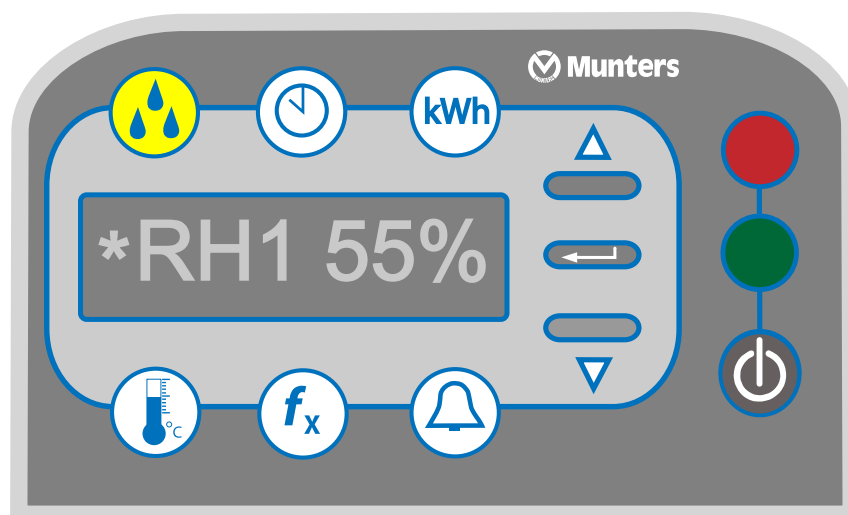


Supplement

ComDry Control System



Operation instructions

Valid for units from serial no.
20001

MEN-CDCS-A1808

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1 Operation

1.1 Safety



WARNING!

The unit must not be splashed with or immersed in water.

The unit can restart automatically without warning following a power failure.

Do not operate the unit if the power cable or plug is damaged, risk of electrical shock.

Do not pull the plug with wet hands, risk of electrical shock.

Do not insert fingers or any objects into the air vents, rotating fans are inside.

Do not cover the unit as that can block air intake or outlet and cause a fire.

If the unit has overturned, cut the power immediately.

1.2 Introduction

1.2.1 Humidity control

The ComDry dehumidifier is equipped with a sophisticated microprocessor based control system. This, in combination with the built-in humidity/temperature sensor in the process air inlet, makes it possible to set both the control and presentation of the humidity to either relative humidity (RH%), dew point (Dp °C) or absolute humidity (X gr/kg). The control system additionally checks the temperatures before and after the heater, as well as in the wet air after the rotor. A high safety level is obtained by various temperature sensors. Too high temperatures gives a reduction of the heater power, while excessive temperatures will make the system issue an alarm and shut the dehumidifier down in a controlled way. For further explanation, see 2.1, *Humidity* and 2.5, *Functions*.

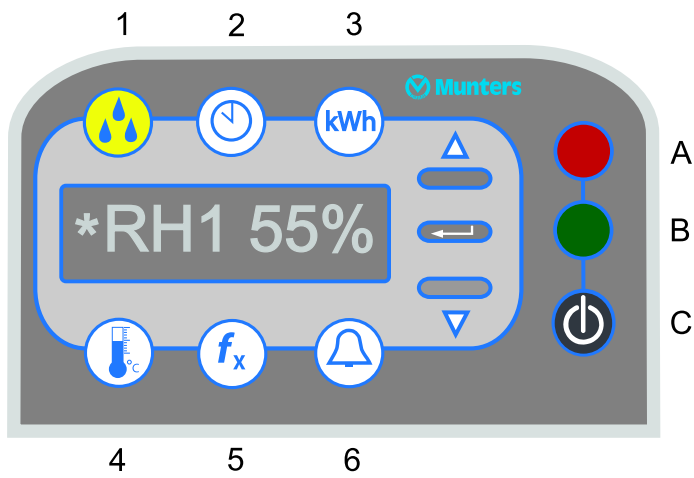
NOTE! *The dehumidifier always operates in automatic mode (moisture based operation). As default it will use the built-in humidity/temperature sensor, as option an external sensor.*

1.2.2 Fan modes

Depending on the application, the dehumidifier can be run in different process fan modes: Fan “ON” (continuous), “INT” (INTermittent) or “DEM” (on DEMand).

