calorex®
CLIMATE SOLUTIONS

ORIGINAL SERVICE INSTRUCTIONS
VPX 33-55-77 / VPX-T 33-55-77

| en |

DANTHERMGROUP

en

Introduction

Table of contents

Overview

Target group

As the dehumidifier embodies electrical and rotational equipment, only a competent person should carry out any work on this type of machine. The dehumidifier has to be installed to current IET electrical regulations.

Safety precautions

It is the responsibility of the operator to read and understand this service manual and other information provided and to use the correct operating procedure.
Read the entire manual before the initial start-up of the unit. It is important to know the correct operating procedures for the unit and all safety precautions to prevent the possibility of property damage and/or personal injury.

It is the responsibility of the installer to ensure the conformity of all, not supplied cables towards national regulations.

Copyright

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Reservations

Calorex reserves the right to make changes and improvements to the product and the service manual at any time without prior notice or obligation.

Recycling

The unit is designed to last for many years. When the time comes for the unit to be recycled, it should be recycled according to national rules and procedures to protect the environment. The VPX dehumidifiers contain R407C refrigerant and compressor oil. The compressor must be returned to authorities for disposal according to local regulations.

⚠ DANGER

Type and source of hazard
This symbol in connection with the word "Danger" warns of a high risk or severe injury or acute danger to life.
  • Measures to avert danger or immediate measures if the risk occurs are described in this way

⚠ WARNING

Type and source of hazard
This symbol in connection with the word "Warning" warns of a risk involving severe injury.
  • Measures to avert danger or immediate measures if the risk occurs are described in this way

⚠ CAUTION

Type and source of hazard
This symbol in connection with the word "Caution" warns of a risk of minor or moderate injury and material damage.
  • Measures to avert danger or immediate measures if the risk occurs are described in this way

❗ NOTICE

In connection with this symbol you will find further tips and information concerning the use of the device.

Declaration of Conformity

Stationary Drying & Ventilation

Dantherm A/S
Marienlystvej 65
DK - 7800 Skive
Tel.:   +45 96 14 37 00
Danthermgroup.com

Hereby declares for the following products in all configurations:

351530	VPX 33
351531	VPX 55
351532	VPX 77
351533	VPC 33
351534	VPC 55
351535	VPC 77
351536	VPX-T 33
351537	VPX-T 55
351538	VPX-T 77

That these products are in conformity with the following regulations:
- 2006/42/EC Machinery Directive
- 2014/30/EU EMC Directive
- 2011/65/EU RoHS Directive
- 1907/2006/EC REACH Regulation
- 2014/53/EU Radio Equipment Regulations 2017

and are manufactured in conformity with the following harmonised standards:
- DS/EN ISO 12100:2010 — Safety of Machinery – General principles for design
- DS/EN 378-1:2016+A1:2020 — Refrigerating Systems and Heat Pumps – Safety and environmental requirements – Part 1
- DS/EN 378-2:2016 — Refrigerating Systems and Heat Pumps – Safety and environmental requirements – Part 2
- DS/EN 60335-1:2012+A1:2019 — Household and Similar Electrical Appliances – Safety – Part 1
- EN 60335-2-40:2003 — Household and similar electrical appliances - Safety - Part 2-40

Skive, 03-11-2022

Business Unit Director Lars Brodersen

Managing Director Jakob Bonde Jessen

UK CA

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Declaration of Conformity
Stationary Drying & Ventilation

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351535	VPC 77
351536	VPX-T 33
351537	VPX-T 55
351538	VPX-T 77

That these products are in conformity with the following regulations:
- Supply of Machinery (Safety) Regulations 2008
- Electromagnetic Compatibility Regulations 2016
- Radio Equipment Regulations 2017
- UK REACH Regulations
- The Restriction of the use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulation 2012

and are manufactured in conformity with the following harmonised standards:
- DS/EN ISO 12100:2010   Safety of Machinery – General principles for design
- DS/EN 378-1:2016+A1:2020   Refrigerating Systems and Heat Pumps
  – Safety and environmental requirements – Part 1
- DS/EN 378-2:2016   Refrigerating Systems and Heat Pumps
  – Safety and environmental requirements – Part 2
- DS/EN 60335-1:2012+A1:2019   Household and Similar Electrical Appliances – Safety – Part 1
- EN 60335-2-40:2003   Household and similar electrical appliances - Safety - Part 2-40

Skive, 03-11-2022

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Business Unit Director Lars Brodersen

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Managing Director Jakob Bonde Jessen

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Product description

Overall description

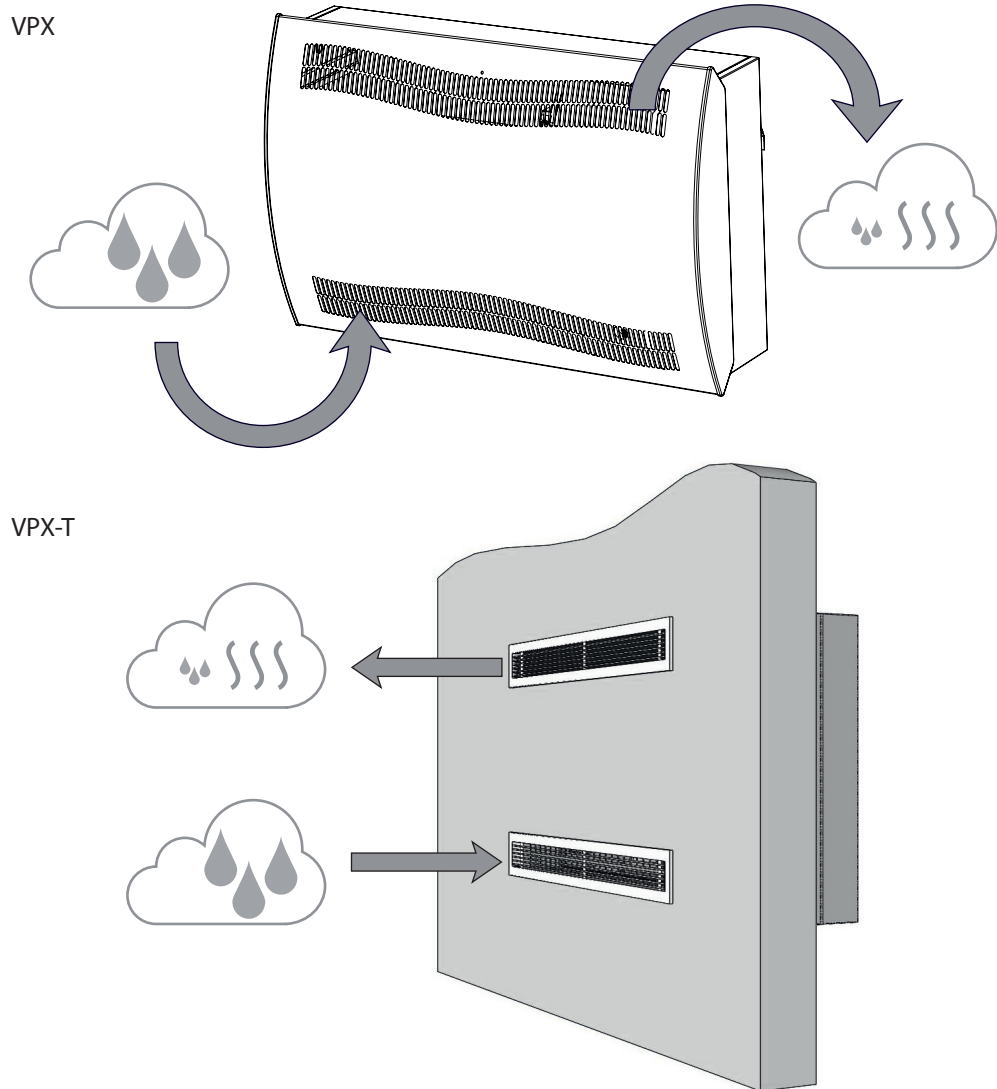**Air flow direction**   This illustrates the functional principle of the VPX 33-55-77 and the VPX-T 33-55-77.

VPX

VPX-T

Fig. 1

Functionality of the dehumidifier   VPX 33-55-77 and VPX-T 33-55-77 work in accordance with the condensation principle.
Humid air from the pool room is drawn into the unit by one or two fans.
When passing through the evaporator the air is cooled down to below dew point and water vapour is condensed into water, which is drained.
The dry air is then passed through the condenser where it is heated and returned to the pool room. As a result of the latent heat from the condensation process and the compressor energy the return air temperature to the pool room is approx. 5ºC higher than the air from the pool room.

Fan control

When the dehumidifier is started by the hygrostat, the fan(s) are activated at the same time as the compressor.
In order to check the humidity level the units are starting the fan(s) once an hour for one minute (**NOTE: only applicable to VPX-T 33-55-77 units**):
- If the humidity is above the selected setpoint, the unit starts dehumidifying.
- If the humidity is below the setpoint, the unit will remain off and check the humidity level again after one hour.

Compressor control

To protect the compressor against overloading there is a timer which prevents the dehumidifier from starting more than 10 times pr hour. It means, that there is at least 6 minutes between every start up.

Defrosting

The unit is equipped with an intelligent defrost function. The unit monitors the temperature of the evaporator. When the temperature has been below a certain temperature for a certain period of time, the unit will switch to active defrosting. The fans will stop and the magnetic valve will open.
The hot gas can now pass through the evaporator.
When the evaporator has the right temperature again the magnet valve will close and the dehumidification will continue.

Safety circuit

If the temperature in the dehumidifier increases to a temperature of more than 55 °C (in case of fan failure or room air temperature higher than 36 °C), the compressor stops automatically to avoid damaging it. When the temperature allows it the dehumidification will continue.

Cable groove
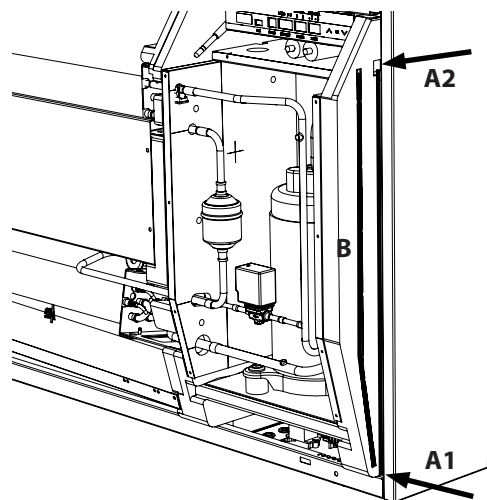
Two cable grooves for accessory make it easy to guide the cables from the control panel to the mains electricity connection and out of the unit.

Groove B is for use with cable from external RH sensor as it requires a seperate groove to avoid interference.

All other accessory cables are to be placed in groove A1-A2.

LED

An LED is placed at the front of the unit. The LED light indicates different modes of the unit.
Find a description of the different modes in section "LED light and troubleshooting" on page 38.

