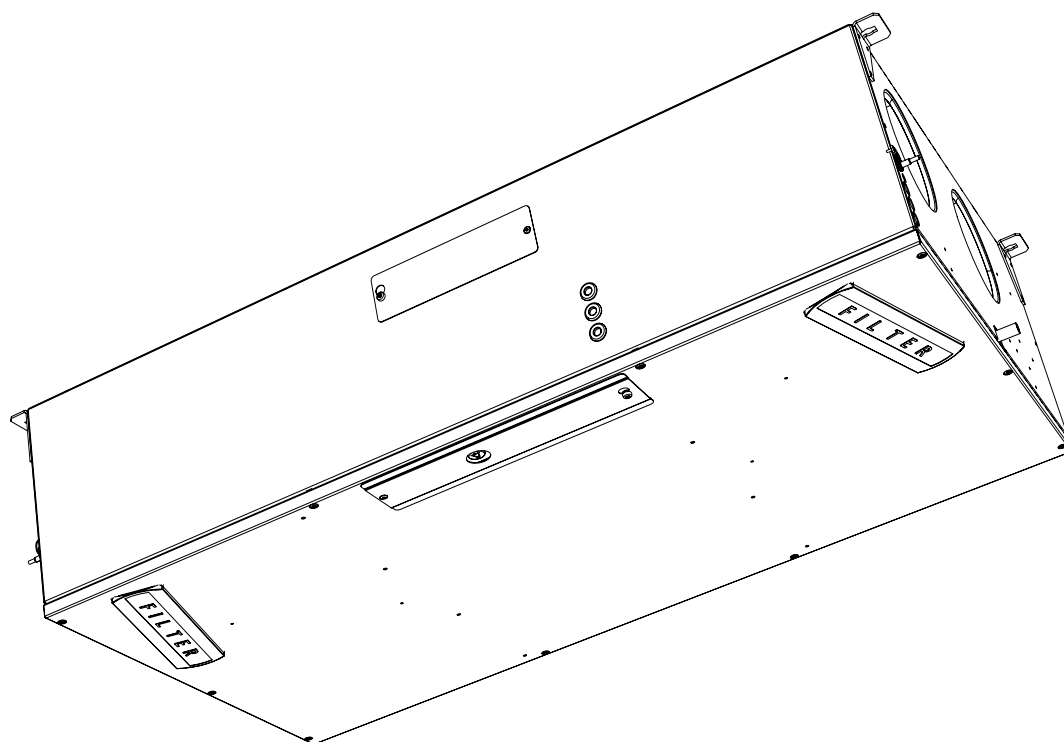


SERVICE MANUAL

HCC 260 P1 - HCC 360 P2 - HCC 360 E1





Introduction

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Overview

Manual

This is the service manual for the Dantherm HCC 260/360 residential ventilation unit. Part number of this service manual is 108478 and covers units with serial numbers from:

HCC260 P1-A-BP - 2010121652545
HCC360 E1-A-BP-RH - 2010131652548
HCC360 P2-A-BP-RH - 2010131652549

Target group



WARNING

This manual is for both installers and users of the product. Installation and repair of the unit is to be carried out by qualified personnel only. It is the responsibility of the installer to read and understand this service manual prior to initial start and setup of the HCC 260/360 unit. Warranty is restricted to units, installed by trained personnel only.

This application is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, unless they have been given supervision or instructions concerning the use of the appliance by a person responsible for their safety. Children should be supervised to ensure that they do not play with the appliance. Apart from the replacement of air filters and exterior cleaning of the system, any kind of maintenance will require the use of trained personnel.



WARNING

Copyright

The unit **MUST** be earthed, through cables **WITH** earth wire and earthed power supply.

Copying of this service manual, or part of it, is forbidden without prior written permission from Dantherm

Reservations

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

Recycling

This units is designed for long term durability. When total lifetime ends, the unit should be recycled according to national rules and with high environmental protection considerations

Abbreviations in this manual

This manual uses following abbreviations for ventilation terminologies.

Abbr.	Description
T1	Outside air coming into the unit
T2	Supply air from the unit to the home
T3	Extract air from the home to the unit
T4	Exhaust air from the unit
S1	Temperature sensor no 1
S2	Temperature sensor no 2
S3	Temperature sensor no 3
S4	Temperature sensor no 4
Mode A	Indicating operation mode A. See more at page 15
Mode B	Indicating operation mode B.(reverse fan) See more at page 15
G4	Standard air filter class (ISO Coarse)
F7	Filter class (ePM1), better and absorbs finer grains than G4 filter
BP	Bypass damper
IP	Unique address for the Ethernet port.
DHCP	Automatic settings of an Ethernet address provided from an external network component (if connecting the unit to Ethernet)
PC	Personel computer running MS Windows
USB	Universal serial bus connection– located on almost any computer
LAN	Local area network is the internal network with or without wireless access
VOC	Volatile organic compounds sensor, controls the ventilation level depending on the pollution of the air.
PC Tool	Windows software application specific for this unit.

Declaration of conformity

Declaration of Conformity



Dantherm hereby, declare that the unit mentioned below:
No.: 352444 Type: HCC 260/360

- complies with the following directives:

2014/35/EU	Low Voltage Directive
2014/30/EU	EMC Directive
2014/53/EU	RED
2009/125/EC	Eco Design Directive (incl. Regulation 2014/1253)
2011/65/EU	RoHS Directive
1907/2006/EC	REACH Regulation

- and is manufactured in compliance with the following standards:

EN 60335-1:2012	Household and similar electrical appliances - Safety - Part 1
EN 60335-2-40:2003	Household and similar electrical appliances - Safety - Part 2-40
EN 61000-3-2:2014	Electromagnetic compatibility (EMC) - Part 3-2
EN 61000-3-3:2013	Electromagnetic compatibility (EMC) - Part 3-3
EN 61000-6-2:2005	Electromagnetic compatibility (EMC) - Part 6-2
EN 61000-6-3:2007	Electromagnetic compatibility (EMC) - Part 6-3
EN 60730-1:2011	Automatic electrical controls for household and similar use - Part 1
EN 62233:2008	Measurement methods for electromagnetic fields of household appliances
EN 55014-1:2006	Electromagnetic compatibility - Requirements for household appliances - Part 1
EN 55014-2:1997	Electromagnetic compatibility - Requirements for household appliances - Part 2
EN 301 489-1 V1.9.2	ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1
EN 301489-3 V1.6.1	ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 3
EN 300 220-1 V2.4.1	ElectroMagnetic compatibility & Radio spectrum Matters (ERM); Short Range Devices
EN 300 220-2 V3.1.1	ElectroMagnetic compatibility & Radio spectrum Matters (ERM); Short Range Devices
EN 13141-7:2010	Ventilation for buildings - performance testing of components/ products for residential ventilation

Skive, 24.09.2020

Product manager
Managing director Jakob Bonde Jessen

Product description

Overall description

Introduction HCC 260/360 residential ventilation unit is designed to supply fresh air to residential home, by exchanging heat from outgoing air to incoming air, resulting in low heat energy loss. These units are designed for installation underneath a ceiling, in dry surroundings, with temperatures >12°C. e.g. utility room or similar heated rooms. The duct connections can be electronically swapped, providing ability to route the connected ducts, either to the right or to the left, as described on page 15

Product illustration This illustrates the unit, without the steel drip tray:

