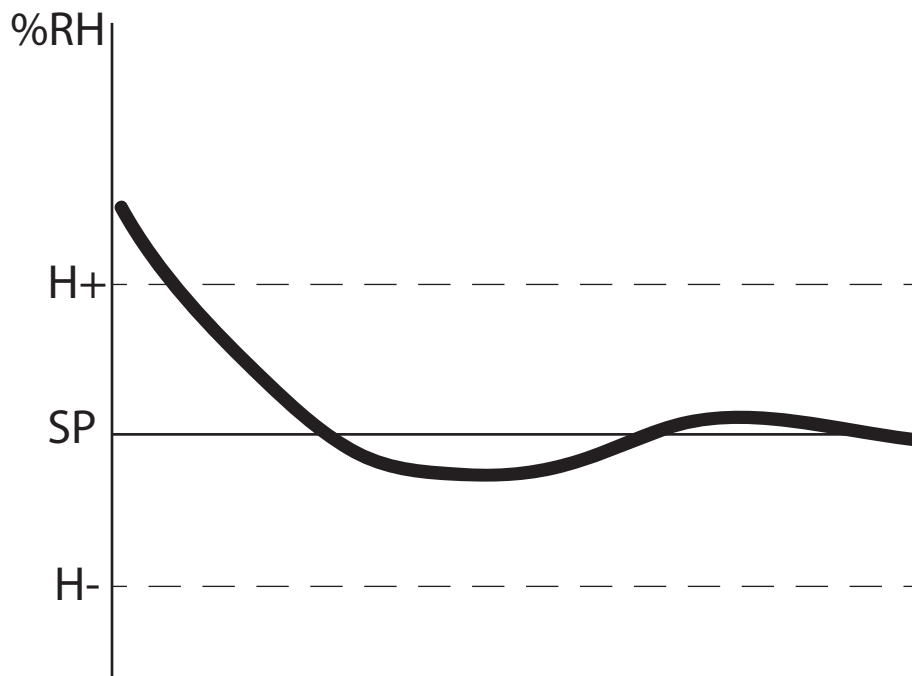
The control system loop controllers work to maintain setpoints for humidity and the reactivation temperature.

Hysteresis limits can be set for humidity to allow variation around the setpoint value within specified values before the unit is turned on or off.

In the figure below, the indicated values refer to:

%RH	Relative humidity
SP	Setpoint
H+	Hysteresis upper limit
H-	Hysteresis lower limit

Figure 1. Hysteresis



If the humidity exceeds the hysteresis upper limit (*Hyst Start*), the dehumidifier will start and begin to regulate to the setpoint.

The regulation will continue as long as the humidity value is above the hysteresis lower limit (*Hyst Stop*). The dehumidifier will stop only when the humidity value falls below the hysteresis lower limit.

It will start again the next time the value exceeds the upper limit.

2.4. Sensors

The following are examples of sensors that can be used to give information input to the controller.

- Reactivation temperature
- Wet air temperature
- Return or room temperature
- Return or room humidity
- Rotor rotation
- Reactivation filter pressure switch
- Process filter pressure switch

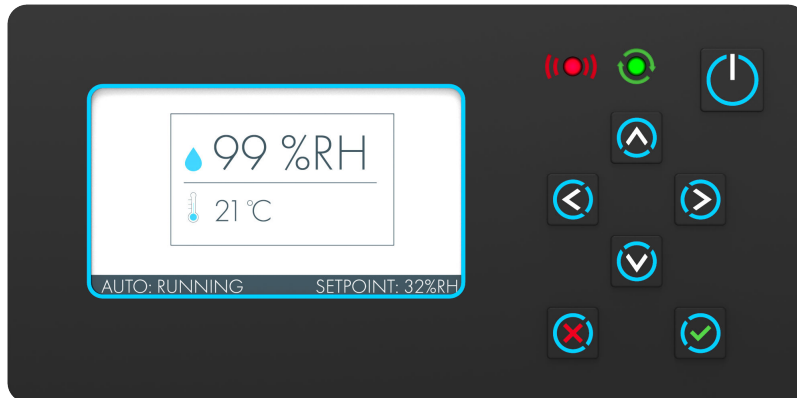
2.5. Variable frequency drive

Variable frequency drives (VFD) are used to control electric motor speed. They replace the motor contactors and overload relays and provide a soft start for the motor. If the VFD detects a problem such as high amperage, low voltage etc. it shuts the motor down to protect it and indicates a fault condition.