VPX Presentation

Pos.	Part	Illustration
1	LED lamp	
2	Air outlet	
3	Air inlet	
4	Drip tray	
5	Control panel (behind the cover)	
6	Cable groove (for accessory only)	
7	Humidity sensor	
8	Wall mounting spacers (supplied loose)	
9	Mains electricity connection (behind the lid)	
10	Wall bracket	
11	Water drain	

Front cover

Inside (front cover removed)

Rear view

Bottom view

Fig. 2

VPX-T Presentation

Pos.	Part	Illustration
1	LED lamp	
2	Control panel (behind a cover)	
3	Drip tray	
4	Cable groove (for accessory only)	
5	Wall bracket	
6	Mains electricity connection (behind the lid)	
7	Air outlet	
8	Humidity sensor	
9	Air inlet	
10	Water drain	

Front cover (plant room side)

Inside (front cover removed)

Rear view

Bottom view

Fig. 3

Enclosure dimensions

VPX 33-55-77

male 3/4" stub, without threading

56

Ø 3/4"

430

326,1

769,2

699,9

315,6

VPX 33 - 1010
VPX 55 - 1160
VPX 77 - 1495

Fig. 4

VPX-T 33-55-77

male 3/4" stub, without threading

56

Ø 3/4"

430

304

700

294

VPX-T 33 - 998
VPX-T 55 - 1148
VPX-T 77 - 1483
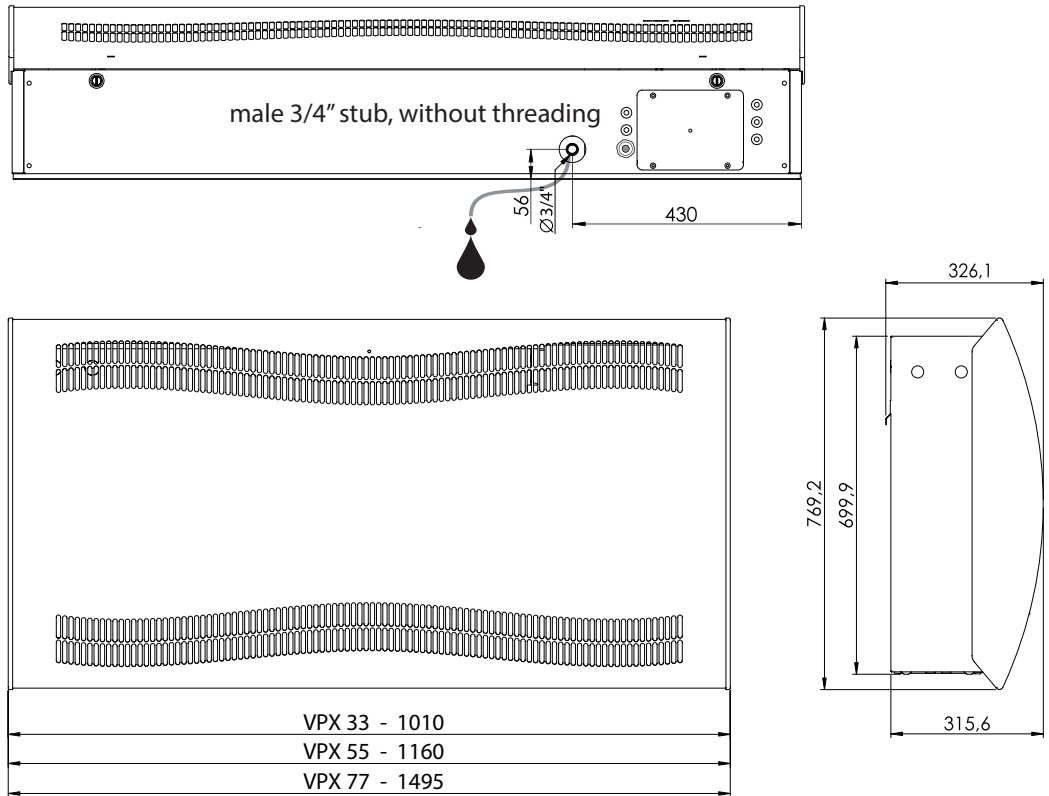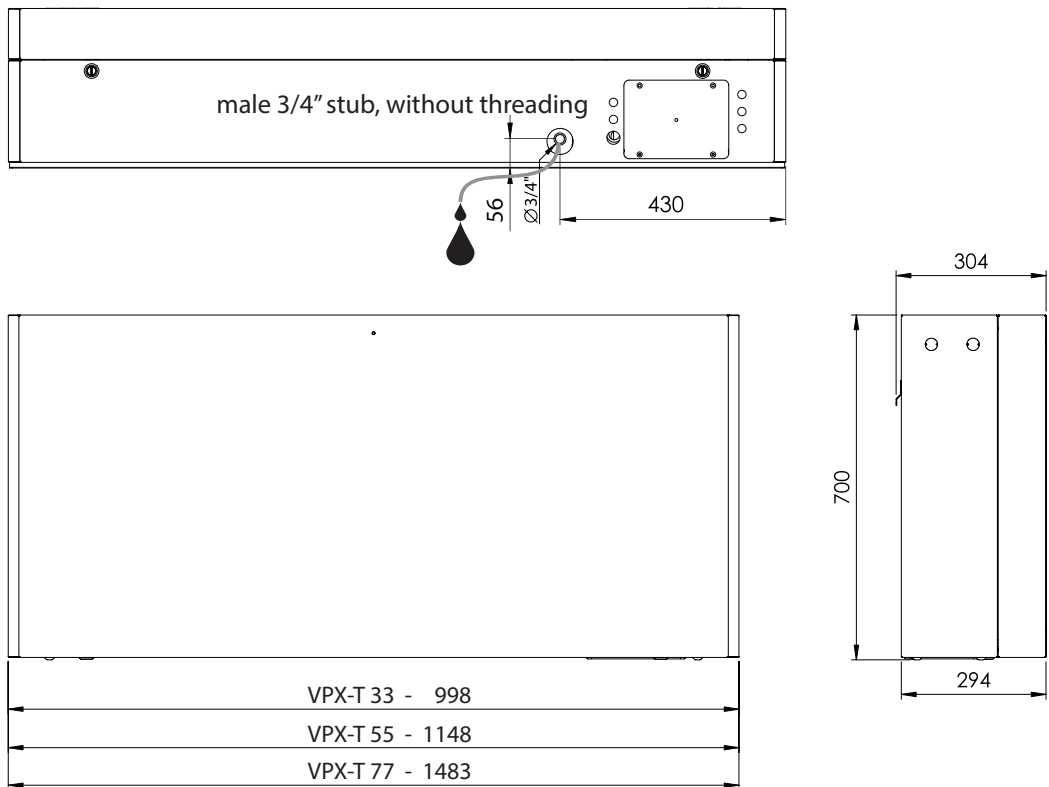
Fig. 5

Technical data

Data sheet

Specification	unit	VPX 33	VPX-T 33	VPX 55	VPX-T 55	VPX 77	VPX-T 77
Operating range, humidity	%RH	40-100	40-100	40-100	40-100	40-100	40-100
Operating range, temperature	°C	10-36	10-36	10-36	10-36	10-36	10-36
Air volume at max. external pressure	m³/h	400	400	680	680	900	900
Capacity at 28°C - RH 60	l/day	34	34	52	52	69	69
SEC 28°C - RH 60	kWh/l	0,47	0,47	0,48	0,48	0,43	0,43
Power supply	V/Hz	1×230/50	1×230/50	1×230/50	1×230/50	1×230/50	1×230/50
Max. power consumption	kW	0.9	0.9	1.5	1.5	1.8	1.8
Max. current, dehum.	A	3,8	3,8	6,6	6,6	8	8
Refrigerant	-	R407C					
Quantity of refrigerant	kg	0.7	0.7	0.9	0.9	1.2	1.2
GWP (Global Warming Potential)	-	1774					
Noise level* (1 m from unit)	dB(A)	46	43	47	44	50	47
Weight	kg	56,5	57,5	65,0	66	75,5	77,5
Filter Type		PPI 15					
Protection class		IPX4					

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Installation

Installation environment

Pay attention to the right combination of chemicals in your swimming pool in order not to endanger the health of the users and the inventory. Insufficiently treated water results in poor hygiene. Excessive water treatment leads to the formation of gases in the air. These gases contain chlorine, which can irritate the eyes and cause breating difficulties.

At the same time, the incorrect composition of chemical ingredients in the water can result in rapid destruction of all inventory, e.g. the dehumidifier.

The following exclusions apply to the Warranty given by Calorex Heat Pumps Ltd. No claims will be accepted if:

1. The dehumidifier is incorrectly sized for the application.
2. The dehumidifier is installed in any way that is not in accordance with the current procedures as defined by Calorex Heat Pumps Ltd.
3. The dehumidifier has been worked upon or is adjusted by anyone other than a person authorised to do so by Calorex Heat Pumps Ltd.
4. The air flow through the machine is outside the specified limits.
5. The water flow through the machine is outside the specified limits.
6. The water pH level and/or chemical balance is outside the specified limits."

Shown below are the threshold values which apply to indoor swimming pool products in accordance with EN/ISO 12944-2, protection class C4. Comply with these hreshold values in order for the warranty to remain valid.

When adding chemicals

The following guideline values are applicable to swimming pools with the addition of chemicals.

Chemicals	ppm
Free chlorine content	1.0-2.0
Combined chlorine content	Max. 1/3 of free chlorine content
pH	7.2-7.6
Total alkalinity	80-150
Calcium hardness	250-450
Total dissolved solids	< 2000
Sulphates	< 360

With own production of chlorine

The following guideline values are applicable to swimming pools with self-production of chlorine:

| Chemicals	ppm
Salt (NaCl)	< 30,000
Total dissolved solids	< 5500
pH	7.2-7.6
Total alkalinity	80-150
Calcium hardness	250-450
Sulphates	< 360

Langelier Saturation index

It is advisable to use the Langelier Saturation index to ensure that the combination of the different water parameters is acceptable.
Contact Calorex if necessary.

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Optimal conditions

⓵ **NOTICE**

- The VPX-T 33-55-77 units are designed for installation in a heated room, adjacent to the pool room.
- Do not place the dehumidifier close to a heating source, e.g. a radiator.
- Doors and windows must be kept closed when the dehumidifier is in function.
- To make sure that the room air passes freely through the dehumidifier, air inlet and air outlet openings must be free.
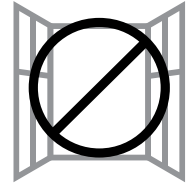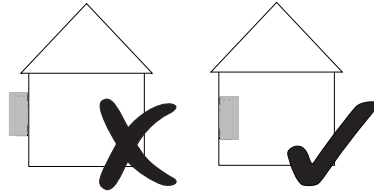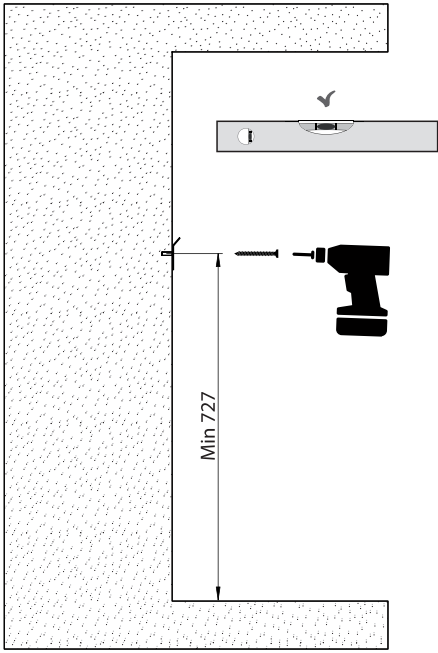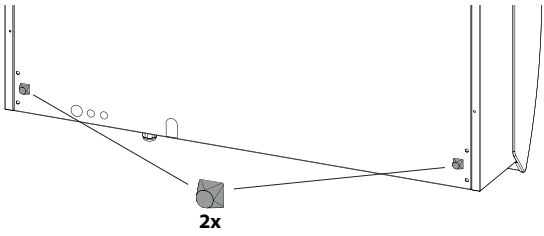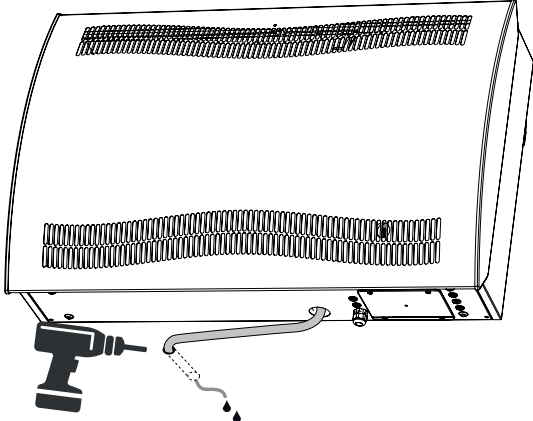
Wall mounting

Mounting VPX 33-55-77

Please follow this procedure to mount the VPX 33-55-77:
(Go to page 18 for instructions on wall mounting of the VPX-T range)

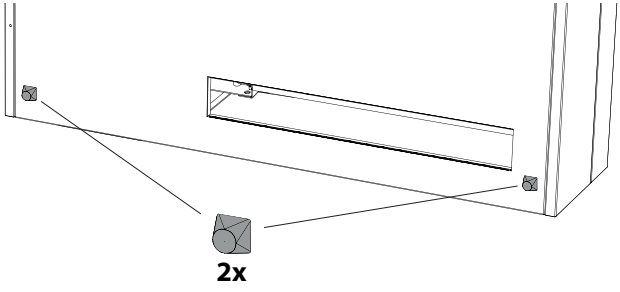| Step	Description	Illustration
1	The installation should be in line with the current IET wiring regulations. The dehumidifier should not be located within zone 0 or 1. The dehumidifier can be located in zone 2 or outside zone 0, 1, and 2.	
2	Find the right spot for the VPX dehumidifier and measure where the wall suspension bar has to be mounted. Recommended distance from dehumidifier to: • Ceiling: min 225 mm • Floor: min 225 mm	

3	Fix the wall suspension bar supplied with the unit to the wall. **NB:** It is important to fix it horizontally to ensure correct condensate outlet.	
4	Fasten the two wall mounting spacers (included in the delivery) on the back of the unit.	
5	**Drain outlet:** Connect a drain hose and make a condensate outlet through the wall. Connect a 3/4" flexible or fixed water hose to the spigot at the base of the dehumidifier. The hose has to be put over the spigot. Make sure the drainage has a drop of at least 2 %. **Alternatively:** • A condensate pump can be fitted at the water outlet in order to pump the water to a drain.	