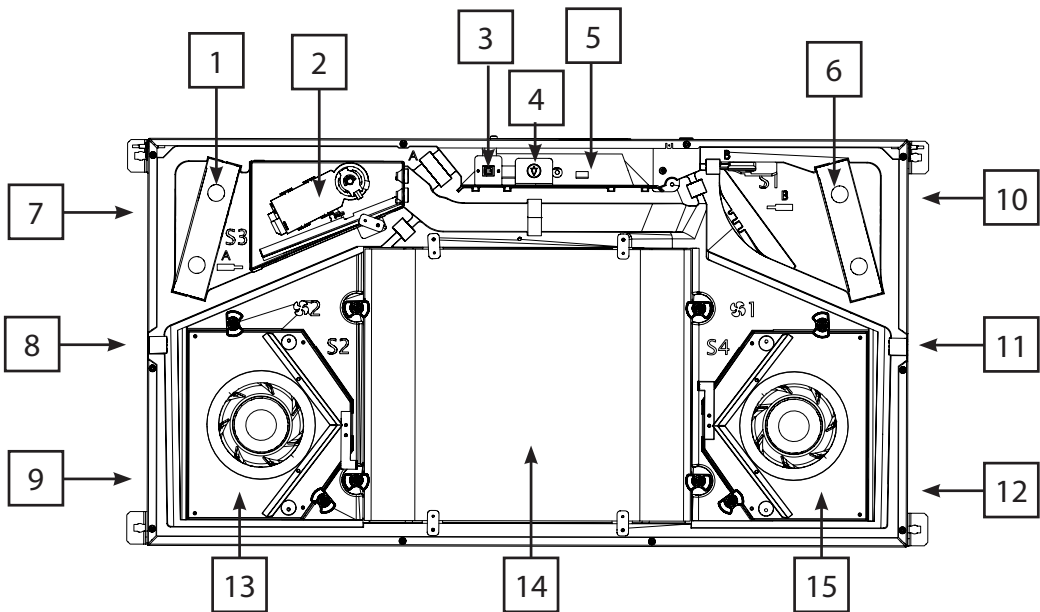


Fig. 1

Part description This table shows the parts according above illustration:

Pos	Mode A(default)	Mode B
1	Extract filter ISO Coarse	Supply filter ISO Coarse or ePM1
2	Bypass module	
3	USB connection	
4	Filter reset button	
5	Controller PCB (external connections see page 21)	
6	Supply filter ISO Coarse or ePM1	Extract filter ISO Coarse
7	Extract air - T3	Outside air - T1
8	Blocked	Water drainage spigot
9	Supply air - T2	Exhaust air-T4
10	Outside air - T1	Extract air - T3
11	Water drainage spigot	Blocked
12	Exhaust air – T4	Supply air - T2
13	Supply fan	Extract fan
14	Heat exchanger	
15	Extract fan	Supply fan

**HCC 260/360
variants
P1, P2, E1**

There are three different variants of the HCC 260/360 unit: P1, P2, E1. The function and installation of the unit is exactly the same.

The variants only differ by either heat exchanger or ventilator thus influencing the performance of the unit.

The product label showing the variant is placed on the cover for PCB access beside the filter reset button (see fig. 2).

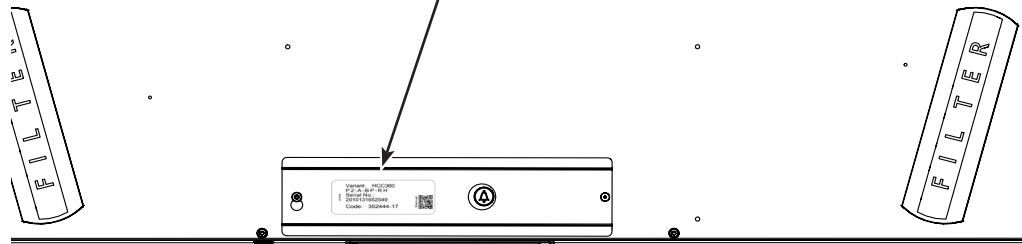


Fig. 2

Airflows

This illustration shows the air flow paths, through the unit.

See more about changing operation mode at page 16

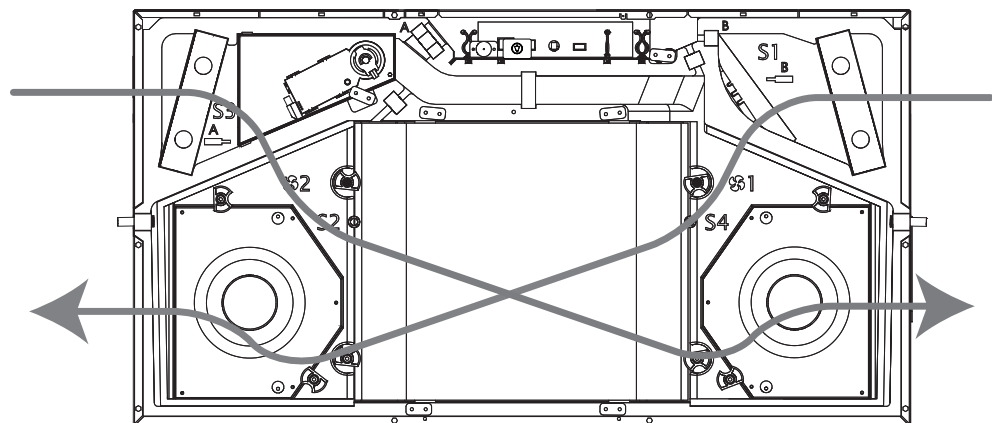


Fig. 3

Sensor placement This illustration shows correct placement of sensors (if available) are placed inside the unit. See also “Part description” on page 6

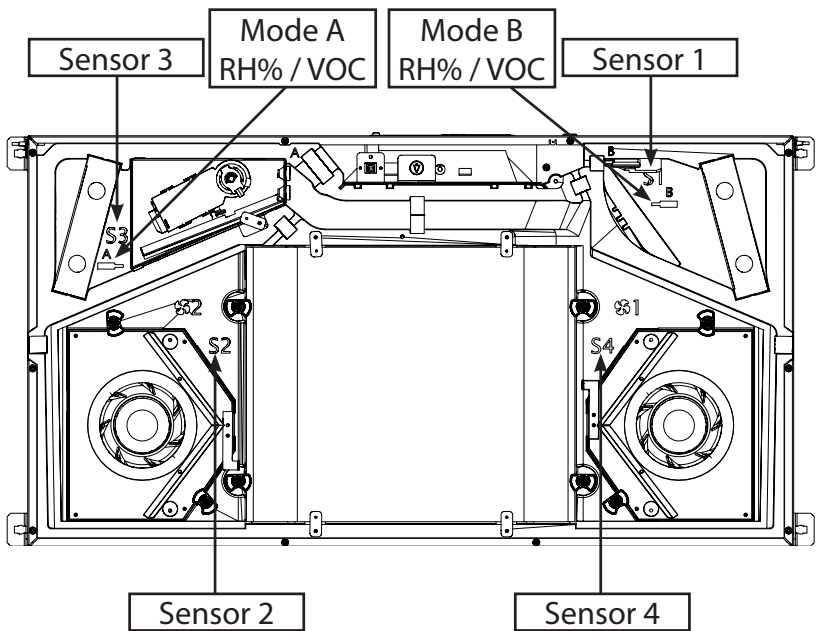


Fig. 4

Sensor function according operation mode:

Sensor	Mode A	Mode B
1	Outside air - T1	Extract air - T3
2	Supply air - T2	Exhaust air-T4
3	Extract air - T3	Outside air - T1
4	Exhaust air – T4	Supply air - T2