For further explanation, see 2.5, *Functions*.

1.3 Control panel overview



Menu indicators 1-6

- | | | |
|------------------|---------------------|------------------------|
| 1. Humidity menu | 4. Temperature menu | A. Alarm indicator |
| 2. Time menu | 5. Functions menu | B. Operation indicator |
| 3. Power menu | 6. Alarm menu | C. On/Off button |

Menu button	Function
	Up/Right button
	Enter/Confirmation button
	Down/Left button

Table 1.1 Menu button functions

1.4 Initiation and start

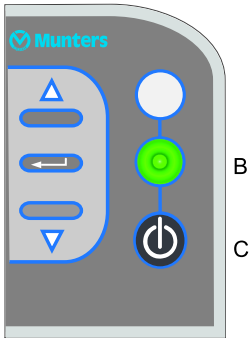
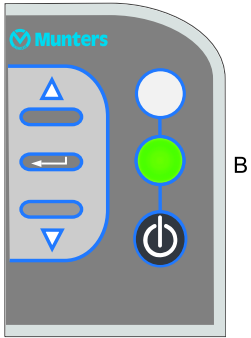
1.4.1 Boot the control system

Connect the dehumidifier to mains. **Result:** The control system will initiate by flashing all LEDs for a few seconds, and the display first shows the ComDry machine type, then the set frequency, e. g. [50Hz] and finally the software version number, e. g. [VER: 1.00] and the current humidity level, e. g. [*RH1 46%].

NOTE! *The boot sequence takes about 10 seconds. Let the control system finish the booting before attempting to start the dehumidifier.*

1.4.2 Start the dehumidifier

Follow these steps to start the dehumidifier:

Step	Action	Illustration
1	<p>Press the On/Off button (C) once to start the dehumidifier.</p> <p>Result: If the measured humidity is lower than the Set Value, the green operating indicator (B) will start to flash in a long on/short off sequence. Depending on fan mode setting, the process fan will run or not. The unit is now in stand-by mode.</p>	
2	<p>The dehumidifier starts to dehumidify when the measured humidity is equal to or greater than the Set Value, and the operating indicator (B) will shift to continuously lit.</p>	

1.5 Stop the dehumidifier



CAUTION!

Do not unplug the dehumidifier while it is cooling down.

The fan stops and the heater can be very hot, which can result in damage to the heater and other components close to it.

Follow these steps to stop the dehumidifier:

Step	Action	Result/Illustration
1	Press On/Off once to stop the dehumidifier.	The green operating indicator starts flashing with equally long and short on and off periods.
2	The unit continues to run for a while in order to cool down and then stops.	

1.6 Quick stop



CAUTION!

Only quick stop the dehumidifier in case of an emergency.

The fan stops and the heater can be very hot, which can result in damage to the heater and other components close to it.

In case of emergency, stop the dehumidifier by pulling the mains plug or, if it is permanently connected to mains, by using the external circuit breaker.









1.7 Automatic start after power failure


If the dehumidifier is switched on it will revert to operation after a power failure, regardless of if it was running or in stand-by.

1.8 Navigate the menus

The three buttons ,  and  on the control panel make it possible to navigate the menus.

Follow these steps to navigate the menus:

Step	Action	Result/Illustration
1	To select a menu, press  or  until the selected menu appears.	The selected menu indicator is lit.
2	To enter the menu, press  .	The menu indicator starts flashing. 
3	Use  or  to scroll through the menu.	
4	Leave the menu by using  and go to [EXIT]. Press  .	The menu indicator stops flashing.