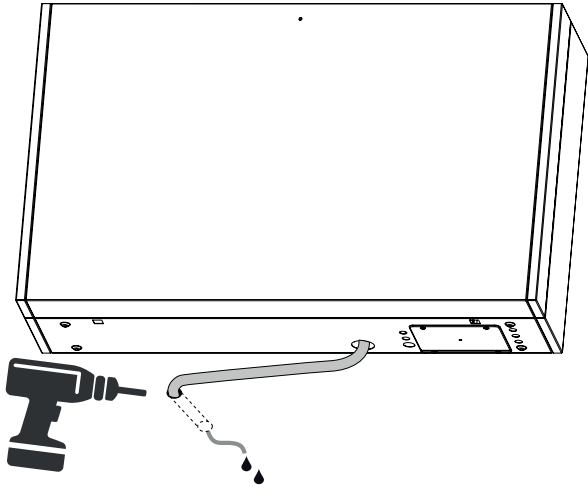| 6	Hang the dehumidifier on the wall suspension bar.	
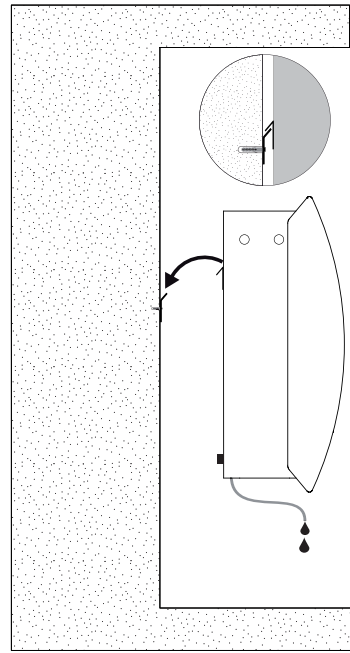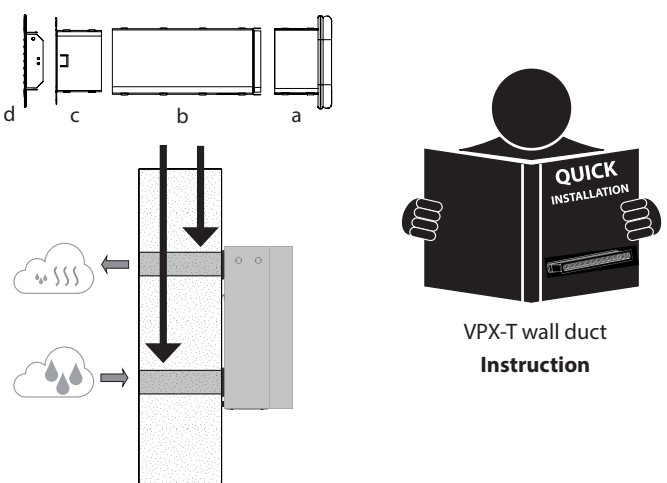
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Mounting
VPX-T 33-55-77

Please follow this procedure to mount the VPX-T 33-55-77:
(Go to page 15 for instructions on wall mounting of the VPX 33-55-77 units)

Step	Description	Illustration
1	Find the right spot for the VPX-T dehumidifier and measure where the wall suspension bar has to be mounted. Fix then the wall suspension bar supplied with the unit to the wall. **NB:** It is important to fix it horizontally to ensure correct condensate outlet.	 |	**VPX-T 33**	**VPX-T 55**	**VPX-T 77**
---	---	---	---
Y	437 (x2)	341 (x3)	450 (x3)	
2	Make a hole in the wall according to the measurements of the illustration.	 |	**VPX-T 33**	**VPX-T 55**	**VPX-T 77**
---	---	---	---
Z	610	760	1095
X	62	62	68.5	

3	Use VPX-T wall duct in order to seal between unit and wall. See how to mount the wall duct correctly in the VPX-T wall duct instruction.	 d c b a VPX-T wall duct **Instruction**
4	Fasten the two wall mounting spacers (included in the delivery) on the back of the unit.	 **2x**
5 ⚠	**Drain outlet:** Connect a drain hose and make a condensate outlet through the wall. Connect a 3/4" flexible or fixed water hose to the spigot at the bottom of the dehumidifier. The hose has to be put over the spigot. Make sure the drainage has a drop of at least 2 %.	

Alternatively:
• A condensate pump can be fitted at the water outlet in order to pump the water to a drain.

6	Hang the dehu-midifier on the wall suspension bar.	

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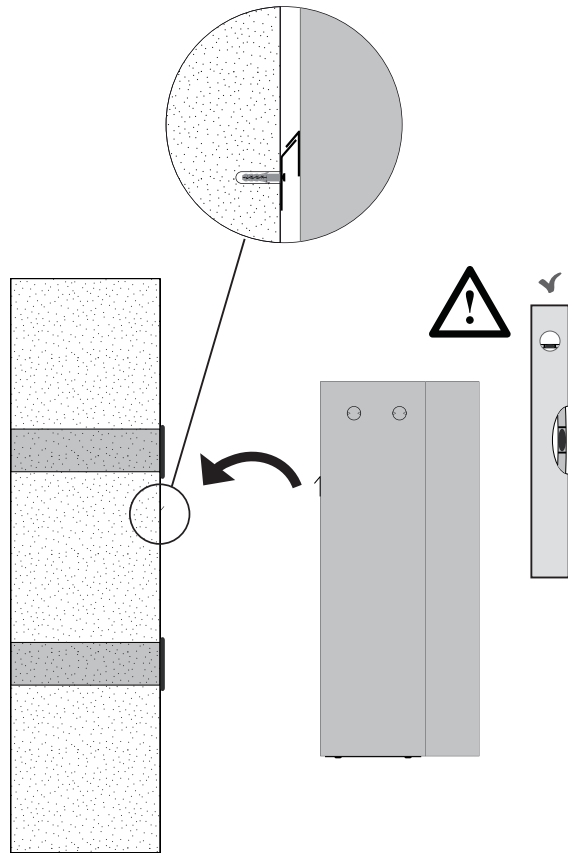
Electrical connection

⚠ CAUTION	**Risk of damaging the dehumidifier, if it has been lying down.** The compressor can be damaged permanently, when the unit is started up just after it has been put upright.	

- Wait 1 hour with the start up of the dehumidifier, if the unit has been lying down (e.g. during transport or installation).

⚠ DANGER	**Risk of electric shock** You can be severely injured by an electric shock

- Switch off the power on the main switch, while you open the dehumidifier.
- Remember also to switch off the power, while you close the dehumidifier.

Connection of power supply

Step	Description	Illustration
1	Loosen the two screws that secure the lid to the mains electricity connection. Tilt the lid in order to get access to the terminals.	
2	Guide the cable for the power supply through the PG cable restrainer.	
3	Connect the power to the unit in accordance with the description stated on the name plate. See also "Wiring diagram" on page 46.	L1 L2 L3 N PE 2,5 mm² Min Ø9 Max Ø18
4	Close the lid and fix it with screws again.	

NOTICE

It is the responsibility of the installer to ensure the conformity towards national regulations of all, not supplied cables.

Control panel interfaces

The interfaces and terminals on the control panel make it possible to communicate with the dehumidifier and connect accessory such as a Relative Humidity & Temperature sensor, an alarm and a heating coil. The figure and table below describe the different functions of the interface.
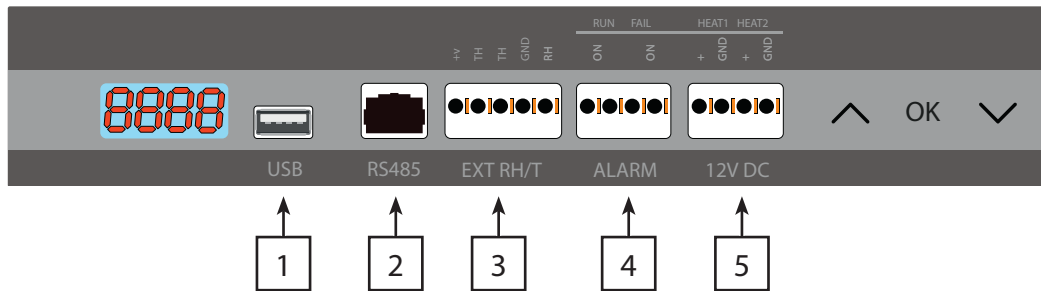

Fig. 6

Pos.	Interface	Description
1	USB	USB is used for datalogging/ software update. See more information in section "Software update and log files" on page 36.
2	Modbus RTU (RS-485)	Connection via modbus. A list of data for the Modbus interface can be downloaded on danthermgroup.com
3	External RH/T sensor	Terminals for connecting an external humidity/ temperature sensor. See wiring example in Fig. 7
4	Alarm	An external alarm can reveal, if the dehumidifier is operating normally or has an error. See wiring example in Fig. 8
5	12 VDC Heat control	Connection of LPHW (water) or electric heating helps controlling the indoor temperature. Contact your Calorex dealer for more information.

External RH/T sensor connection (Optional)

There is an option for connecting an external Relative Humidity & Temperature sensor, which makes it possible to overrule the internal sensors. In Fig. 7 there is an example on how it could be connected.
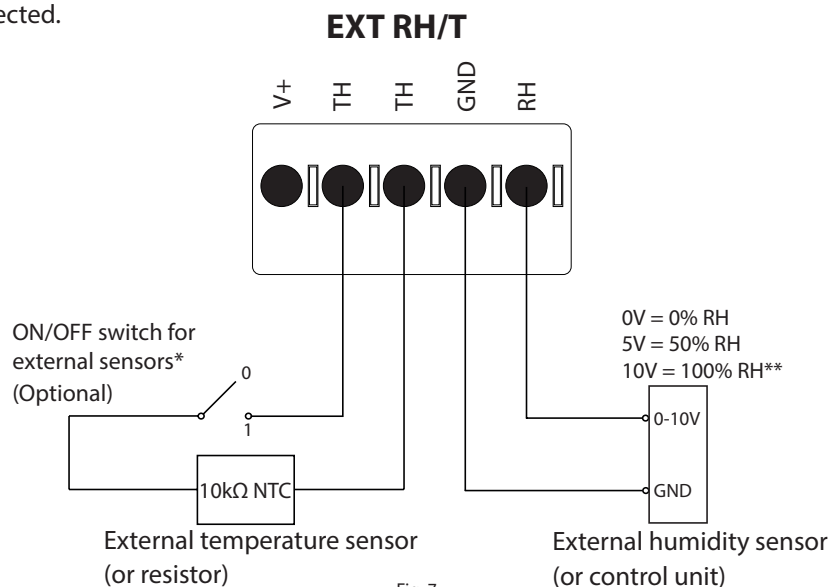

Fig. 7

*Switch in position: 0 = Internal sensors in use, 1 = External sensors in use
**Note, operational range is within 40-99% RH, if out of range the dehumidifier will be in stand by mode

Alarm Run/ fail connection (Optional)

There is an option for connecting an external alarm, which makes it possible to see, when the dehumidifier is operating normally or has an error. In order to use this option you must create your own external electrical circuit and connect it to the run/fail volt free terminals on the main PCB (see page 45).

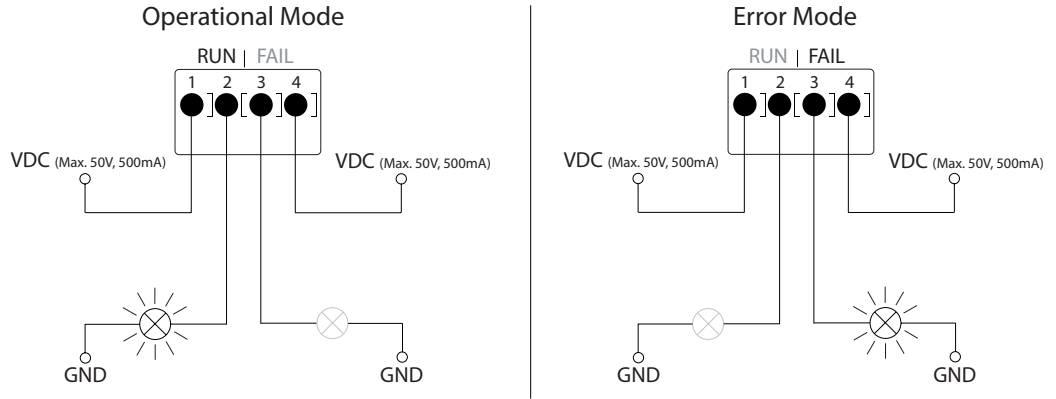This illustration is an example of how the run/fail circuit could be used.