Components description



Introduction	This section describes the individual components which are included in the HCC 260/360 unit. Please use the illustration on page 6 for reference.
Cabinet	<p>Cabinet outer parts are made of aluzink sheet metal. The inner part is one moulded polystyrene block. If adding accessory or exchanging parts, access to all parts are available, just by removing the front cover and drip tray.</p> <p>The cabinet is internal sound and heat insulated, with fire retardant polystyrene foam. The unit's cabinet is designed for mounting in 12°-40° C ambient temperature</p>
Heat exchanger	The counter flow heat exchanger absorbs the heat energy from extract air and moves this heat energy to the ingoing supply air, resulting in domestic ventilation with low heat loss.
Fans	<p>The supply fan supplies fresh outdoor air through the unit's heat exchanger to the ducts, where it's distributed to bedrooms, living rooms and possibly sauna or steam bath.</p> <p>The extract air fan draws used, moistened and polluted air from house, through the unit and heat exchanger, where the heat is transferred to supply air.</p>
Bypass damper	The motorized bypass damper overrides the heat exchanger functionality. This is used in warm summer conditions, where colder outside air can be used for reducing inside temperature, when inside temperature exceeds an upper temperature limit.
Controller	The unit's main controller is named main PCB. It electrically connects all electrical and electronic parts and various accessory components.
Temperature sensor	Units are fitted with 4 temperature sensors that continuously monitor the temperature changes on 4 sides of heat exchanger, i.e. in outdoor air, in supply air, in extract air and in exhaust air.
Humidity sensor	<p>The HCC 260 P1 unit, is not default fitted with a RH sensor. RH sensor is available as an accessory.</p> <p>HCC 360 P2 and E1 units are fitted with an RH sensor in the extract duct.</p> <p>The humidity sensor will continuously monitor the quality of the extract air, and adjust the air flow level accordingly. This operation is named demand mode.</p> <p>If an HRC remote control is connected, the level will be shown in the display using 3 level icon.</p> <p>Using demand mode will result in the correct level of ventilation with lowest possible electrical power consumption.</p>
Filters	<p>The unit is fitted with two ISO Coarse class cassette filters. These filters protect the heat exchanger and improve the indoor climate by removing dust and particles in both airflows.</p> <p>As alternative/accessory, an ePM1 class filter can be obtained. If ePM1 is used, then it is always placed in the supply air, removing even smaller particles.</p>
Water drainage	The unit is fitted with 2 pcs. spigot connections for draining condensed water. It is mandatory to fit the spigot next to the T4 with a hose, discharging the condensed water to a sewer. Correct drainage is shown on the connection label placed on the unit. The remaining unused drain is to be blocked with the enclosed cap.
Hanging rail	The unit is delivered with hanging rail.

Accessory

Introduction

The unit is delivered from factory, without any accessories mounted. These are to be installed prior to initial unit installation or alternative after commissioning, if further functionality is requested. The detailed installation of one or more accessories, is illustrated on the leaflet following each accessory .

Electric preheating

The unit can be fitted with an electrical preheating element that preheats the incoming air. The preheater increases the outside air temperature going into the heat exchanger, and thereby reduces the risk of ice in the heat exchanger in very cold conditions. The preheater is an external enclosure, connected and controlled by the HCC 260/360 controller.

Hand held Remote control

For controlling HCC 260/360 units, Dantherm recommends using remote control, designed for this range of units.

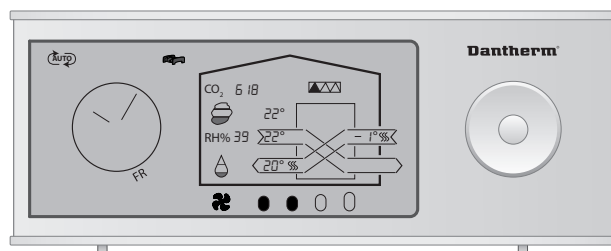


Fig. 5

Wired Remote Control (HCP 10/11)

A wired remote control (HCP 10/11) without display can be connected to the unit as an alternative to the hand held remote control.

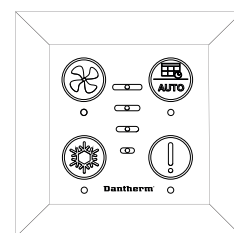


Fig. 6

Accessory control (HAC 2)

Connect a number of additional accessories to the HCC 260/360 unit via an accessory controller: HAC 2.



Fig. 7

VOC and humidity sensors

HCC 260/360 can be fitted with Humidity (RH%) (if not already included as standard) and/or VOC (organic chemicals) sensors. These sensors will continuously monitor the extract air, and adjust the air flow level accordingly. This will result in adequate level of ventilation, with lowest possible electrical power consumption. If a remote control is connected, the sensor level will be shown in the display using 3 level icon.



Fig. 8

Filters

Replacement of filters in sets of 2 ISO Coarse filters or 1 ISO Coarse plus 1 ePM1 (pollen) filter.

System operation strategy

Introduction	This section describes the operation strategy in various conditions. For a user specific running operation see page 26.
Defrost	<p>In cold conditions where T1 is below -4°C and exhaust T4 is <+8°C the condensed water could built up as ice in the heat exchanger, blocking the air path and eventually destroying the heat exchanger.</p> <p>In order to prevent this sequence is initiated:</p> <ul style="list-style-type: none"> • The supply fan speed will decrease with 3 rpm/second until minimum RPM is reached. • After 10 seconds at this speed the supply fan will stop completely, while the ongoing exhaust fan is supplying warmer air into the heat exchanger component, to remove any potential ice. • When T4 yet again is >+8°C the supply fan will start at minimum RPM, and then increase speed with 3 rpm/second until the original required speed is regained. • If T4 becomes <+2°C during the speed increase cycle, the supply fan will decrease speed again. • If T1 ≤ -13°C for more than 4 minutes and 25 seconds, even with defrost mode active, the unit will stop all operation for 30 minutes, and reattempt previous operation condition. If electrical preheat is present, this total off mode is disabled. <p>The defrost operation will create an under pressure inside the house, so if fireplace mode is enabled, and defrost is necessary; the unit will stop all operation in 4 hours instead. Set-points cannot be changed.</p> <p>When defrost is active any connected remote control will show <i>dEF</i> in the display, and when defrost has shut all off, the display will flash the T1 temperature</p>
Preheat (Accessory)	<p>If the preheater is installed, the unit will add electrical heat to the incoming outdoor air, in order to increase the temperature of outdoor air entering the heat exchanger and thereby reduce or eliminate the possibility of going into defrost mode and to ensure balanced operation as long as possible.</p> <ul style="list-style-type: none"> • Preheater can be "master" enabled/disabled on the wireless remote control in installer mode • Preheat is applied before the T1 sensor. • If outside temperature is <-3°C or supply air is < 16,5°C the preheater will switch on with 10% power. • The power will increase/decrease 10% for each 60 seconds depending on the T1 or T2 temperature. <p>Temperature set-points are fixed.</p>

Installation

General location requirements

Introduction

The HCC 260/360 must fulfil all of the previous consideration prior to starting any installation process.

Location and duct connections

The following should be considered selecting an appropriate location for installation:

1. The HCC 260/360 units, is designed to be mounted in dry surroundings, with temperatures $>12^{\circ}\text{C}$ like in utility rooms or similar heated rooms.
2. The HCC 260/360 can be mounted vertically or horizontally. Please ensure that the ceiling or walls structure is adequate to withstand the additional weight of the unit.
3. The air flow direction can be electronically swapped, providing ability to route the connected ducts, either to the right or to the left. See more about swapping at page 16.
4. It is **mandatory** to tilt the HCC 260/360 minimum 1° towards the drain. The enclosed bracket provides this requirement, in case of horizontal ceiling.