NOTE! All menu lists are circular. At the end of each menu you will find [EXIT]. The quickest way of navigating there is to press  one time after having entered a menu.

1.9 Access levels






The following access levels and actions are available in the control system:

Access level	Available actions	Comment
ACCESS	View all processing data	
ACCESS *	<ul style="list-style-type: none"> ▪ View all processing data ▪ Adjust relevant parameters (set value RH, reset h or kWh etc.) 	
ACCESS **		<ul style="list-style-type: none"> ▪ Level 2 is for dedicated personnel only (qualified personnel or Munters Service) ▪ If you have accidentally reached this level the code is 0000 for returning to level 1.

1.10 Access the control system

The control system settings and counters are protected against unauthorized change using two access levels. See also section 1.9, *Access levels*.



Follow these steps to access the system:

Step	Action	Result/Illustration
1	To change the settings you must have “one-star” access. Go to menu Functions, see section 1.8, <i>Navigate the menus</i> .	The menu indicator is flashing. 
2	Scroll up to [ACCESS] using  .	
3	Press and hold  until [ACCESS] changes to [ACCESS*].	The system is now unlocked, and it is possible to make new settings alternatively reset the counters.
4	A higher, PIN-code protected, “two-star” access level exists. If an attempt to get higher access is made with the machine switched off, the display will change to [0 0 0]. Press  four times until [ACCESS*] is visible again.	

NOTE! *The system will return to locked mode automatically after five minutes without any activity.*

NOTE! *The system always starts in locked mode after power-up, regardless of access level prior to power loss.*







Follow these steps to force the system into locked mode:

Step	Action	Result/Illustration
1	Make sure the unit is switched off.	
2	Go to menu "Functions"	
3	Navigate to [ACCESS*]. See general instruction in section 1.8, <i>Navigate the menus</i> .	
4	Start the unit by pressing On/Off.	The green light illuminates
5	Press and hold  until [ACCESS*] changes to [ACCESS].	The system is now locked, and it is not possible to make new settings or to reset the counters.


1.11 Change the system settings

To change settings you must have “one-star” access, see 1.10, *Access the control system*.

Follow these steps to change the system settings:






Step	Action	Result/Illustration
1	Navigate to the parameter you want to change by using  or  .	
2	Press  .	The setting starts to flash.
3	Change the value with  and  .	
4	Confirm the new setting with  .	The setting stops to flash.

NOTE! *If the new setting is not confirmed within 30 seconds, the display changes back to the old setting.*

NOTE! *Read-only values are not changeable. They will not start to flash if  is pressed, regardless of access level. To find out if a parameter is changeable or read-only, see section 2, *Menus and parameters*.*

1.12 Reset an alarm

Follow these steps to reset an alarm:






Step	Action	Result/Illustration
1	Write down the alarm message before resetting the alarm. The information can be helpful when troubleshooting.	
2	Wait until the dehumidifier has stopped. Press  .	The display changes to [Rst NO] and [NO] is flashing. 
3	Toggle [NO] to [YES] by pressing either  or  Confirm by pressing  .	When the alarm has been reset, the menu system returns to its start position.

NOTE! *If the cause of an alarm is still present, the alarm can reappear after resetting, even if the dehumidifier is stopped.*

1.13 Reset the counters

To reset counters you must have “one-star” access, see 1.10, *Access the control system*.

Follow these steps to reset the counters:






Step	Action	Result/Illustration
1	Navigate to the counter you want to reset. See section 1.8, <i>Navigate the menus</i> .	
2	Press 	The display changes to [Rst NO] and [NO] is flashing. 
3	Toggle [NO] to [YES] by pressing either  or  . NOTE! If [Rst NO]/[Rst YES] is left without action for 30 seconds, the display automatically changes back to the stored counter value.	
4	Confirm the resetting with 	The counter is reset.

NOTE! Pressing ENTER when the display shows [Rst NO] will return the stored counter value in the display again.

1.14 Restore the default settings

To restore the factory default settings you must have “one-star” access, see 1.10, *Access the control system*.