Operational Mode | Error Mode

RUN | FAIL

1 2 3 4

VDC (Max. 50V, 500mA) VDC (Max. 50V, 500mA)

GND GND

RUN | FAIL

1 2 3 4

VDC (Max. 50V, 500mA) VDC (Max. 50V, 500mA)

GND GND

Fig. 8

en

Operation

Control panel

⚠ DANGER	**Risk of electric shock** You can be severely injured by an electric shock. • Switch off the power on the main switch, while you open the dehumidifier. • Remember also to switch off the power, while you close the dehumidifier.

Accessing the control panel

Follow the steps below in order to access the control panel.

Step	Description	Illustration
1	Open the dehumidifier: a) Loosen the two screws at the bottom of the unit. Check that the locks release the front cover. b) Pull upwards and remove the front cover.	
2	Loosen the two screws and re-move the upper plate (covering the control panel).	

Display

4 digit Display divided into 2 sections: The first 2 digits show the code and the last 2 show the value of the code.

Code   Value
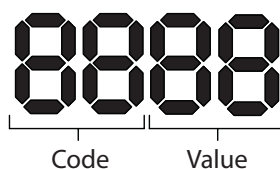
Default view

By default the display will show the relative humidity RH %. This reading can be from the external humidity/temperature sensor when available, if not the RH will be from the internal humidity sensor.
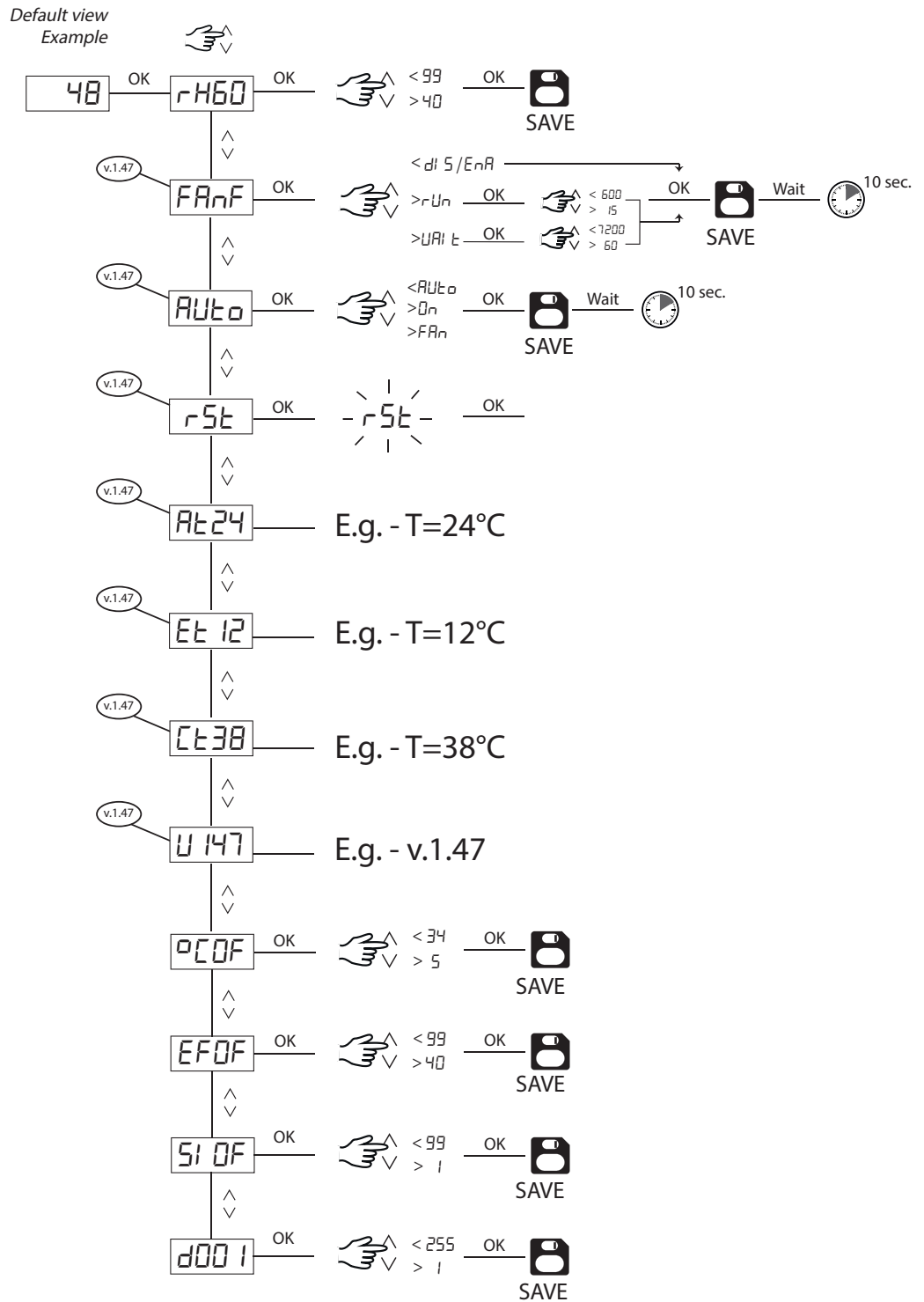
Example

Menu overview

An in-depth description of each menu point can be found on the next page, along with the default value for each submenu.

Update to latest software version, if the menu looks different.

Menu description

Code	Function	Default value	Value range	Description
rH	Relative humidity (%)	60	40-99	The unit will start dehumidifying, when the sensor measures a relative humidity higher than the set value. (Note the +/- 2% hysteresis)
FanF	Fan function			
diS	Disable / enable	diS (disable)*	Dis/enA	Sub menu. Enable or disable fan function. Fan will run periodically when idle to sample air. *in VPX-T the function is enabled as default
Run	Run time	60	15-600	Sub menu. Fan run time in seconds.
wait	Wait time	3600	60-7200	Sub menu. Fan wait time in seconds.
AUTO	Mode selection	AUTO		
			AUTO	Sub menu. Fan + compressor automatic operation based on Rh set point
			On	Sub menu. Fan + compressor always active when power is connected (Manual mode)
			Fan	Sub menu. Fan always active. Compressor automatic operation based on RH set point.
rSt	Reset	-	rSt	Soft reset unit. Corresponds to switching power supply Off and On. When 'rSt' blinks in display press OK button to reset
At##	temperature	-	-	Ambient temperature reading from RH-probe. Not adjustable
Et##	temperature	-	-	Evaporator temperature sensor current value. Not adjustable
Ct##	temperature	-	-	Condenser temperature sensor current value. Not adjustable
U147	SW version	-	-	Current application software version. Not adjustable
°C	°Celcius **(accessory only)**	OF (OFF)	5-34	The el/water heating coil (accessory) will start to heat, when the temperature is lower than the set value. (Note the +/- 2 °C hysteresis)
EF	Extractor fan **(accessory only)**	OF (OFF)	40-99	The extractor fan (accessory) will start, when the humidity is higher than the set value, completely independent of the dehumidifier. The value is measured in % relative humidity. (Note the +/- 2% hysteresis)
SI	Service Interval (weeks)	OF (OFF)	1-99	When the Service Interval function is enabled, the unit will display 5Er, when it is time for service.
d001	Modbus Slave ID	001	1-255	Connection via modbus is possible. The default modbus slave ID of the unit is 1 and can be changed to a value between 1-255.

Menu buttons

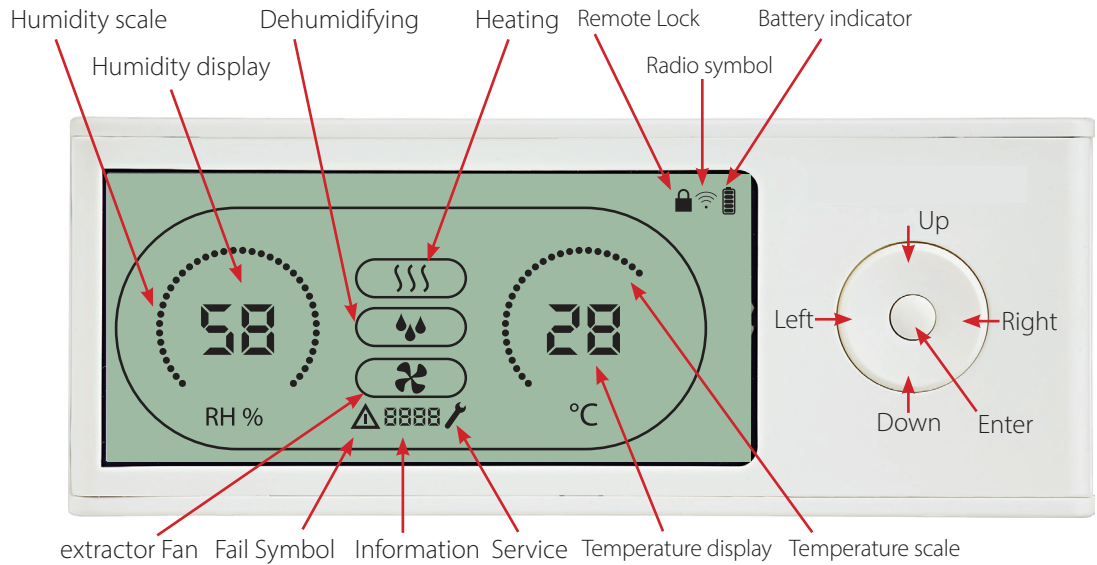OK   Press and hold OK button for 3 sec to enter menu mode

⌃⌄   Toggle Menu Page / change value

Note: If no button is pressed for 10 seconds it will return to Standard view.

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Wireless Remote Controller DRC1

Overview

en

Remote panel Layout

Humidity scale   Dehumidifying   Heating   Remote Lock   Battery indicator

Humidity display   Radio symbol

Up

Left — Right

Down   Enter

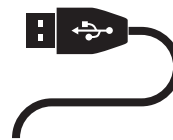extractor Fan   Fail Symbol   Information   Service   Temperature display   Temperature scale

Humidity and Temperature scale.
Temperature scale from 0° till 40°C.
Humidity scale from 0 to 99 % RH

Antennae
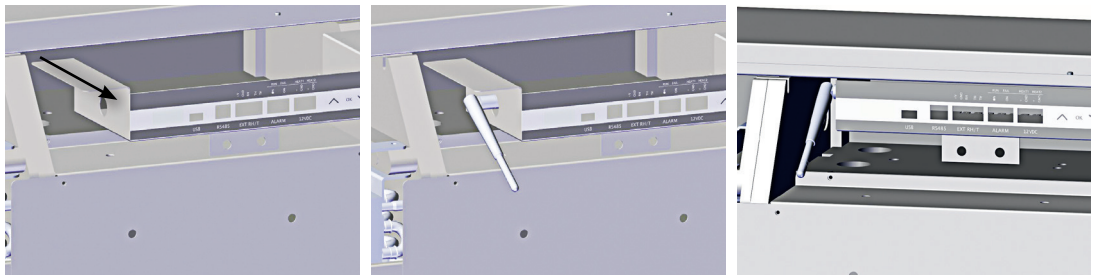
USB cable

The USB cable is for updating software.
It can also be used as external power supply.

Mating

Mating Mode

Before use, the DRC1 must be mated with the controller.
This section describes how to mate the DRC1 with the dehumidifier.

Mating
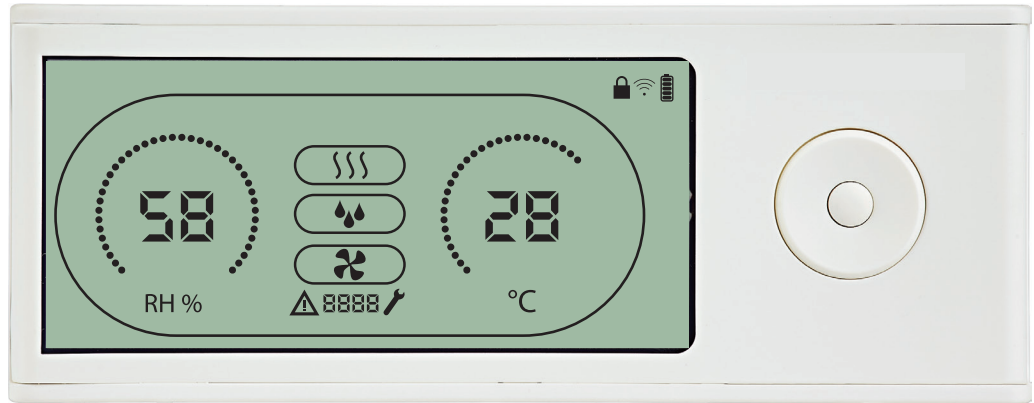
Procedure

1. Insert batteries > Display flashes (if it does not flash, press the left button for 10 seconds and wait until the display starts to flash)
The DRC1 will search for the dehumidifier for 2 minutes, during which time mating can be done:
- Press the up and down buttons on the controller at the same time for 5 seconds
Note: this must be done while the DRC1 is searching for the dehumidifier.