Reserve additional space

The HCC 260/360 is designed for hidden installation.

It is very important to leave additional space:

- Adequate space for exchanging the unit if needed, including turning the unit into its bracket and up, if mounting underneath the ceiling.
- External preheater (accessory), which is mounted external into the duct system on the T1 incoming outside air, minimum 320 mm from the unit.
- Additional space, in order to inspect and test any drainage hose, also if no preheater is installed..

This applies also for after sales situations, where the unit is to be dismantled completely for service. Any warranty claim will not be acknowledge if these above requirements are not fulfilled.

See min. measurements on page 13.

Service space, ceiling

If installing the unit underneath the ceiling, please reserve space for the tilting up/down, and additional space, if electrical preheater is installed.

Additional space dimensions here shown in operation **mode A**

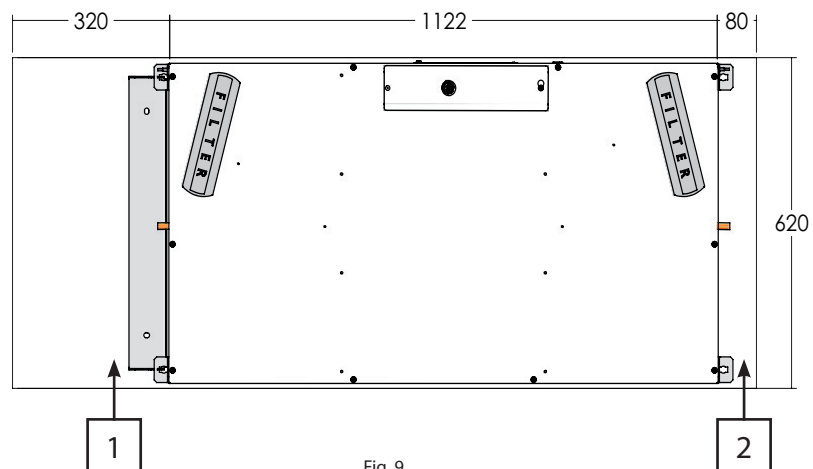


Fig. 9

and here shown in operation **mode B**

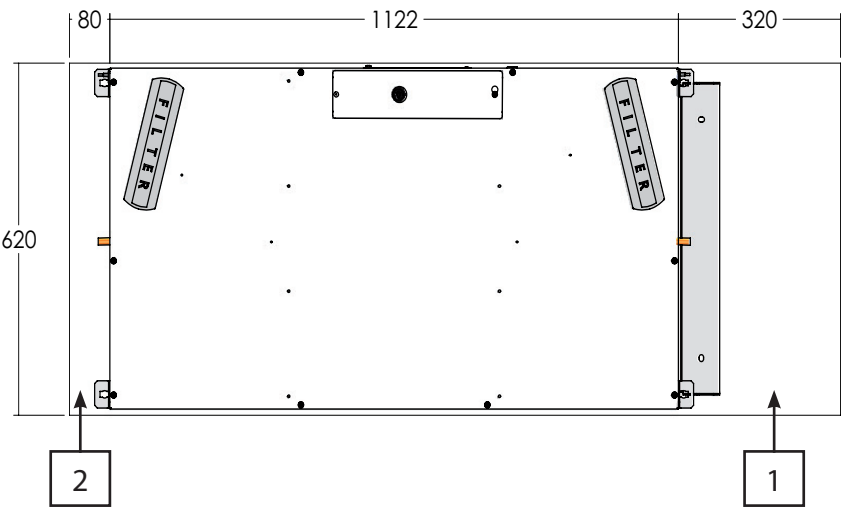


Fig. 10

No	Description
1	This space is mandatory in order to lift the unit upwards in its wall bracket. Please ALWAYS mount the bracket and reserve this space, at the unit end, in which the T1 and T4 (cold ducts) are connected. If preheater is installed, this additional space is require to make future service if needed.
2	In order to be able to mount the screws into the ceiling properly, please add minimum this space shown

Service space, wall If installing the unit onto the wall, always have the T1 and T4 (cold ducts) in the bottom of the unit. If the unit has additional preheater, please allow space for this as well, see illustration.

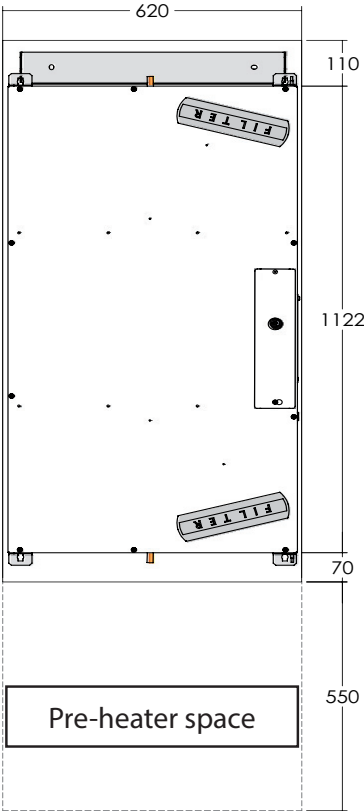


Fig. 11

Installation options

Introduction

HCC 260/360 has a variety of installation options such as vertical or horizontal mounting, flexible cable routing and duct connections making the unit adaptable to different locations. Check the installation options and decide how the installation best fulfils the local demands.