3. User interface

3.1. General

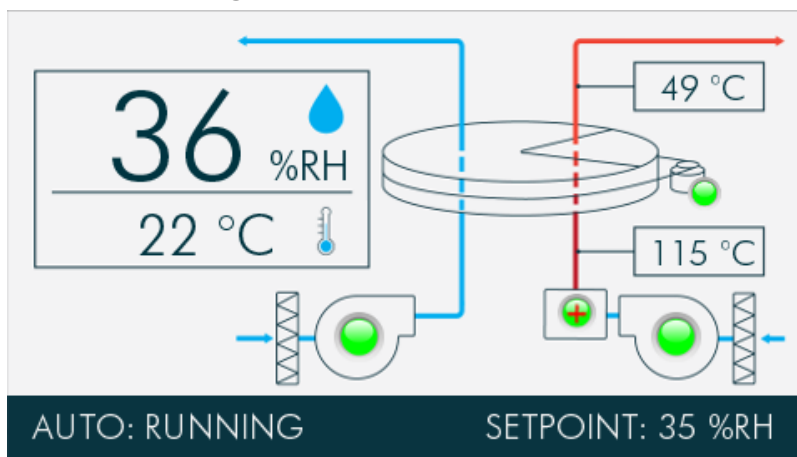
3.1.1. Start/stop from control system panel



Press the start/stop button in the upper right corner to operate the unit.

- From Off, press once to go to Automatic mode, with sensor control.
- From Off or Automatic, press and hold for more than 3 seconds to go to Manual mode, 100% capacity dehumidification.
- From Automatic or Manual, press once to go to Off.

3.1.2. Start Page

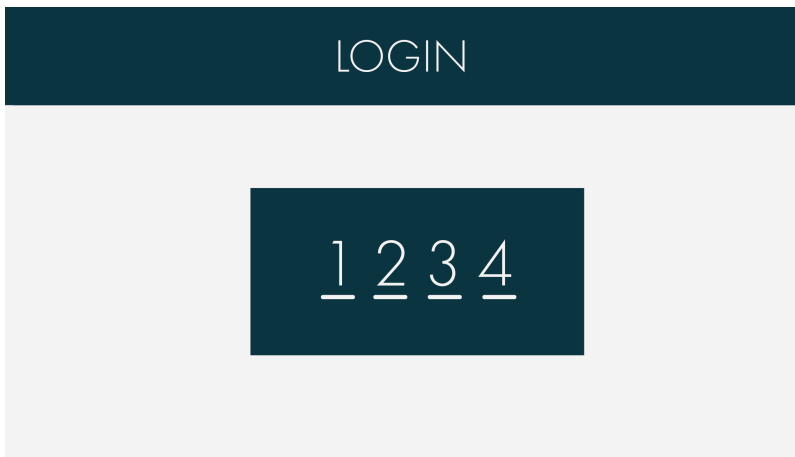


The start page displays the following information:

- Humidity
- Temperature
- Reactivation temperature
- Operation mode
- Unit status
- Alarm status, alarms and informations

Press  or  to go to Main Index.

3.1.3. Login





User login password is **1111**.

Password enter


Press  and  to select the position.