If this procedure does not work:
Switch off the dehumidifier and wait for 5 seconds and then switch it on again.

2. The dehumidifier will send a serial number to the DRC1.
When mating is successful, the radio icon comes on.

3. The dehumidifier will confirm connection by showing code "Conn" $\sqsubset \sqcup \cap \cap$ for 3 seconds
More than one remote control panel can be connected to the dehumidifier.

Navigation

End point

End point
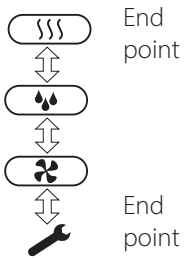
ENTER press and hold for 3 seconds to enter user menu setup
UP and DOWN buttons to navigate between icons.
LEFT and RIGHT buttons allows to change set points value 1press = 1unit
ENTER confirms new set point value and automatically switches to next icon/or exits the menu
Press and hold RIGHT for 5 seconds to enter installer menu setup. (Exit setup menu first)

When no button is pressed for 10 sec, the DRC1 exits the menu and returns to readings screen

Failed mating

Press and hold for 10 seconds to reset the serial number stored in DRC1.

If mating fails ⚠ and $\sqsubset \sqcup \cap \cap$ is shown in the display and the radio symbol flashes
Reset DRC1 and repeat mating process.

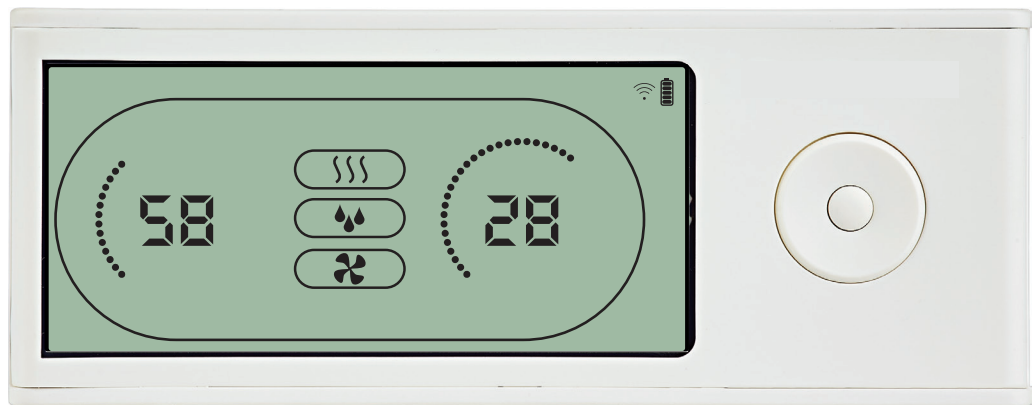**Standard readings**

Standard readings when connected:
-Stand by, RH and ºC scale
-Compressor active, dehumidifying symbol on 💧💧

General information

Operation

Press and hold for 10 seconds to reset the serial number stored in DRC1.

Press and Hold for 3 seconds to enter user menu setup.
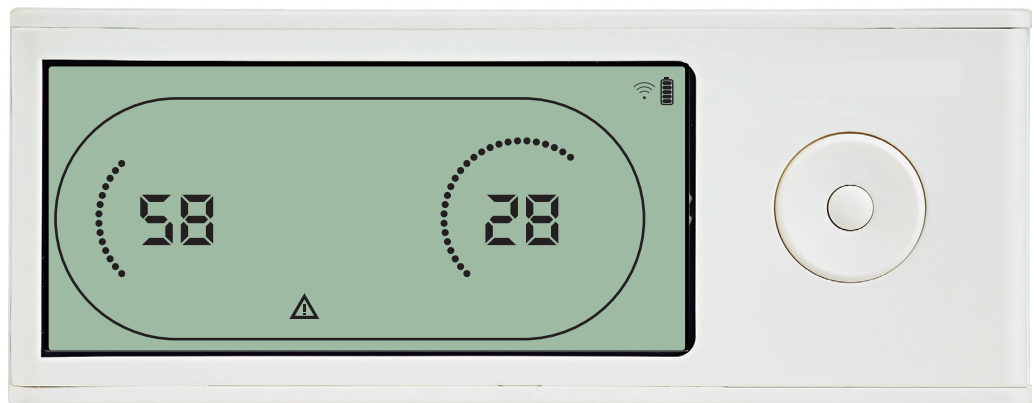
Press and hold for 5 seconds to enter installer menu.

When the dehumidifier is running the dehumidifying symbol (❦) is shown in the DRC1 display.
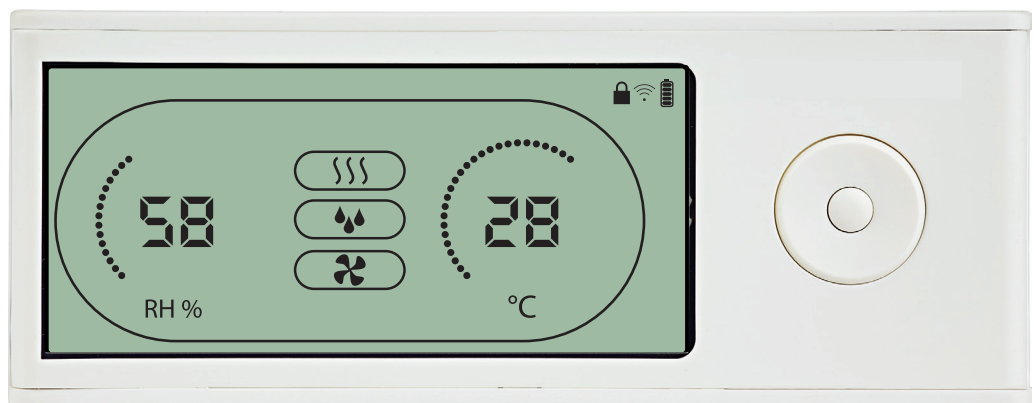When heating is toggled ON, the heating icon (∫∫∫)will be shown in the DRC1 display.
When the extractor fan is turned on, the extractor fan icon (❀) will be shown in the DRC1 display.

Fail Condition

If the dehumidifier enters fail mode, the warning sign (⚠) will be shown in the DRC1 display.

Locked remote

The DRC1 is equipped with switch in the battery compartment.
When switched to "lock" position, the buttons on the DRC1 become inactive.
The display will still update with information, but does not allow user inputs.

User menu - Set points

Dehumidifying set point

Press for 3 sec to enter user menu setup.
Press to confirm.

Decrease with 1 unit

Increase with 1 unit

Navigation between icons

Navigation between icons
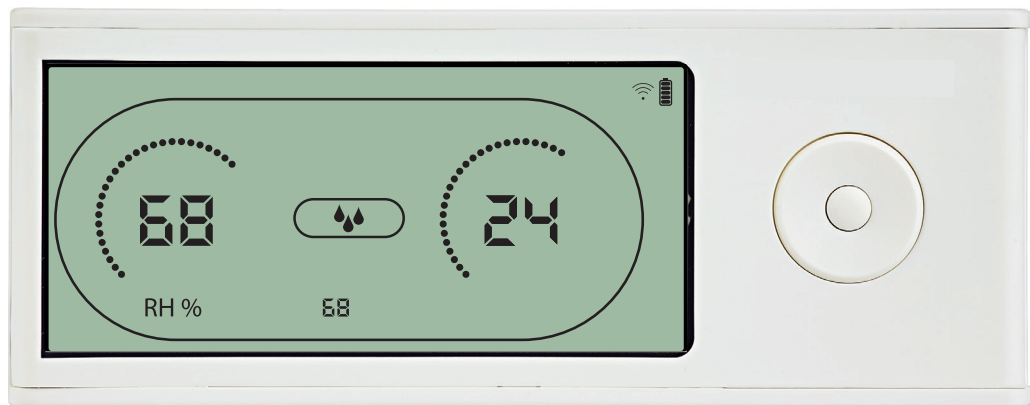
The humidity value and the dehumidifying icon will flash.
The display shows the desired humidity set point.
While flashing, the value can be increased or decreased by pressing Up/Increase or Down/Decrease button on DRC1.
Press enter to confirm humidity set point and go to next menu page.

Temperature set point

Press for 3 sec to enter user menu setup.
Press to confirm.

Decrease with 1 unit

Increase with 1 unit

Navigation between icons

Navigation between icons
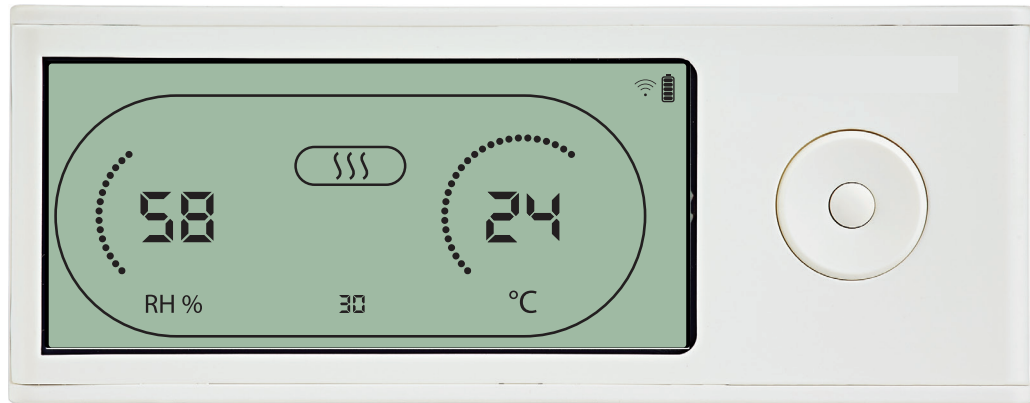
The temperature value and the heating icon will flash.
The value displayed shows the desired temperature set point. While flashing, the value can be increased or decreased by pressing Up/Increase or Down/Decrease button on the DRC1
Maximum: 34 °C, Minimum: 5 °C. Press enter to confirm new set point and go to next menu page.

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Installer menu

Press and hold for 5 seconds to enter installer menu.

Fan set point.

Decrease with 1 unit

Increase with 1 unit

Navigation between icons

Navigation between icons

Press to confirm.
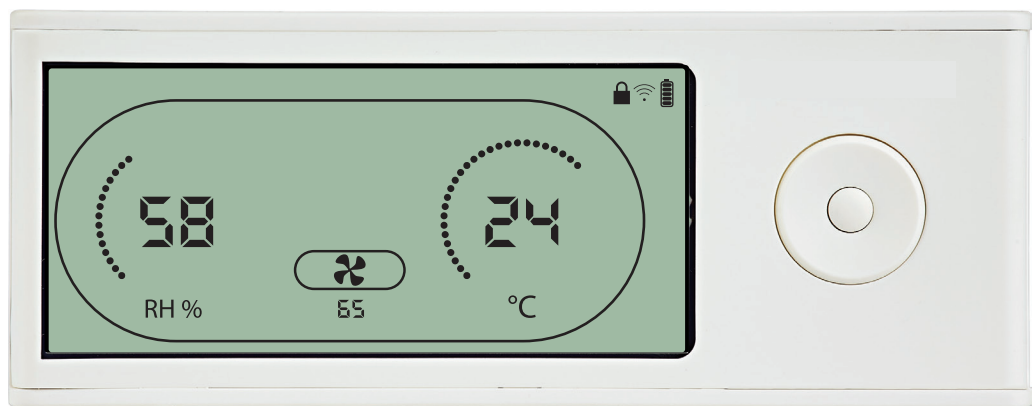
When the extractor fan icon flashes at 0.5 Hz and extractor fan set point value is shown on info line.
Left or right button to decrease or inrease value. Enter to confirm set point and go to next icon.
If you do not confirm change, the new setpoint will not be stored

Service interval

Decrease with 1 unit

Increase with 1 unit

Navigation between icons

Navigation between icons

Press to confirm.
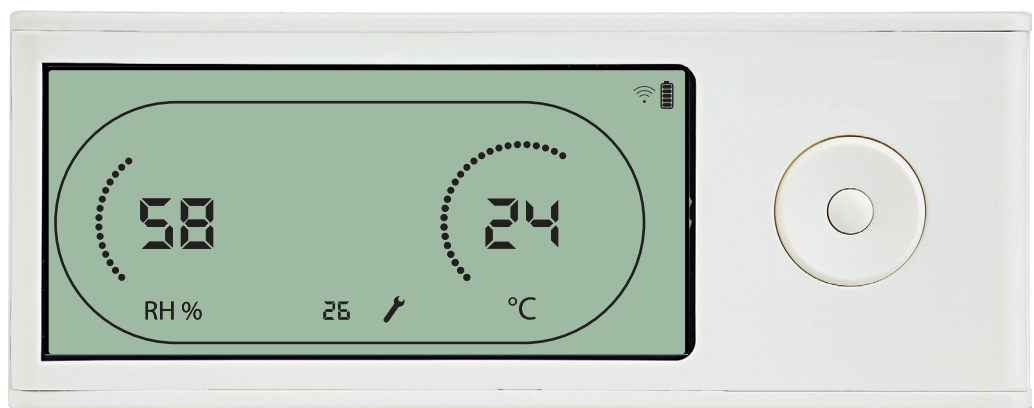
While flashing, the service interval can be increased by pressing RIGHT Button or decreased by pressing the LEFT Button.
Maximum 99 Weeks. Minimum is 1 week.