Vertical or horizontal

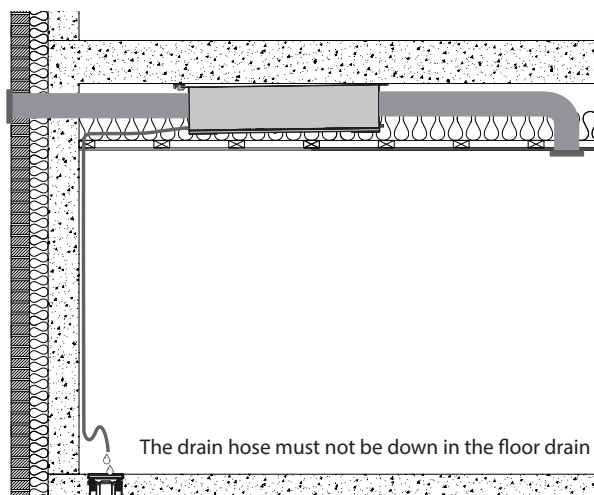


Fig. 12

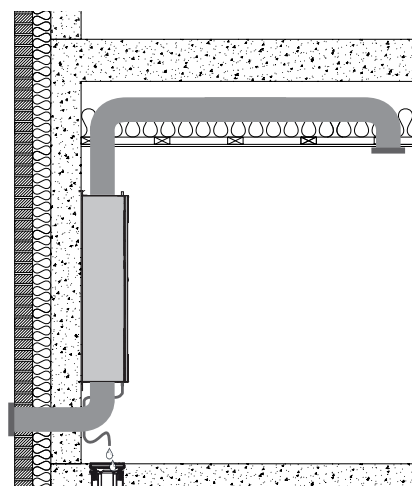


Fig. 13



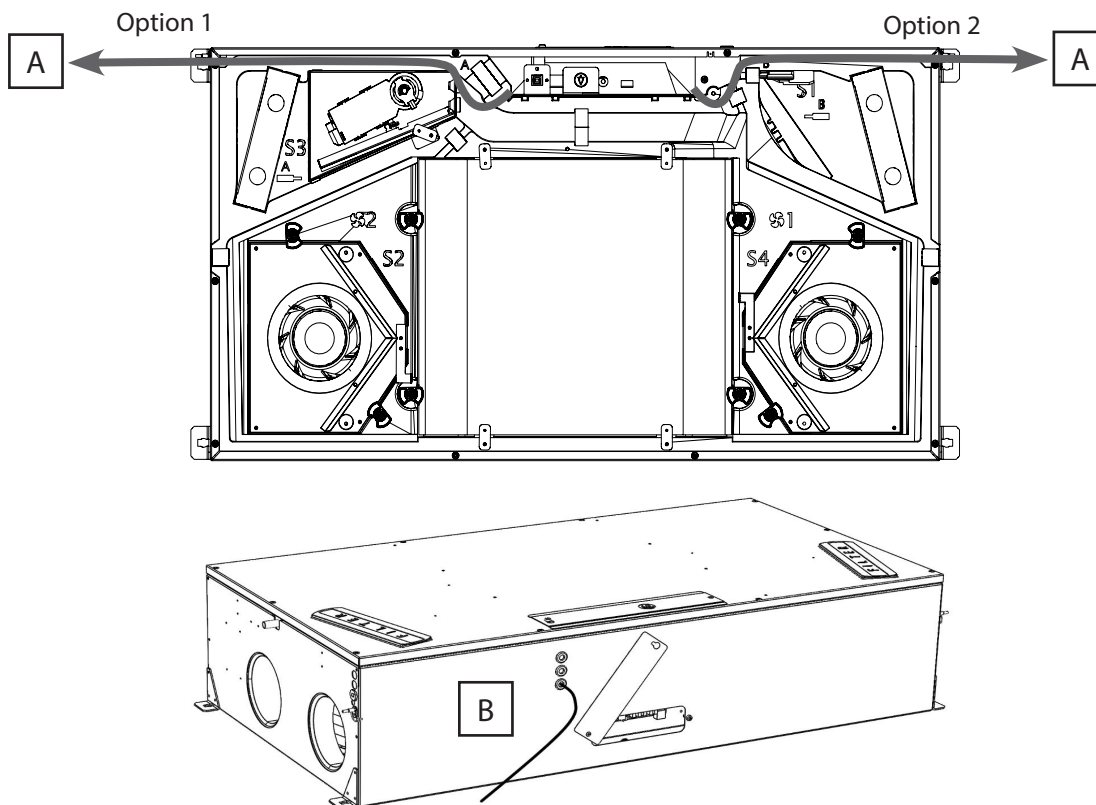
NOTICE

Please ensure that the ceiling or walls structure is adequate to withstand the additional weight of the unit.

Remember to reserve the mandatory service space.

Cable routing

All cable connection can be routed inside the unit, for exit through both end plates (fig. A). Alternatively connect as shown in fig. B. This enables the installer to route and connect cables in best suitable way.



**Selecting
mode A or B**

The air ducts going into the house can either be connected on the right hand side or the left hand side. The default mode is mode A. (Follow procedure on page 16 for swapping to mode B)

Illustration of duct connections in operation **mode A**:

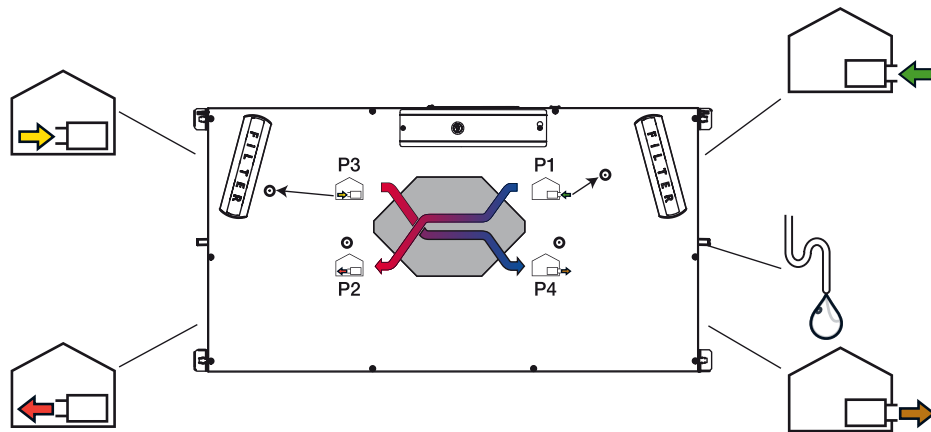


Fig. 14

Illustration of duct connections in operation **mode B**:

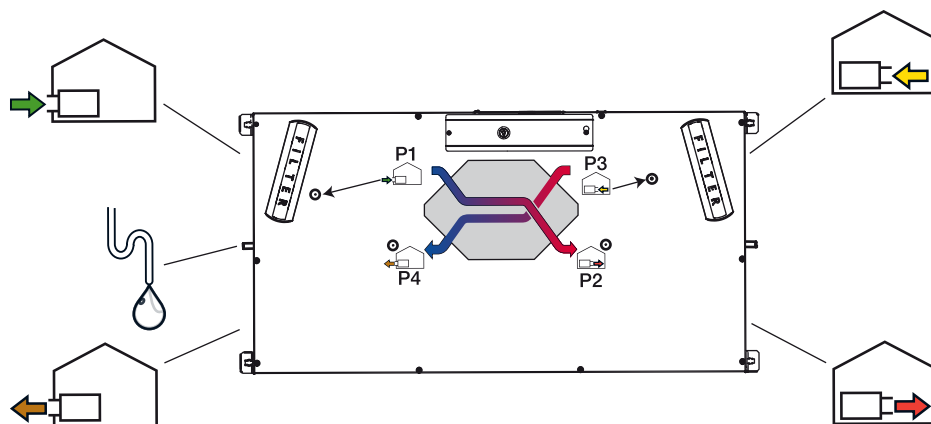


Fig. 15



WARNING

Always disconnect the power by removing the 230V plug from the socket, before opening the unit !

Swapping to mode B

If local systems demand mode B, follow the below procedure AND check the label in order to connect the water drainage correctly.

Step	Action	Illustration
1	Locate the small lid on the long side of the unit closest to the filter lids.	
2	Locate the switch on the main PCB. The default is mode A as shown. To select mode B slide the switch to the right. Close the lid again.	
3	Swap the drain hose and plug as indicated. For a further description of the drain hose installation, see page 20.	
4	To swap the RH sensors, open sidepanel and look for the marking "A" and "B"	
5	Swap the filter (ONLY if the optional pollen filter ePM1 is used for the supply air). • Check the table on page 6 in order to determine the right position of the ePM1 filter during mode A/B.	
6	Place new B sticker and calibration sticker on the unit.	
7	Connect the duct as specified on the label and described on page 19.	
8	Calibrate the unit as described on page 24.	

Mounting

Multi purpose mounting bracket

The enclosed bracket can and should be used, both for wall and for ceiling installation. The bracket will automatically tilt the unit 1° towards the condensate drain, when mounted underneath the ceiling (fig. 16) and when mounted on the wall (fig. 17).