Follow these steps to restore all the default factory settings:

Step	Action	Result/Illustration
1	Go to the Functions menu and navigate to Default.	
2	Press 	The display changes to [Rst NO] and [NO] is flashing. 
3	Toggle [NO] to [YES] by pressing either  or 	
4	Confirm by pressing 	All values reverts to factory settings.

1.15 Service interval alarm

The Service interval [T-xxxx h] can be set between 500 and 8.000 hours.


To reset counters you must have “one-star” access. Follow these steps to change the service interval (see also 1.11, *Change the system settings*):

Step	Action	Result / Illustration
1	Go to the Time menu.	
2	Navigate to "Service interval" [T-xxxx h]	
2	Adjust the "Service interval" [T-xxxx h] in steps of 100 hours	
3	Reset the "Time to service" counter [S xxxx h].	

NOTE! The "Time to service" counter can be reset at any time. When the counter is reset, it starts counting up or down again from the pre-set value [T-xxxx h] depending on how the "Service interval" has been adjusted.

The Time to service counter [S xxxx h] counts down to zero. When it reaches zero, the system issues a "soft alarm" the next time the unit is switched on. The alarm only makes the alarm menu symbol flash, not the red alarm indicator, and [TIME FOR SERVICE] is shown in the display. The alarm will not make the unit stop. The unit can still be operated as normal with the alarm present.

Follow these steps to check the service parameters and stop the service alarm:

Step	Action	Result / Illustration
1	To see or check parameters, either reset the alarm by pressing  and reset it, or leave the Alarm menu with [EXIT].	
2	To stop the alarm completely, navigate to the "Time to service" counter [S 0000] in this menu and reset it.	

NOTE! Even if the alarm has been reset in the Alarm menu, it will be re-issued the next time the unit is switched on.

See the User manual for proper maintenance action.

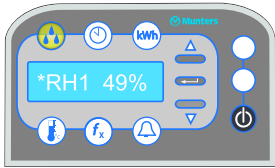
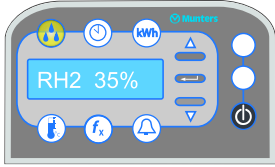

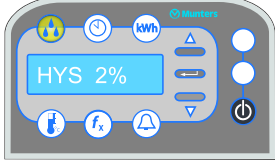
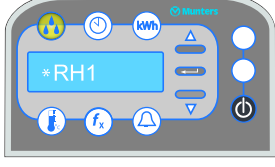
2 Menus and parameters

To set the system parameters, see 1.11, *Change the system settings* and 1.13, *Reset the counters*. For limits when setting parameters, see 2.7, *Min, max and default values*.

2.1 Humidity

The dehumidifier is always operating in automatic mode. It will dehumidify until the desired humidity level (Set Value minus Hysteresis value) is reached. Then the green operating indicator will start to flash in a long on and short off sequence, indicating that the dehumidifier is in stand-by. It will start to dehumidify again when the humidity is equal to, or greater than the Set Value.

Type of humidity control (relative humidity, dew point or absolute humidity) and unit system (metric or imperial) governs the readings and settings in this menu. See 2.5, *Functions* for reference and explanation.

Display view	Description	Type	Setting option
	Internal sensor reading	READ ONLY	D1.../X1...
	(External sensor reading) ¹	READ ONLY	D2.../X2...
	Set Value Humidity	ADJUSTABLE	HIGHER/LOWER
	Hysteresis	ADJUSTABLE	HIGHER/LOWER
	Controlling sensor	(ADJUSTABLE) ¹	(*RH2) ¹ , (*RH3) ¹
¹) Only when external humidity sensors are connected			

2.1.1 Internal controlling sensor

The internal humidity sensor is the controlling sensor as default. This is indicated by a (*) before the reading in the display (*RH1... / *D1... / *X1...).