Alarms

**Ambient condition
Stand-by mode 2**

Press for 3 seconds
to enter user menu
setup.

Press for 5 seconds
to enter installer
menu setup
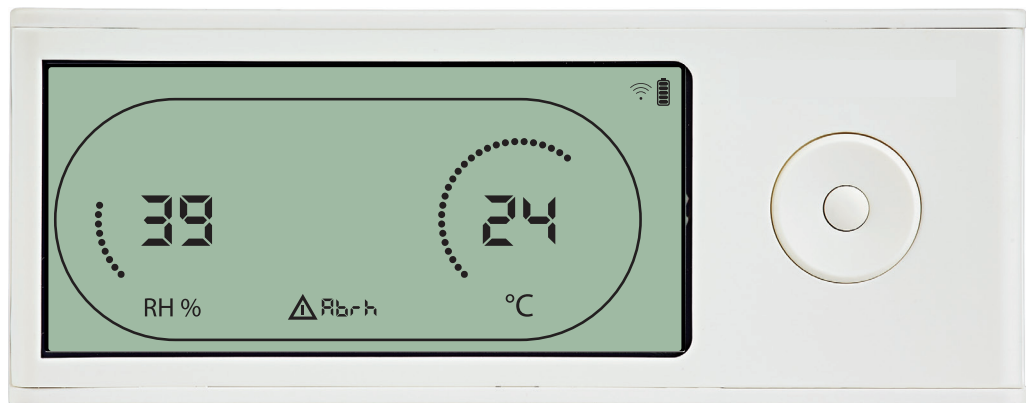
DRC1 enters stand-by mode 2 when ambient conditions are out of operation range.
The display will show temperature and Rh readings when the unit is in stand-by mode 1.
This state will only get corrected when the ambient temperature (abt) or ambient humidity (abrh) is in range, and can not be dismissed.
You can enter menu setup to modify set point values – only in this case.
While in Menu Setup, the alarm icon turn off and set point value will be shown instead of "Abt/Abrh" code on INFO line

Sensor fail

Press to see which
sensor is defect.

Press to see which
sensor is defect.

Dehumidifier is stopped because sensor failure is detected.
Sensor Fail can not be dismissed from DRC1.
Use UP or DOWN button to see which sensor/sensors are defect
If all sensors are defect these codes show in the following sequence: "COnd" ↑↓ "EVAP" ↑↓ "RH/T"
It is not possible to enter menu setup to modify set point values

**Condensor sensor
fail**
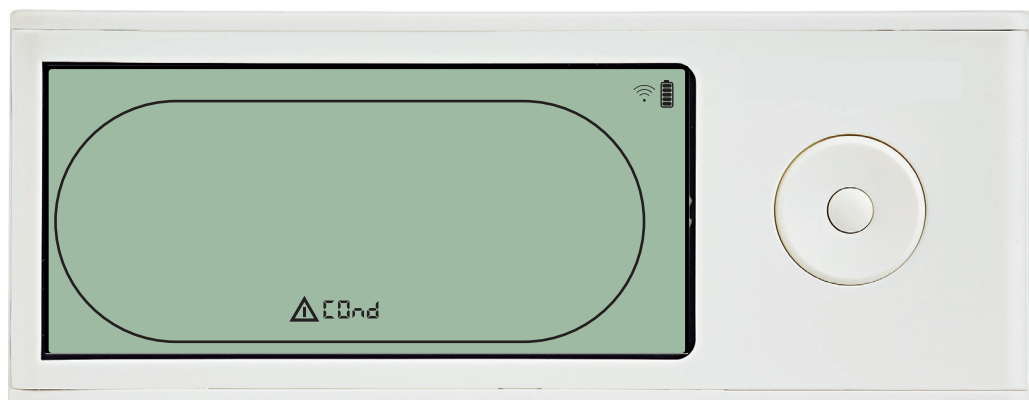
If condenser sensor is defected, then "COnd" code will be shown when pressing UP or DOWN when screen shows Sensor fail code "SEnS".
If no buttons pressed within 10 seconds then screen will again show "SEnS" again.
It is not possible to enter menu setup to modify set point.

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Alarms continued

Evaporator sensor fail

Press to see which sensor is defect.

Press to see which sensor is defect.
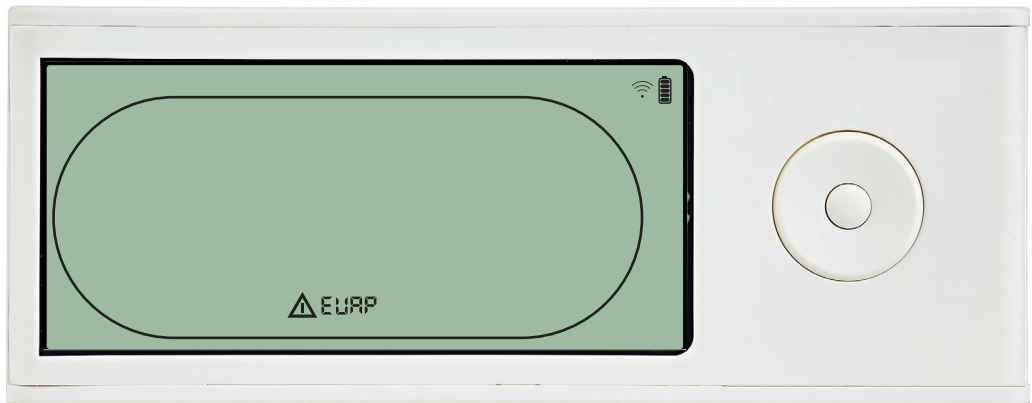
⚠ EVAP

If evaporator sensor is defect, then "EVAP" code will be shown when pressing UP or DOWN during screen shows Sensor fail code "SEnS".
If Evaporator sensor ok, then no "EVAP" code shall be shown.
If no buttons pressed within 10 seconds then screen will show "SEnS" fail again.
It is not possible to enter menu setup to modify set point.

RH/T sensor fail

Press to see which sensor is defect.

Press to see which sensor is defect.

⚠ rh°t
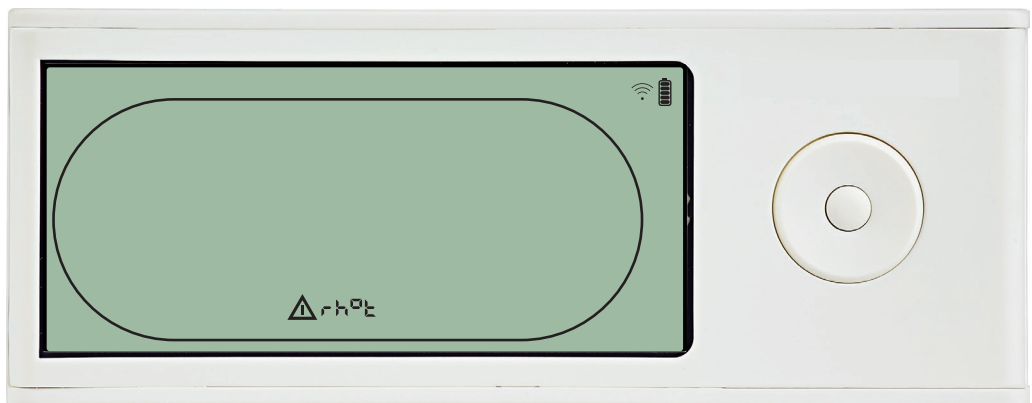
If RH/T sensor is defect, then "rh°t" code will be shown when pressing UP or DOWN during screen shows Sensor fail code "SEnS".
If RH/T sensor ok, then no "rh°t" code shall be shown.
If no buttons pressed within 10 seconds then screen will show "SEnS" fail again.
It is not possible to enter menu setup to modify set point.

Low pressure fail

⚠ LP
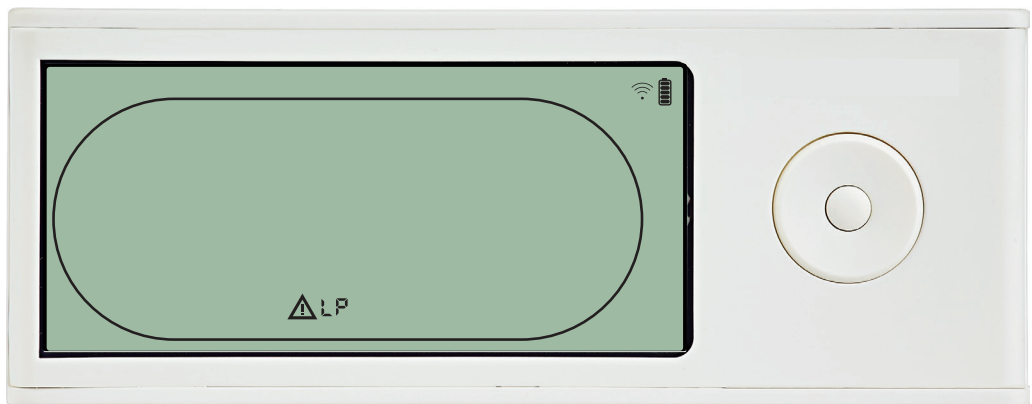
Dehumidifier stopped because of Low Pressure detection.
Fail can not be dismissed from DRC1.
It is not possible to enter menu setup to modify set point.

Alarms continued

High pressure fail
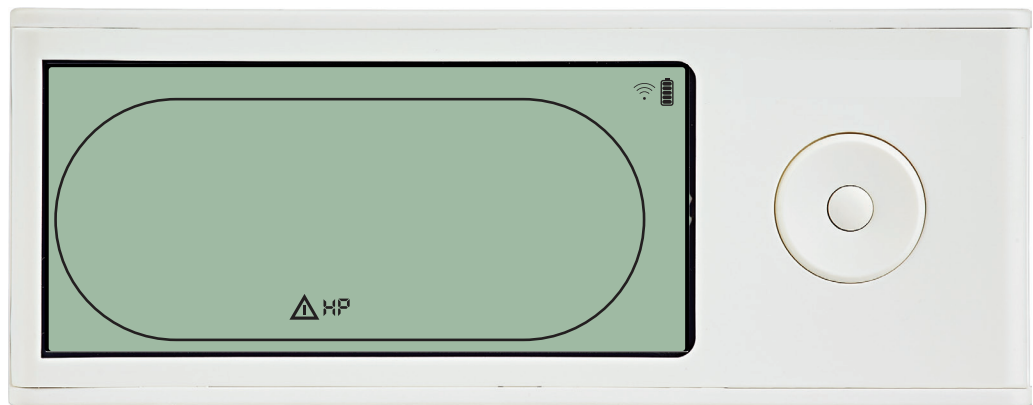
Dehumidifier has stopped because of High Pressure detection.
Fail can not be dismissed from Remote panel.
It is not allowed to enter menu setup for modification of set points values.

Service alarm

Press for 5 seconds
to enter installer
menu setup
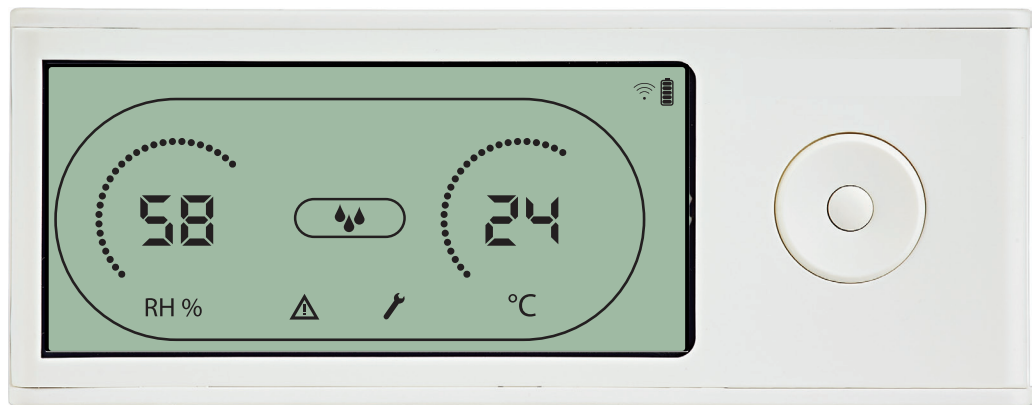
The Service icon will be shown when it is time for servicing the dehumidifier.
The service alarm does not affect the operation of dehumidifier.