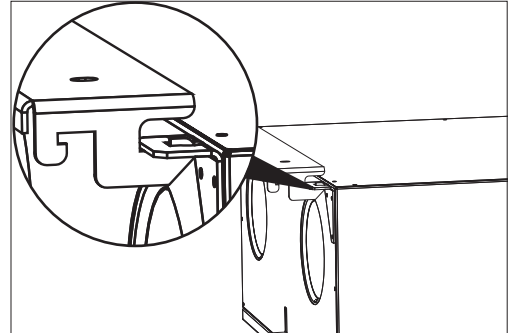


Fig. 16

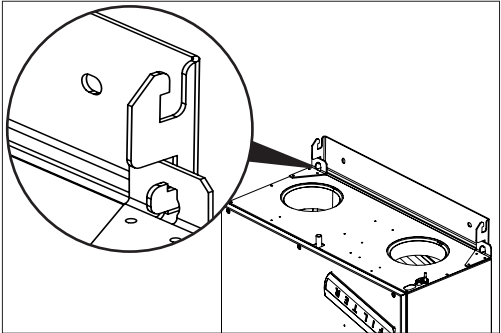


Fig. 17

Wall mounting

Please follow this procedure to install the HCC 260/360 vertical onto a wall.

Step	Action	Illustration
1	Drill two holes for the bracket, fulfilling all dimension requirements shown in the section "General location requirements" on page 12.	
2	Mount the bracket with appropriate screws	
3	Lift the unit onto the bracket	
4	Drill and mount two appropriate screws in the lower unit bracket	
5	Connect ducts according illustration at page 15 IMPORTANT: the T1 and T4 outside air ducts, must ALWAYS be routed to the duct connections in the bottom	
6	Connect ducts and drain hose.	

**Under ceiling
installation**

Please follow this below procedure for ceiling installation

Step	Action	Illustration
1	<p>The HCC 260/360 should always tilt minimum 1° towards the drain side(T4). This is achieved when using the enclosed bracket, placed at T4 end of unit. Drill two holes and mount the bracket into the ceiling configuration setup (see page 17)</p> <p>Please allow minimum 320 mm to the ceiling edge, in order to have room for turning the unit in step 2.</p>	
2	<p>Lift the unit onto the bracket hanging freely as shown</p>	
3	<p>Turn the unit towards the ceiling, and secure it with two screws</p>	
4	<p>Connect ducts and drain hose.</p>	

Connect duct system

Connect ducts (specification according local regulations), with spigot connection only.

WARNING: NEVER screw any spigot for ducts, directly onto the sheet metal of the unit.

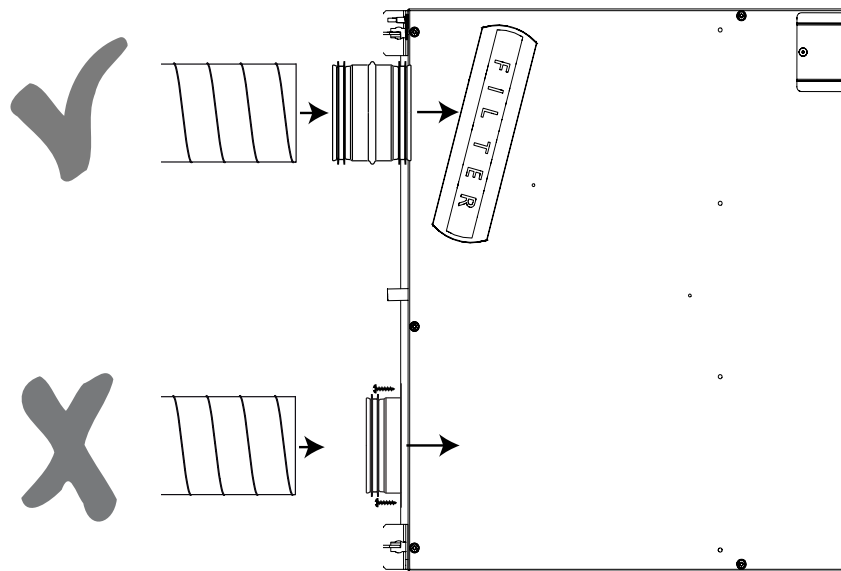


Fig. 18

Insulate the ducts according local requirements, taking the installation surrounding temperature into consideration.

Secure ducts

Make sure that all ducts are well attached and secure, and ALWAYS fixed securely to the ceiling or wall with brackets

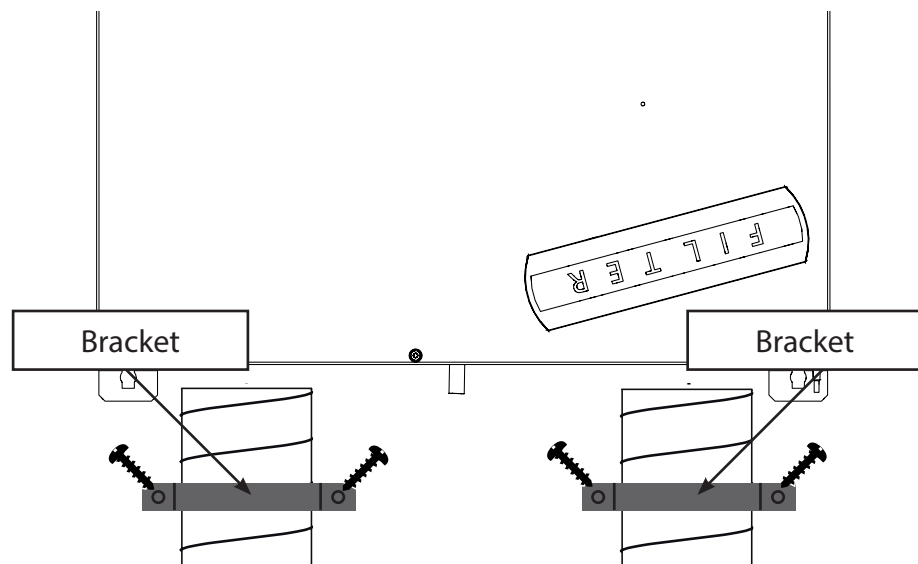


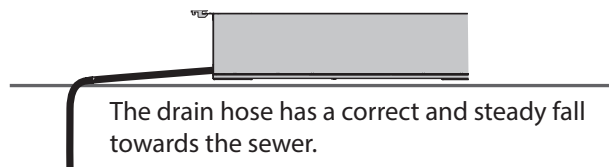
Fig. 19

Drainage consideration

It is mandatory in any HCC 260/360 installation to connect a water drain hose to the unit, because the humidity from the extract air condensates to water drops when cooled in the heat exchanger.

This water is harmful to its surrounding if not managed correctly. The installation thus needs a condensate water drain hose connected with a decline of minimum 10 Promille (1 cm/meter) away from the unit and the hose must NEVER exceed the level of the lower sheet metal plate.

Correct installation



Faulty installation



Fig. 20

Condensate drainage

After guiding the hose downwards to a drain, it needs a closing loop. This will block air from escaping through the hose. Please make either a complete closed loop, or a siphon loop on the hose as illustrated, and make sure it has a minimum height of 100 mm. Fill the siphon/loop with min. 0,5 l. water before connecting the hose to the unit.