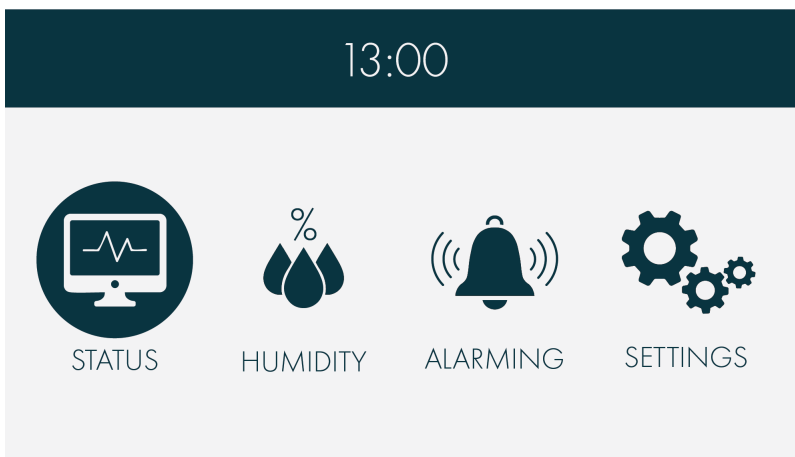
Press  and  to change the digit.

Press  to confirm the correct PIN-code.

Press  to go to the Start page.

3.1.4. Main Index


Select the icon for the desired menu and press .



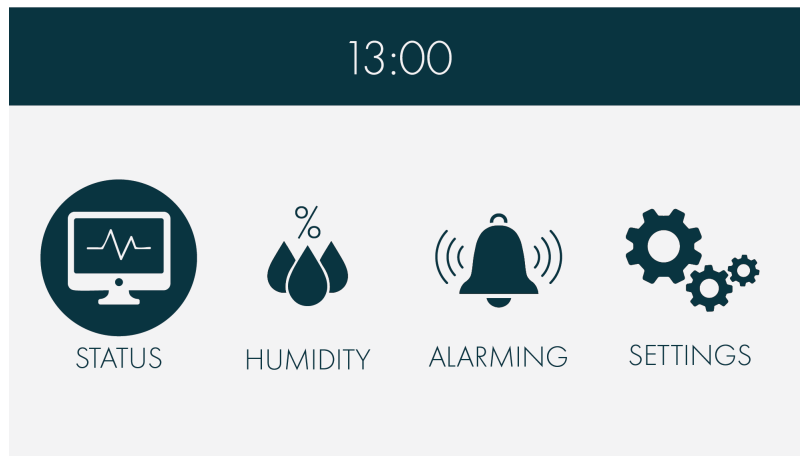
NOTE

See the unit specific Report document for default settings.

3.2. Status

Select the icon and press .

No login is required.




NOTE

Menu contents can vary depending on configuration.

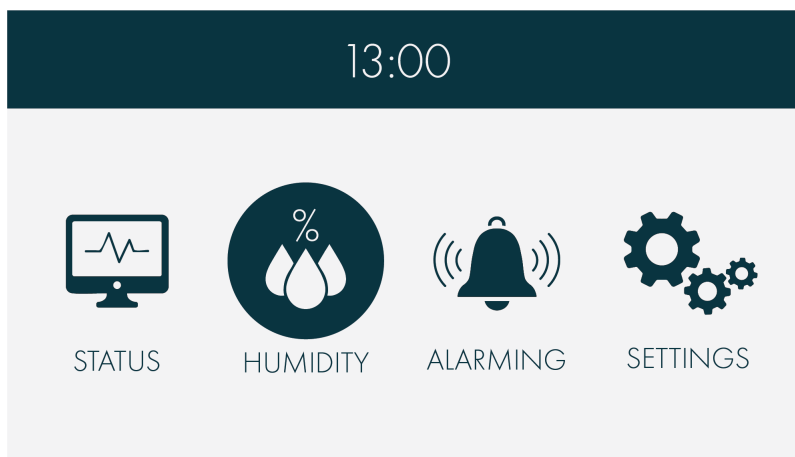
Item	Values	Unit
Operating mode	Start Up Delay*Alarm*Off*Automatic*Manual	
Unit status	Off*Off-Alarm*Waiting*Standby*Starting*Running*Stopping	
Operating type	Sensor*Full capacity*External heater control	
Remote start	On*Off	
Relative humidity	0.0... 100.0	%RH
Dewpoint	-60.0... +60.0	°C
Absolute humidity	0.0... 20.0	g/kg
Humidity setpoint	0.0... 100.0	%RH
Dewpoint setpoint	-60.0... +60.0	°C
Floating setpoint	Sensor value + offset	°C
Humidity setpoint	0.0... 20.0	g/kg
Humidity setpoint (remote)	0.0... 100.0	%RH
Dewpoint setpoint (remote)	-60.0... +60.0	°C
Humidity setpoint (remote)	0.0... 20.0	g/kg
Temperature	-64.0... 200.0	°C
React temperature	-64.0... 200.0	°C
Wet air temperature	-64.0... 200.0	°C
Surface temperature	-64.0... 200.0	°C