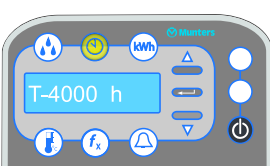
2.1.2 External controlling sensor

Optionally, an external sensor can be connected. It will automatically be designated RH2 / D2 / X2) by the system. When connected, it is possible to choose external sensor as control. The display will then show (*RH2... / *D2... / *X2...).

With an external sensor set as control sensor, it is possible to disconnect and reconnect the external sensor without losing the control setting, e.g. [*RH2...] while the unit is switched off (but powered). When switched on, the system makes five attempts (during 20 seconds) to contact the external controlling sensor. If this fails, the system reverts to the internal RH1-sensor. Subsequently any renewed assignment of the external sensor as control must be carried out manually.

2.2 Run time

Run time is registered as long as the process air fan is operating. It stops counting when the unit is in stand by mode or is switched off. The system has two run time counters, one resettable trip meter and one non-resettable total run time counter.

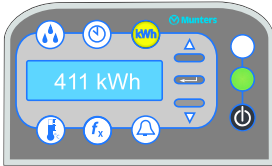

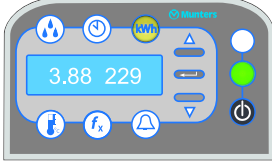
Display view	Description	Type	Setting option
	Run time trip meter	RESETTABLE	Yes / No
	Total run time (Display jumps from "TOTAL" to display view and back).	READ ONLY	
	Time to service	RESETTABLE	Yes / No
	Service interval	ADJUSTABLE	Every 100 hours

2.3 Power

The ComDry dehumidifier is equipped with an integrated, resettable kWh counter. The energy consumption is registered when the dehumidifier is connected to mains, regardless of being switched on, off or in stand-by mode. The counter shows the consumption as whole kW-hours.

It is also possible to monitor real time Power (W), current (A) and voltage (V) measurements in this menu.

NOTE! *Resetting is always performed manually. Unplugging the unit (or a power failure) will not reset the kWh counter.*

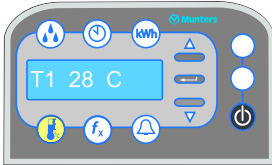
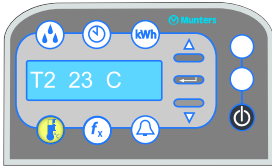
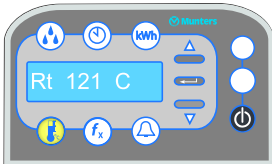
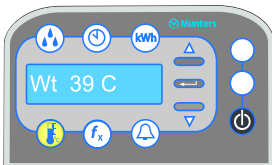

Display view	Description	Type	Setting option
	kWh counter	RESETTABLE	Yes / No
	Real time Power	READ ONLY	
	Real time Current/Voltage	READ ONLY	

2.4 Temperature

The air temperature is measured in different positions in the dehumidifier. All values are read-only.

If external humidity/temperature sensors are connected, these will also be found in the list. The reactivation inlet temperature (Ri) before the heater and reactivation temperature (Rt) after the heater, as well as the wet air temperature (Wt) and the process air inlet temperature (T1) is measured.

The temperature is shown in degrees Celsius or Fahrenheit, depending on the setting in the Functions menu.

Display view	Description	Type	Setting option
	Process air inlet temperature (internal sensor)	READ ONLY	
	(External sensor) ¹	READ ONLY	
	Reactivation temperature	READ ONLY	
	Wet air temperature	READ ONLY	
	Reactivation inlet temperature	READ ONLY	
¹) Only if external sensor is connected			

2.5 Functions

2.5.1 Process fan mode

There are three process fan modes:



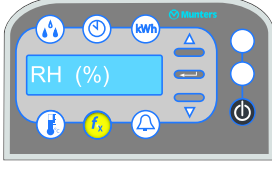


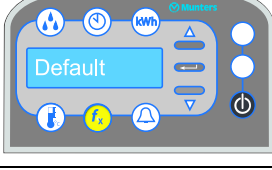

Fan mode	Description
[Fan ON]	In [Fan ON] mode, the dehumidifier will run the process fan continuously, regardless of there is a dehumidification need or not. This is the default mode.
[Fan INT] (INTermittent)	In [Fan INT] (INTermittent) mode, the fan will stop when the desired humidity (Set Value minus Hysteresis) is reached. If the humidity reading stays below the Set Value, the process fan will anyhow start after 30 minutes to let the built-in sensor more accurately sense the condition of the incoming process air. The fan will run for a minute to produce a proper measurement. If the humidity is still below the Set Value, the fan will stop again. This is repeated until the humidity reaches the Set Value, which will make the dehumidification start again.
[Fan DEM] (on DEMand)	In [Fan DEM] (on DEMand) mode, the fan will stop when the desired humidity (Set Value minus Hysteresis) is reached. It will start again when the sensed humidity is equal to, or greater than the Set Value. This gives in practice a control with greater hysteresis than "Fan INT", depending on the following: When the dehumidifier has reached the desired humidity level, it will shift to stand-by and stop the process fan. After a while, internal machine heat will increase the temperature of the humidity sensor. This makes the sensor reading even lower, i.e. the system functions as if there was a "negative hysteresis". As a result, a greater humidity load will be necessary to make the dehumidifier start compared with the "Fan INT" mode.

2.5.2 Humidity control and units

It is possible to set the control/presentation of the humidity to either Relative humidity (RH%), Dew point (Dp °C) or absolute humidity (X gr/kg).

Depending on unit system setting, SI for metric or IP for Imperial, the readings will be shown in Celsius and g/kg, or Fahrenheit and grain/lb. All these settings are made in the Functions menu.

2.5.3 Display information

Display view	Description	Type	Setting option
	Process fan running modes	ADJUSTABLE	Fan ON, INT, DEM
	Metric or imperial units	ADJUSTABLE	SI, IP
	Humidity	ADJUSTABLE	RH, Dp, Absolute humidity
	Unit serial no	READ ONLY	ID no
	ACCESS Level	ADJUSTABLE	ACCESS*
	Restore to default settings (only possible when dehumidifier is OFF).	RESETTABLE	Yes or No
	Mains frequency	ADJUSTABLE	50 or 60 Hz

2.6 Alarm

Should an operation fault occur, the red alarm indicator and the alarm menu indicator will start to flash. The cause of the alarm will be shown in the display and the dehumidifier will stop after it has cooled down.

This can take a couple of minutes.



CAUTION!

Do not unplug the dehumidifier while it is cooling down – the reason for the alarm can be overheating.

Display view	Description	Type
	Source of alarm in full text	RESETTABLE
	Alarm status	READ ONLY

2.7 Min, max and default values

2.7.1 Humidity

This table shows the minimum, maximum and default humidity values:

Parameter		RH (%)	Dp (°C)	X (gr/kg)	Dp (°F)	X (grain/lb)
SV_ (set value)	Max.	95	40	40	99	300
	Default	50	9	7,3	49	51
	Min.	5	-30	0,5	-20	2
HYS_ (hysteresis)	Max.	10	10	1,0	10	10
	Default	2	2	0,2	2	2
	Min.	0	0	0,0	0	0

Table 2.1 Minimum, maximum and default humidity values

2.7.2 Service time

This table shows the minimum, maximum and default service time values:

Parameter	Default setting	Max.	Min.
T—h (service time)	4000	8000	500

Table 2.2 Time, min/ max and default service time values

2.7.3 Functions

This table shows the default settings and setting options of the Functions menu:

Parameter	Default setting	Options
Fan	Fan ON	Fan INT, Fan DEM
Unit	SI (metric units)	IP (imperial units)
Humidity	RH (%)	Dp (°C / °F)
		X (gr/kg) / (grain/lb)

Table 2.3 Default settings and setting options of the Functions menu

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