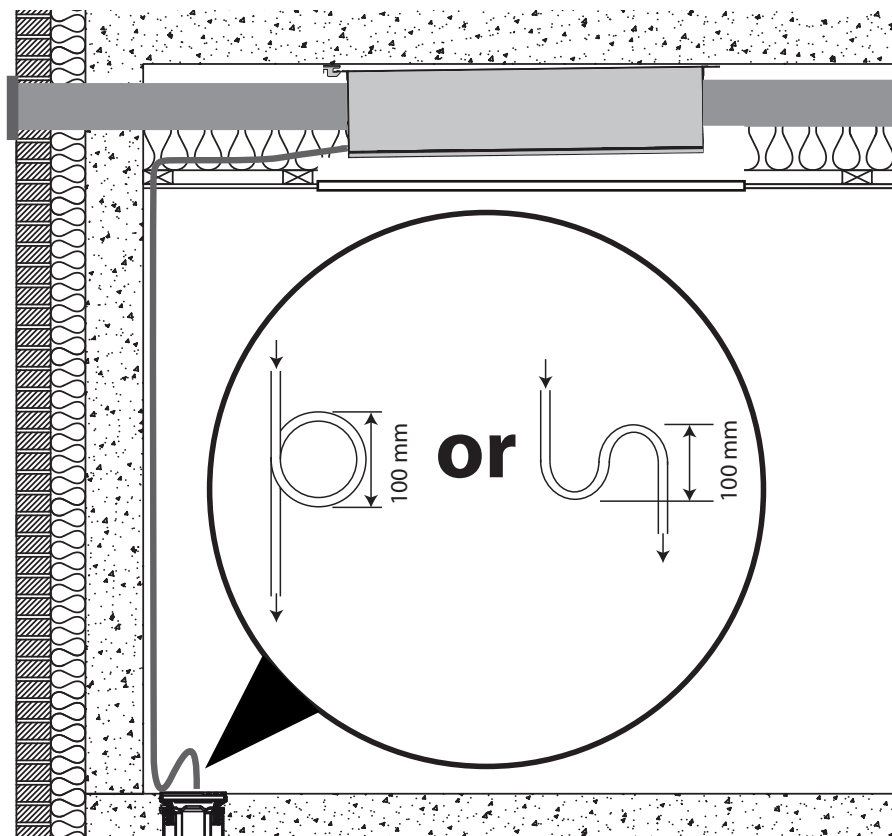


Fig. 21

Connecting additional equipment



Connecting additional equipment is to be carried out by qualified personnel only. Always disconnect the power by removing the 230V plug from the socket, before opening the unit !

Access to connections

The integrated controller has various options to connect additional external equipment. To gain access to the controller, please open the print cover (A) of the unit, by turning it all the way around as shown in fig. 22 .

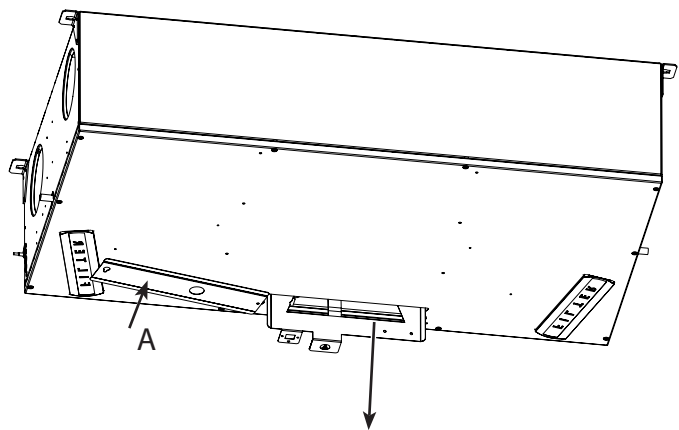


Fig. 22

External connections options

This illustration shows the various connections:

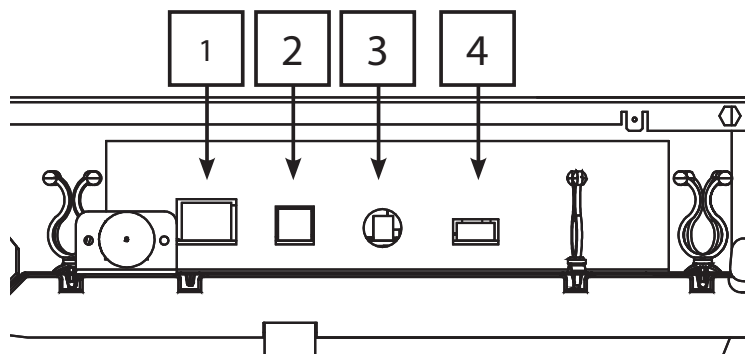


Fig. 23

Connection	Description
1: ETHERNET	LAN connection for connecting to wireless router for BMS and smart phone app. functionality.
2: MODBUS	Modbus connection for hardware accessory modul (HAC or HCP 10)
3: ANTENNA	Wireless connection point for proprietary remote control.
4: DIG IN	External digital input, to select specific operations. Parameters can be set in the PC Tool.

Cable installation

Pull the cable through the sheet metal plate next to the 230V AC input. This can either be on the right or the left. See more at page 14

Press the cable in between the sheet metal and the EPS part.

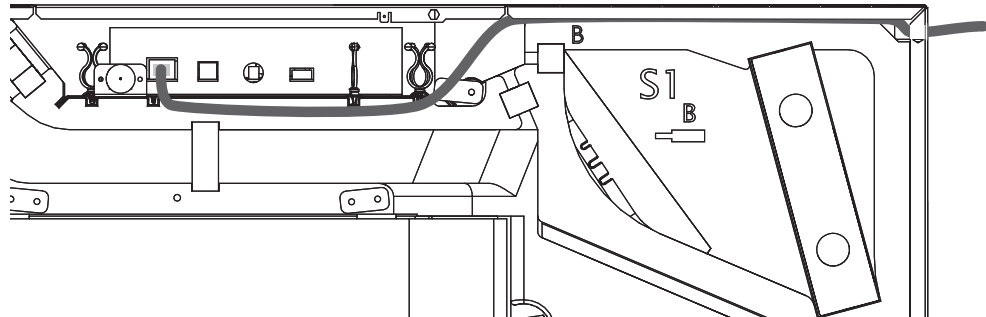


Fig. 24

Connecting to LAN

Connect the unit to LAN using a standard Ethernet cable, fitted with RJ45 plug. If using non pre-fabricated cable, please first run the cable through the house as needed and mount the RJ45 plug using the standard Ethernet wire crossing terminology, as specified in T568B. These mounting instructions can be found in the internet fx. on Wikipedia.

The unit will be accessible for the smartphone app (IOS and Android), if your device is connected to the same network via WIFI.

IP adress allocation status	Description
Dynamic IP	If the unit is connected to a router with built-in DHCP server it will fetch the IP address itself from the router when the unit starts up.
Static IP	Using PC Tool it is possible to allocate a static IP address to the unit, which is necessary for example in order to perform checks on HCC 260/360 via smartphone app when outside the LAN's range. This will also require setup of the home's WAN address as well as allocating a port on the router.

MODBUS

MODBUS:

MODBUS RTU is only for internal communication between unit (UVC print) and Dantherm accessories (HAC, FPC, or HCP11)

Connected via RS485 port

Important! External BMS can not be connected as a Modbus RTU via RS485 port, nor via Dantherm accessories. (HAC, FPC, or HCP11)

Modbus TCP/IP

The controllers in the Dantherm ventilation units has the possibility to communicate Modbus TCP/IP over the Ethernet port. This is used for Building Management Systems (BMS) or communication with smartphone apps.

Antenna

External antenna can be connected here, to gain higher coverage area.

Dig. input

The unit is fitted with 2 overrule inputs, also called digital inputs. These inputs can be used for selecting other fan speed level or activating alarms.