Item	Values	Unit
Ext heater signal	0.0... 100.0	%
Calculated heater set-point	0... 150	°C
React max temperature	-64.0... 200.0	°C
Heater output	0... 100	%
React fan	On*Off	
Process fan	On*Off	
Rotor	On*Off	
Time left for service	0... 32000	Hours
Time left for service	0... 1000	Days
Log out		

3.3. Humidity

Select the icon and press .

User password or higher is required.



NOTE

Menu contents can vary depending on configuration.

Item	Values	Unit
Relative humidity	0.0... 100.0	%RH
Dewpoint	-60.0... +60.0	°C
Absolute humidity	0.0... 20.0	g/kg
Humidity setpoint	0.0... 100.0	%RH
Dewpoint setpoint	-60... +60	°C
Humidity setpoint	0.0... 20.0	g/kg

Item	Values	Unit
Humidity setpoint (remote)	0.0... 100.0	%RH
Dewpoint setpoint (remote)	-60... +60	°C
Humidity setpoint (remote)	0.0... 20.0	g/kg
Surface temperature	-64.0... 200.0	°C
Floating setpoint	Sensor value + offset	°C
Floating setpoint offset	-10.0... +10.0	°C
Humidity hysteresis start	-10.0... +10.0	%RH
Humidity hysteresis stop	-10.0... +10.0	%RH
Dewpoint hysteresis start	-10.0... +10.0	°C
Dewpoint hysteresis stop	-10.0... +10.0	°C
Humidity hysteresis start	-10.0... +10.0	g/kg
Humidity hysteresis stop	-10.0... +10.0	g/kg
Remote start	Off*On	
Ext. heater signal	0.0... 100.0	%
Start limit	0.0... 100.0	%
Relative humidity	0.0... 100.0	%RH
Force limit start	0... 100	%RH
Force limit hyst.	-10.0... 0.0	%RH
Humidity controller		>
Operating type	Sensor*Full capacity*External heater control	
Log out		

3.3.1. Humidity controller

Item	Values	Unit
Controller output	0... 100	%
Humidity P-factor	0.00... 20.00	
Humidity I-time	0... 3600	sec
Humidity D-time	0... 3600	sec
Humidity sample rate	1... 60	sec
Humidity startup value	0... 100	%

3.4. Alarming

3.4.1. Alarm types

The control system can give two different types of notifications:

- Alarm - stops the whole unit. Needs to be manually reset.
- Information - warning or indication of service need.