To dismiss/reset service alarm:
- Press right for 5 seconds to enter the installer menu.
- Press DOWN/UP to navigate to service icon.
- Press RIGHT/LEFT to change setpoint from 0 to desired service interval.
- Confirm service interval by pressing enter.

Alarms priority

HP   High priority
LP
SEnS
Abt
Abrh   Low priority

When more than one alarm is active the list above
shows the priority of the alarms.

Maintenance and care

Preventative maintenance

Introduction
The dehumidifier requires very little attention for trouble free running. All the necessary safety and control functions have been built in. The fan motor(s) and the compressor have permanent lubrication and require no particular maintenance.

⚠️ **CAUTION**

Injury - risk of cuts and minor skin burns, when you access the inside of the VPX
Be cautious of sharp edges when opening the unit. Internal parts can be very hot or cold.
- Switch off VPX for half an hour prior to opening it. Avoid touching very hot and cold parts as e.g. the pipes or evaporator.
- Avoid touching sharp edges or wear gloves.

Monthly service
The air inlet filter is to be cleaned once a month. The filter is placed in a stand behind the grill of the air inlet duct. Drip tray and outlet should also be cleaned, so water can run off freely.
Please follow this procedure to perform the monthly service:

Step	Action
1	Unlock the two locks underneath the dehumidifier
2	Dismount the front cap by lifting it up and take out the filter. The filter is located on the rear of the front cap
3	Wash the filter in tepid soapy water or vacuum clean thoroughly. If the filter is faulty, replace it.
4	Insert filter in the filter holder, reattach the cap and lock the two locks. (From Step 1)

NB: If the filter (one size PPI filter with order no. 094686) has to be replaced, you can order it through a Calorex dealer.

Annual service
The dehumidifier should be inspected once a year.
Please follow this procedure to perform the annual service:

Step	Action
1	Remove the front from the dehumidifier
2	Inspect the inside of the dehumidifier
3	Vacuum clean the dehumidifier to remove any dust or debris Important: Vacuum clean the condenser thoroughly
4	If necessary wash the coil fins evaporator in tepid soapy water if it is badly soiled

Software update and log files

Access data log/ USB

If you wish to read the log file from the unit without updating the software follow these steps.

Step	Action
1	Insert an empty FAT32 USB memory stick. Supports total drive volume of max 16Gb only (see section "Formatting to FAT32" on page 37).
2	After connecting the USB memory stick all collected records will be stored to file data_log.csv in CSV format. Records won't be deleted from board so it is possible to get data onto several USB memory sticks.
3	When the display has shown the "Log" message and went back to default view, the log records have been stored succesfully and the USB memory stick can be removed.

Data log uses 2KB of backup SRAM (under battery) for data records.
Interval for storing records is 3 hours. State change to fail mode also invokes record store.
If whole space is filled by record then new one will replace the oldest.

Data log record content

Excel column	Output text	Description
Timestamp	<dd:mm:hh:ss>	Time for log since last compressor start sequence
T_amb	<-40….100>	Temperature of ambient air (-40 = Not conn.)
T_amb_int	<-40….100>	Temperature from internal RH/T sensor (-40 = Not conn.)
T_amb_ext	<-40….100>	Temperature from external RH/T sensor (-40 = Not conn.)
T_aux	<-40….100>	Auxiliary temperature (input) (-40 = Not conn.)
T_cond	<-40….100>	Temperature from condenser (-40 = Not conn.)
T_evap1	<-40….100>	Temperature from evaporator 1 (-40 = Not conn.)
T_evap2	<-40….100>	Temperature from evaporator 2 (-40 = Not conn.)
T_set	<5….34>	Setpoint value of desired temperature (Default OFF)
RH_amb	<0....100>	Humidity of ambient air (0 = Not conn.)
RH_amb_int	<0....100>	Humidity from internal RH/T sensor (0 = Not conn.)
RH_amb_ext	<0....100>	Humidity from external RH/T sensor (0 = Not conn.)
RH_set	<40....99>	Humidity set point (Default 60)
ExtFanSet	<40....99>	Extractor fan set point (Default OFF)
Service	[Blank]	Service interval disabled
	"ENABLED"	Service interval enabled
Mode	"SB"	Stand-by mode state
	"STARTUP"	Start-up mode state
	"DEH"	Dehumidifying state
	"ICE"	Deicing state
	"LP"	Low-pressure fail mode state
	"HP"	High-pressure fail mode state
	"SENS"	Sensor fail mode state
	"AMBT"	Ambient temperature fail mode
	"AMBRH"	Ambient humidity fail mode
Error	"EVAP"	Evaporator sensor Fail
	"COND"	Condenser sensor Fail
	"AUX"	Auxiliary sensor Fail
	"AMB_INT"	Internal ambient sensor error
	"AMB_EXT"	External sensor error (Always shown when no conn.)
Reason (For log)	"IDLE"	Automatically made every 3 hours
	"ERROR"	If an error occurred
Sensor	"SHT31"	New sensor type
	"ChipCap2"	Old sensor type

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Software update   Follow these steps in order to update the software version.

Step	Action
1	Use an empty USB memory stick.
2	Obtain latest software version from Calorex and copy the file to the USB memory stick.
3	Insert the USB memory stick in the USB port of the control panel of the unit.
4	The unit will now auto detect the new software and install it. The installation process should take no more than 30 seconds. During the process the display shows: "Erasing - Flashing - Done - Log" and a log file is stored on the USB memory stick. **Note:** If the display only shows the "Log" message, when the USB is inserted and returns back to default view some seconds later, the software has NOT been updated succesfully. The reason may be a wrong format of the USB memory stick. Try to format the USB memory stick to FAT32 (see description below) and repeat the software update procedure again.
5	When the display went back to default view the memory stick can be removed.

Formatting to FAT32

Format the USB memory stick to FAT32 file system by following the below steps.
(Note: All data on the USB memory stick will be erased during the formatting process.)

Step	Action
1	Insert a USB memory stick in the USB port of the computer. Supports total drive volume of max 16Gb only.
2	Press WIN key (⊞)+r
3	Type: CMD - press enter
4	Type: format /FS:FAT32 X: - press enter. *X* = letter of the USB drive
5	When you get the following message: Insert new disc for drive X: and press ENTER when ready - press enter.
6	When the disc has been formatted with a 100% - press enter to complete the formatting process.

Trouble shooting

Display messages   The VPX can display a number of Information and Error Messages to help finding a fault. Every single message and associated problems are explained in the following sections.

Information messages

Display	Description
Abrh	The relative humidity is out of range. • The display will automatically return to standard view when the relative humidity is within range again.
Abt	The ambient temperature is out of range. • The display will automatically return to standard view when the temperature is within range again.
LOSS	The connection to the Remote Panel is lost. • When the connection is reestablished the error message can be cleared by pressing OK.
SEr	It is time for service inspection. • When a new service interval is set, the display will return to standard view.
PAIr	The unit tries to connect to a remote control. • The display will automatically return to standard view after some seconds.
LPCo	Low Pressure preliminary warning • The unit will reset and returns to standard view, if the problem is solved after restart. If the error persists the display will switch to an LP error (see table "Error messages").

Error messages

Display	Description
SEnS	This message indicates a sensor fault and will cause the unit to stop. Press either Up or Down to determine which sensor is faulty. The faulty sensor can be: COnd — Condenser sensor (displayed COnd) EVAP — Evaporator sensor (displayed EVAP) rh°t — Humidity sensor (displayed rh°t) If no button is pressed for 10 seconds it will return to SEnS.
LP	If the Code LP (Low Pressure detection) is shown, the fault must be found and rectified. (See also "LED light and troubleshooting" on page 38)
HP	If the Code HP (High Pressure detection) is shown, the fault must be found and rectified. (See also "LED light and troubleshooting" on page 38)

The errors described above automatically lock the unit.

Press OK and access the unlock sequence in order to dismiss the error.

Unlock Sequence

Loc The message indicates that the unit is locked. If no buttons are pressed within 5 seconds the display will return to previous fail state.

Follow the steps below in order to unlock the unit.

Step	Action	Description
1	☞ ⌄	$UnLo$ (unlock function) is displayed
2	☞ OK	$tESt$ (test function) is displayed
3	☞ OK	test is activated. The test will detect if the error is fixed. $CCCC$ indicates that the error has been fixed and the unit is unlocked successfully. $FAIL$ indicates that the error is NOT fixed yet and the unit will still be locked.

! **NOTICE**

If the dehumidifier is not functioning correctly, shut it down immediately!

LED light and troubleshooting v.1.47

Use this table to understand the LED lights or localize and solve a possible problem/ fault (v.1.47):

LED		Audible alarm	Reason
OFF	-	-	No power to PCB
Blue	Burst	Single 1s beep	Power up sequence
	Slow flashing	-	Self-test sequence activated. LED will blink until self-test has completed.
Green/Yellow	Flashing	-	Unit in remote pairing mode
Green	Constant	-	Unit operating normally
Yellow	Constant	-	Service timer expired. Perform service and set new interval
Red	2x flash	Single 3s beep	LP alarm. See fault finding guide page 42
	4x flash		HP alarm. See fault finding guide page 42
	6x flash		Sensor alarm. See fault finding guide page 42

If you cannot find the reason for the fault, switch off the unit immediately in order to prevent further damage. Contact a service technician or a Calorex representative.

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Fault finding guide

Display text	Type	Fault	Possible cause	Unit behaviour	Fault finding	Solution
None	-	-	Power supply disconnected	LED + display off	Check 230V supply	Re-establish power supply
			Fuse 'F1' on main PCB blown		Check PCB fuse	Replace fuse
Abt	Info	No fault	Ambient temperature is out of operating range	Unit in standby	-	-
Abrh			Ambient humidity is out of operating range			

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Display text	Type	Fault	Possible cause	Unit behaviour	Fault finding	Solution
			Refrigeration circuit leak causing loss of refrigerant	LPCo will persist until LP fault is triggered after 3 separate attempts to clear the fault condition. *Condition is similar to Expansion falve failure	* confirm compressor is running * confirm fan is running * confirm defrost valve is closed (no leak) --> No temperature difference between coils	Repair refrigeration circuit
					compressor does not start at all: *Confirm there is voltage at compressor terminals.	Replace compressor"
			Compressor defective	LPCo will persist until LP fault is triggered after 3 seperate attempts to clear the fault condition No or irregular noise from compressor housing	compressor tries to start but will not run (clicking/humming from compressor): *Confirm that compressor voltage is 230V +/- 10 % *Confirm run capacitor is within specifications	Replace compressor Replace run capacitor
LPCo	Alarm	LP condition	Thermostatic Expansion Valve (TEV) defective	LPCo will persist until LP fault is triggered after 3 separate attempts to clear the fault condition. Evaporator coil can build up a small amount of ice around the TEV * condition can be similar to refrigeation circuit leak	Verify if TEV is visually damaged: Check for cracks and/or corrosion in TEV head / capillary tube / TEV sensor bulb	Replace TEV
			*Defective temperature sensor for evaporator coil or condensor outlet tube. *Bad contact to evaporator coil / condensor outlet tube *Bad connection in plug on PCB *PCB failure *Sensor wire break	Unit seemingly functions normally with no apparent fault. Evaporator coil cold, condenser coil warm. Permanent or periodic LP failure	Confirm sensor resistance Check connection to PCB for corrosion Confirm sensor wire integrity Sensor resistance and connection OK --> defective PCB	Replace sensor Clean connection to PCB Perform PCB reset procedure Replace PCB
			Special operation conditions: Ambient temperature and humidity low can cause insufficient temperature difference between condenser and evaporator coil, which will trigger LPCo fault	No or limited water from dehumidifier LPCO fault will be periodically present LP fault can be triggered Self check will reset fault condition	"Confirm compressor is running Confirm fan is running Confirm magnetic defrost valve is closed (no leak)"	Perform self check Wait for room temperature to increase
			Defrost valve leak PCB failure causing incorrect operation of defrost valve	No water from dehumidifier LPCo will be periodically present LP fault can be triggered	Hissing from defrost valve Voltage at defrost valve coil when there is no ice on evaporator coil"	Excercise valve by means of external magnet or by applying 230VAC to valve coil Replace defrost valve Perform PCB reset procedure Replace PCB