3.4.2. Alarm reset

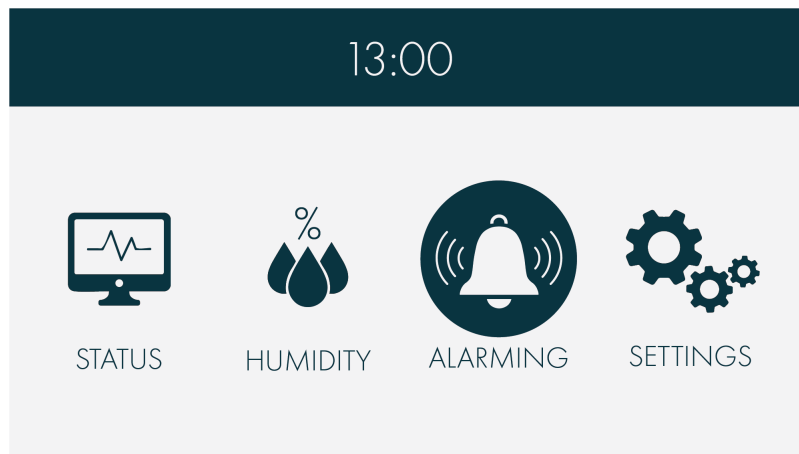
Access the alarming menu with the HMI buttons.

Alarm list is showing all active alarms.

Reset all active alarms after correction: Select **Acknowledge All Alarms > Yes** and press ENTER. User or higher login is required.

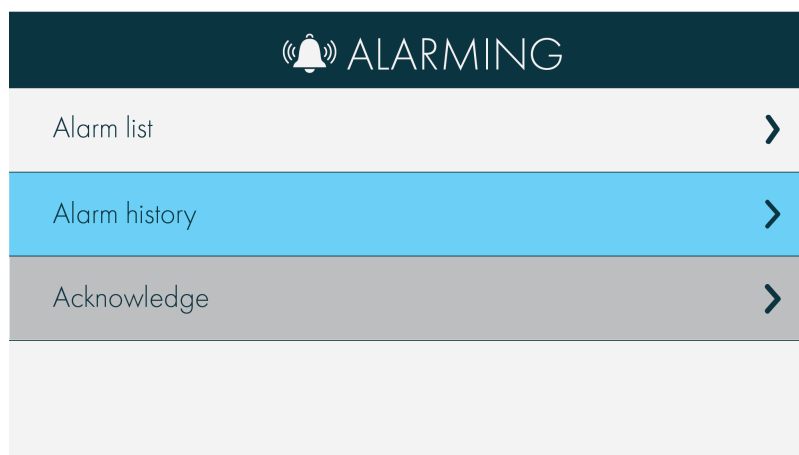
3.4.3. Alarm menu

Select the icon and press .



No login is required.

Select list of active alarms or alarm history list, latest alarm first.



Acknowledge all alarms and Alarm settings require User or higher login.

Select Acknowledge to reset active alarms after correction.

3.4.4. Alarm settings



NOTE

Menu contents can vary depending on configuration.

Item	Values	Unit
Humidity deviation		>
Temperature deviation		>
React filter clogged, delay	0... 3600	sec
Process filter clogged, delay	0... 3600	sec
Sensor fault react temp, delay	0... 300	sec
Sensor fault wet air temp, delay	0... 300	sec
Sensor fault surface temp, delay	0... 300	sec
Sensor fault humidity sensor 1, delay	0... 300	sec
Sensor fault humidity sensor 2, delay	0... 300	sec
Sensor fault temp sensor 1, delay	0... 300	sec
Sensor fault temp sensor 2, delay	0... 300	sec
Process fan fault, delay	0... 60	sec
React fan fault, delay	0... 60	sec
Rotor fault, delay	0... 60	sec
Rotor stopped, delay	0... 3600	sec
Heater fault, delay	0... 60	sec
Long cooling time, delay	0... 3600	sec
Clear alarm history	Cancel*Reset	
Log out		


3.4.5. Humidity deviation

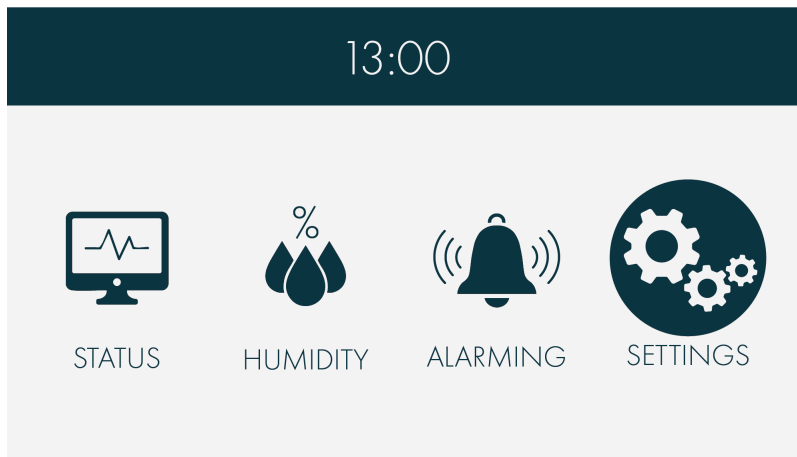
Item	Values	Unit
Humidity deviation type	Disabled*High limit*Low limit*Both	
Delay	0... 300	min
High limit	0.0... 100.0	%RH
Low limit	-100.0... 0.0	%RH

3.4.6. Temperature deviation

Item	Values	Unit
Temperature deviation type	Disabled*High limit*Low limit*Both	
Delay	0... 300	min
High limit	-100.0... 100.0	°C
Low limit	-100.0... 100.0	°C

3.5. Settings

Select the icon and press .



NOTE

Menu contents can vary depending on configuration.

Operating mode	>
Sensors	>
Remote	>
Communication	>
Service	>
HMI settings	>
Version	>
Time & Date	>

3.5.1. Operating mode

Fan mode	>
Timer	>

Fan mode

Item	Values	Unit
Process fan mode	On demand*Continuous*Intermit	
Intermit interval	1... 120	min
Intermit run time	1... 30	min

Timer

Item	Values	Unit
Timer	Disabled*Enabled	
Timer status	Off*On	
Start time	00:00	hh:mm
Stop time	00:00	hh:mm

3.5.2. Sensors

Item	Values	Unit
Operating type	Sensor*Full capacity*External heater control	
Control type	Relative*Dewpoint calc*Absolute calc	
Humidity sensor 1 type	Disabled*0-10V*0-20mA*4-20mA*Modbus	
Humidity sensor 1 min	0... 100	%RH
Humidity sensor 1 max	0... 100	%RH
Humidity sensor 2 type	Disabled*0-10V*0-20mA*4-20mA*Modbus	
Humidity sensor 2 min	0... 100	%RH
Humidity sensor 2 max	0... 100	%RH
Control sensor	Sensor 1*Sensor 2*Average*Minimum*Maximum	
Temp sensor 1 type	Disabled*0-10V*0-20mA*4-20mA*Modbus	
Temp sensor 1 min	-80... 200	°C
Temp sensor 1 max	-80... 200	°C
Temp sensor 2 type	Disabled*0-10V*0-20mA*4-20mA*Modbus	
Temp sensor 2 min	-80... 200	°C
Temp sensor 2 max	-80... 200	°C
Temp control sensor	Sensor 1*Sensor 2*Average*Minimum*Maximum	
Restart		

3.5.3. Remote

Item	Values	Unit
External start	Disabled*Enabled	
Humidity control type	Sensor*Full capacity*External heater control	
External heater control type	Disabled*0-10V*0-20mA*4-20mA	
Remote setpoint type	Disabled*0-10V*0-20mA*4-20mA	
Remote setpoint min	-100... 100	%RH / °C / g/kg
Remote setpoint max	-100... 100	%RH / °C / g/kg
Restart		

3.5.4. Communication

TCP/IP

Item	Values	Unit
IP address		
Netmask		
Gateway		
Use DHCP	Active*Passive	
Restart		

Modbus

Item	Values	Unit
Slave ID	1... 247	
Baud rate	9600*19200*38400	
Data + Stop bits	8+1*8+2	
Parity	None*Even*Odd	
Termination	Active*Passive	
Restart		

3.5.5. Service

Only for service engineers.