Display text	Type	Fault	Possible cause	Unit behaviour	Fault finding	Solution
LP	Alarm	LP fault	LPCo fault has been triggered too many times consecutively	LP fault is triggered.	See LPCo fault finding procedures	-
			Fan failure, periodic	HP fault is triggered Unit seemingly operating normally, self check will reset fault condition	Confirm fan is working. If fan switches off for no apparent reason it is likely caused by the internal fan motor thermal protection circtuit. It will disable the fan if the winding temperature is too high.	Replace fan
HP	Alarm	HP fault	Fan failure	HP fault is triggered. Self-test will not reset the fault condition	Confirm fan is working.	Replace fan
			HP temperature sensor fault	HP fault is triggered self check will not reset fault condition	Measure resistance of the temperature probe between the ""cond"" and ""gnd"" terminals in the ""temp"" section of the PCB. Resistance should be in the range 190kOhm - 0,14kOhm, corresponding to -50..98°C. If resistance is not within this range the sensor is defective or sensor cable is broken/short circuited	Replace temperature sensor
			Condenser coil clogged		Inspect condensor coil fins for dust/debris.	Clean condensor coil
SENS	Alarm	Sensor failure	Sensor malfunction	Display shows SENS error followed by EVAP or COND when arrow keys are pressed, indicating fault in either condenser or evaporator sensor	Measure resistance of the temperature probe between the terminals of the corresponding sensor in the ""temp"" section of the PCB. Resistance should be in the range 190kOhm - 0,14kOhm, corresponding to -50..98°C. If resistance is not within this range the sensor is defective or sensor cable is broken/short circuited	Replace temperature sensor
				Display shows SENS error followed by Rh°t when arrow keys are pressed indicating failure of the combined temp./RH-sensor.	Confirm if the sensor and/or cable is visibly damaged.	Replace sensor
LOSS	Info	-	Lost communication to paired remote control panel	-	Check that remote control panel is On. Check battteries in remote control panel.	Move display closer. Change batteries in remote control panel.

Spare parts

Find spare parts	If the need for spare parts occurs, please visit: www.shop.dantherm.com

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Schematics

Cooling circuit

Illustration

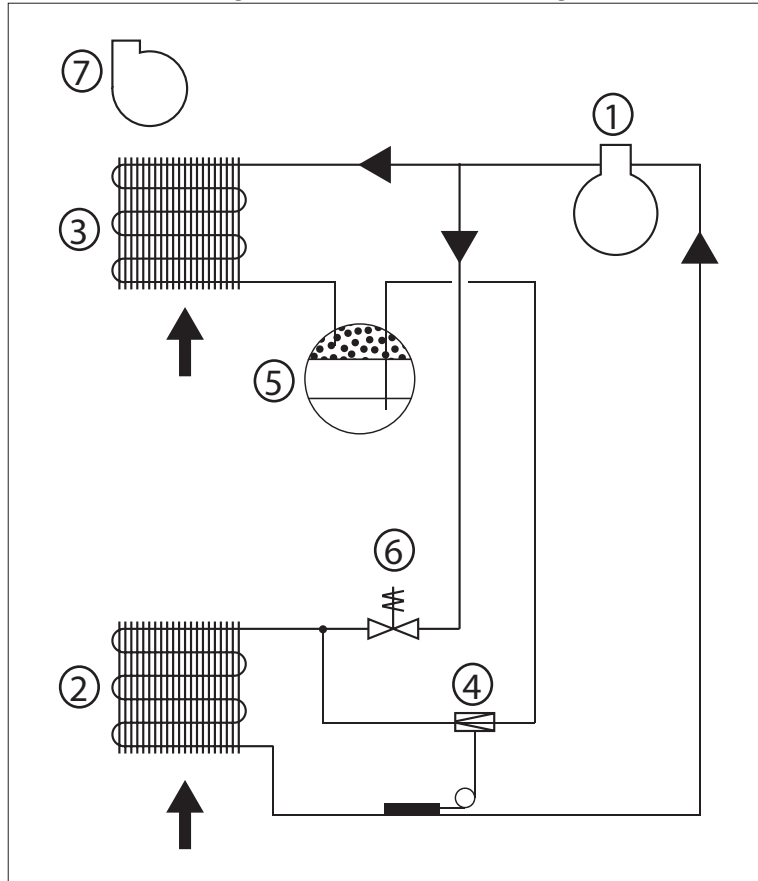This illustration shows the cooling circuit of the VPX/VPX-T range.

Fig. 9

Description

This table lists the different parts of the cooling circuit according to Fig. 9.

Pos.	Description
1	Compressor
2	Evaporator
3	Air-cooled condenser
4	Thermostatic expansion valve
5	Receiver/liquid line drier
6	Solenoid valve for pressure equalization
7	Fan

Main PCB

Illustration
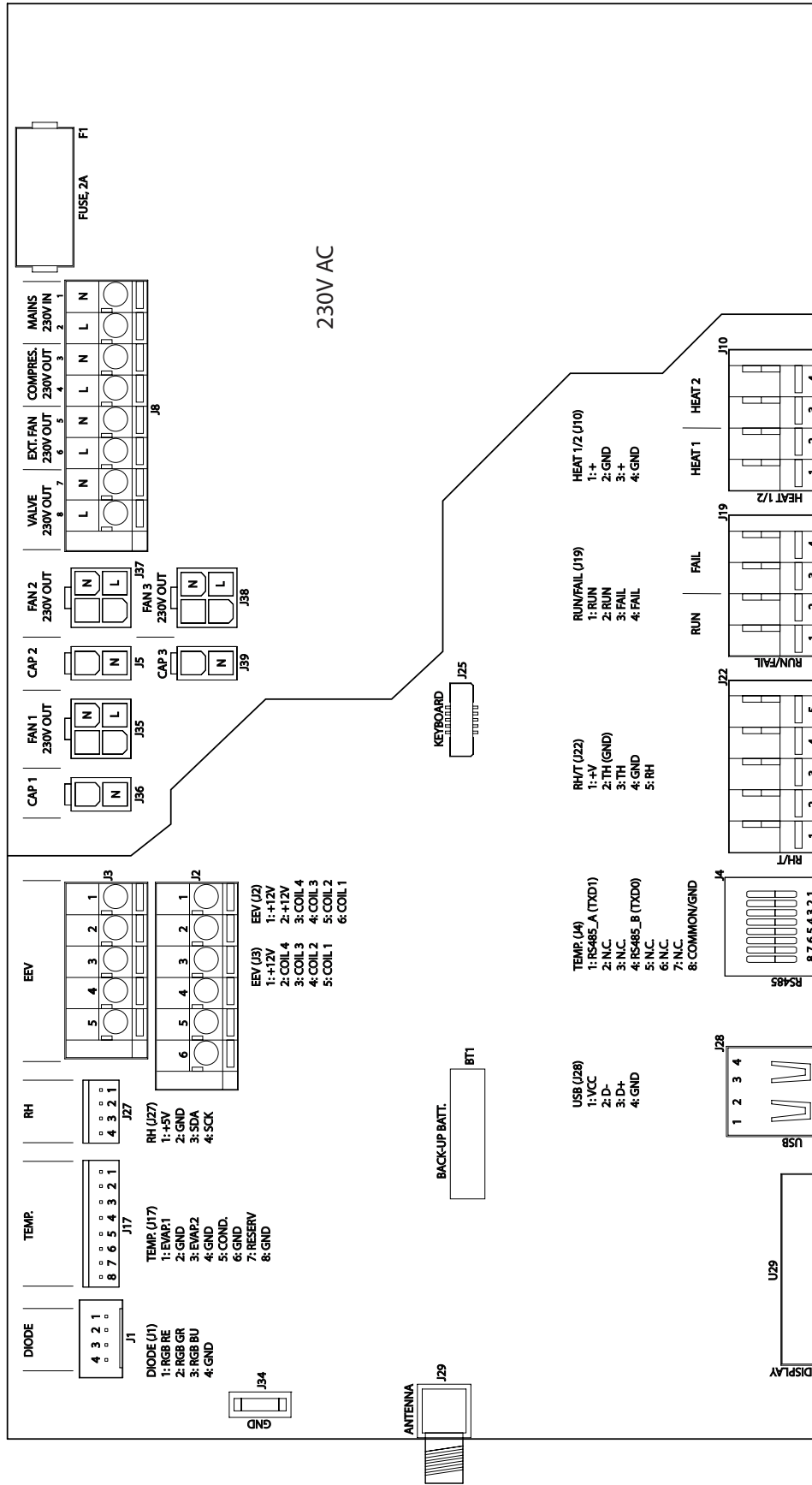
This illustration shows the main PCB and its terminals.

Fig. 10

Wiring diagram

Illustration

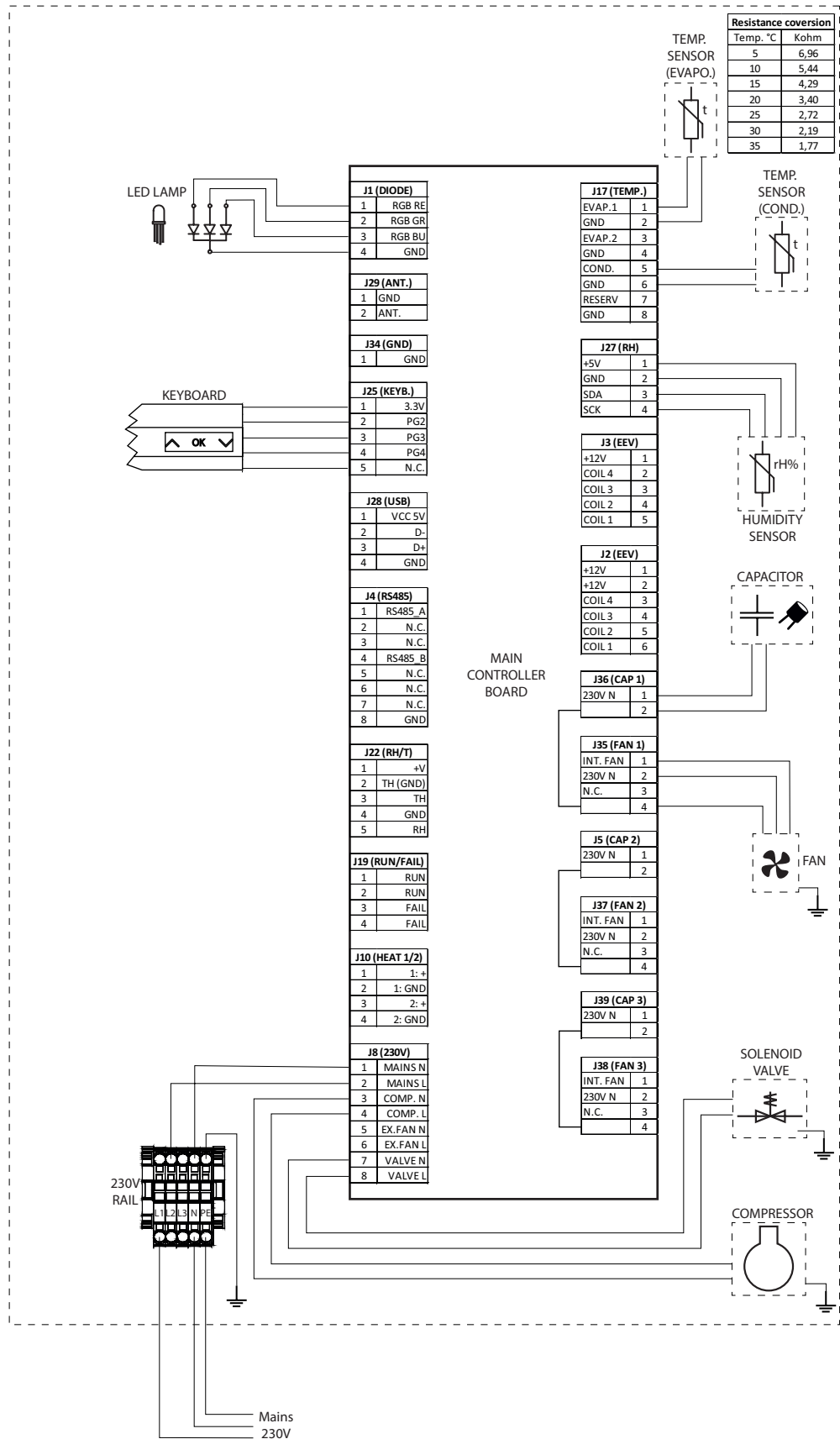This illustration shows the standard connection of the unit.

Resistance coversion	
Temp. °C	Kohm
5	6,96
10	5,44
15	4,29
20	3,40
25	2,72
30	2,19
35	1,77

Fig. 11

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