Corresponding login required.

3.5.6. HMI settings

Item	Values	Unit
Start view	Simple*Advanced	
Screen saver	Yes*No	
Screen saver delay	1... 60	min
Auto logout delay	1... 60	min

3.5.7. Version

Item	Values	Unit
Unit type		
Fabrication number		
Software version		

3.5.8. Time & Date

Item	Values	Unit
Set date		
Set time		

4. Fault tracing



NOTE

Other alarm indications are possible. Consult Munters service in these cases.

Fault symptom	Indication	Possible cause	Corrective action	
The unit has stopped.	The display window is not lit.	Power supply failure.	Check the supply to the unit.	
		A fuse and/or circuit breaker has tripped.	Investigate the cause of the fault and rectify. Reset the fuse and circuit breaker. If the fault re-occurs, contact Munters service.	
The unit is in AUTO mode and has stopped.	The display window is lit.	Dehumidification is not required. Operation mode is STANDBY	Make sure that the current humidity level is lower than the setpoint. Set the setpoint lower than the actual humidity value and see if the unit starts. Make sure that the the humidity sensor value is correct.	
		Remote start not connected. Operation mode is WAITING.	Make sure that the wiring for the remote start function is correct. Make sure that the input is bridged.	
The unit has stopped.	The red alarm lamp on the control panel is blinking. The following text is shown on the display:			
		Process fan fault	Low power supply	Check flows, fan motor and circuit breaker. Remedy any faults, reset the circuit breaker.
		React fan fault		
		Rotor fault	Drive motor overheating; rotor runs with difficulty.	Check the motor, drive and the rotor seals. Reset the circuit breaker.
Rotor stopped	Drive belt error.	Check the tension and condition of the drive belt. Check the rotor rotation sensor.		

Fault symptom	Indication	Possible cause	Corrective action
	Heater fault	The air flow is too low. One of the high temperature cut-outs has tripped, either due to an obstruction in the reactivation airflow or because the reactivation airflow has been set too low.	Make sure that the airflow is correct, see the User manual for the unit. Reset the motor circuit breaker.
		Reactivation heater error.	Reset the fuse and circuit breaker. If the fault re-occurs, contact Munters service.
	Sensor fault React Temperature	Temperature is out of the sensor limits.	Investigate the sensor function.
	Sensor fault Wet Air Temperature		
	Sensor fault Surface Temperature		
	Sensor fault Temperature Sensor		
Sensor fault Humidity Sensor	Humidity is out of the sensor limits.		
Yellow information symbol on the screen.	The following text is shown on the display:		
	React filter clogged	Inlet filter is clogged	Inspect and replace filter if necessary
	Process filter clogged		
	Time for service	Service interval counter has reached the preset service time.	Contact Munters to book a service visit.
	Sensor Fault Humidity Sensor 1	Relative humidity sensor 1 is out of the sensor limits	Investigate the sensor function.
	Sensor Fault Humidity Sensor 2	Relative humidity sensor 2 is out of the sensor limits	
	Sensor Fault Temperature 1	Temperature sensor 1 is out of the sensor limits	
	Sensor Fault Temperature 2	Temperature sensor 2 is out of the sensor limits	
	Too long cooling time	The cooling temperature isn't reached within set time	Check the air flow and the heater.
	Humidity deviation	Humidity measurement deviates from the humidity set-point more than the preset limits	Reset the alarm.
	Temperature deviation	Temperature measurement is not between the preset limits	
The unit is running but is not reducing the humidity.	Humidity deviation	Reactivation and process airflows do not correspond to the rated airflows.	Measure and adjust the reactivation and process airflows, see the User manual for the unit.

Fault symptom	Indication	Possible cause	Corrective action
		The humidity sensors are not working properly.	Make sure that the humidity transmitter works properly and is correctly connected as described in the recommendations.
		P-band, I-time or hysteresis are incorrectly set.	Check these parameters.
		The rotor is worn out.	Contact Munters service.

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