As default the digital input are setup to:

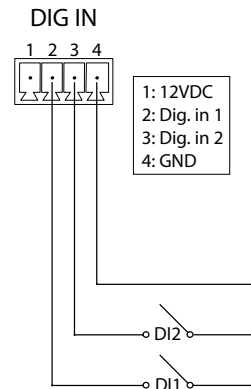
- Dig. input 1: Ventilation step 2
- Dig. input 2: Ventilation step 4

How it works (example to the right):

- Switch DI1 between pin 2 & 4 will activate input 1
- Switch DI2 between pin 3 & 4 will activate input 2

Dig. input can be used for:

- Ventilation steps from 0 - 4
- Safety shutdown
- High water level sensor.
- Kitchen hood boost
- And more



Find relevant information and settings in the PC Tool, under External Control.

Initial calibration

Introduction

After the installation the unit need to be calibrated to adapt any specific duct system. This is done by connecting a computer with MS Windows, to the USB hidden under a black rubber ceiling, on the front cover, and start up the PC Tool software, specific for this unit type..

Connect power

The unit is fitted with a 230V Schuko plug. NEVER cut away this plug. The unit needs to have an easy disconnecting possibility, as it needs to be rebooted when doing a firmware up-grade, as well as being disconnected when connecting additional connections. Connect the plug into an 230V socket with earth.

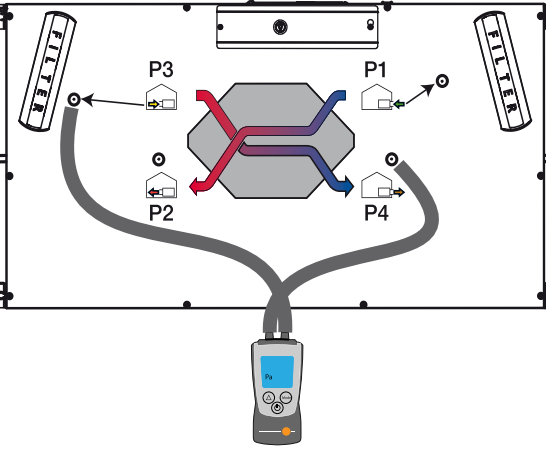
Connect USB

Locate the black rubber bushing, and remove it, to be able to connect the enclosed USB cable, between the unit and your computer.

Calibration

Please follow this procedure to calibrate the unit:

No	Action	Illustration
1	Make sure the unit is in correct operation mode (A or B) according the duct connection, and assure that correct label is placed on the unit .See more at page 16	
2	Locate the air flow chart placed on the front cover of the HCC 260/360. Based on the required air volume for each specific installation, its possible to read out the corresponding pressure drop over the heat exchanger.	
3	<p>Connect the ΔPa meter across the supply air path, as shown. This example is based on the unit being in operation mode A. Use a football needle pin, punch this all the way through the rubber ceiling pad. When removing the pin, the rubber will close the hole.</p> <p>Needle: </p>	
4	Adjust the supply fan speed, according the guide in the PC Tool on your computer . The goal is to adjust the fan until the Δ Pa meter shows the pressure drop value that was read in point no 2	

5	<p>Move the ΔPa meter across the extract air path as shown. This example is based on the unit being in operation mode A.</p>	
6	<p>Adjust the extract fan speed, according the guide in the PC Tool on your computer . The goal is to adjust the fan until the ΔPa meter shows the pressure drop value that was read in point no 2, deducted a few percent, in order to create a small under pressure inside the house.</p>	
7	<p>Disconnect the ΔPa meter, as well as the computer. Adjust the balancing of the valves in every room in order to make sure that the desired air flow rate can be supplied in every room.</p> <p>Check the nominal air flow rates based on earlier instructions in this procedure, as radical adjustments (balancing) will influence the nominal air flow rates.</p>	

Operation (user)

Overall ventilation functions

Introduction

Never switch off the main power to shut down the ventilation. This could ultimately result in condensate water dripping from air inlets.

The HCC260/360 unit is able to operate in the ventilation and override modes mentioned in this section. Please be aware, that the different operation modes cannot be activated via the unit itself, but have to be activated via an additional remote control (HCP 10/11 or HRC3) or via the Dantherm Smartphone app.

Ventilation modes

The units can ventilate your home in three different main operation modes. The modes are selectable according personal needs, taking in mind that national rules and regulations, can state a minimum ventilation requirement. Auto mode requires an accessory sensor

Mode	Description
Manual	In manual operation, the unit will run in the required fan speed at all times. Fan speed 4 is 130 % boost mode. Deactivates automatically after 4 hours Fan speed 3 is nominal fan speed, defined as 100 % Fan speed 2 is 70 % of speed 3 Fan speed 1 is 49 % of speed 3 Fan speed 0 is fan stop. Deactivates automatically after 4 hours.
Week timer	Timer controlled operation mode sets the fan speed according a week time table. The controller has 10 fixed and 1 custom timer. Select a fixed time table that cover your requirements or create a custom timer, in the PC Tool. Appendix A - "Week program specification" on page 41 shows in details, the week programs layout
Demand (RH or VOC sensor needed)	In auto mode (demand), the unit will automatically adjust the ventilation level, to comply with the ventilation needs, measured in the outgoing air by VOC and/or RH% sensors. This operation mode is only possible if the unit is fitted with VOC and/or RH% sensor.

Override operation

On top of the above main ventilation modes, the user can select some override modes for various purposes. These overrides will disable automatically depending on time or temperature.

Overrides	Description
Fan boost	130% boost in 4 hours.
Summer mode	Supply fan off, extract fan still running, and colder air will flow through any open window. This reduces inside temperature in summer times, with half energy consumption.
Bypass (accessory, if not standard equipment)	Both fans running, but no heat recovery. This will automatically supply colder outside air, that reduces inside temperature in summer times.
Fireplace booster	7 min. with extract fan reduced to 50% This creates an overpressure enhancing the chimney function, when lighting a fireplace
Night mode	Sets the fan to speed 1 at night regardless of any other mode. Start and end time can be set from the remote control
Away mode	In Away mode, the unit will run same fan speed as manual fan speed 1. After 28 days or manual disabling of Away mode the unit will run week program mode.

User Rights

User Right

This unit is designed for hidden installation. Any user interaction is therefore based on external devices, either a wireless remote control or a smartphone app. See the enclosed manual for these accessories for user instructions.

The PC Tool for installers, brings even more extensive options for installers. This below table shows all controls available on these interfaces

Function	Unit	Wired remote control		Handheld remote control	Smart-phone	PC Tool
Basic operation		HCP 10	HCP 11			
Select Basic operation Mode (Man, Week and Auto if sensor exist)		User		User	User	User
Select Fan step 1-4 in manual fan mode		User		User	User	-
Select Summer Mode		User		User	User	User
Select Fire place boost mode		User		User	User	User
Enable away mode		-		User	-	-
Night mode enable		-		User	User	-
Set start/end night mode		-		User	User	-
Basic readout						
Read actual mode		User		User	User	User
Read actual fan step		User		User	User	User
Read indication if summer mode is active		User		User	User	User
Read temperatures for T1-T4		-		User	User	User
Read temperature for T5 – If wireless remote active		-		User	User	User
Read supply and extract fan speeds in RPM	-	-		Installer	-	Installer
Filter						
Filter fouling - three steps indication		-		User	User	User
Acoustic filter alarm	Yes	-	User	User		
Reset filter timer upon expiration		User		-	User	User
Reset filter timer before expiration		User		-	User	User
Read remaining filter time in days	-	-		-	User	User
Alarms						
Acoustic alarm signalling	Yes	-	User	Yes		
Read real time error indication		-		User	User	User
Read specific error code indication		User		User	User	User
Read historical error log with timestamps	-	-		-	-	User
Time and Date						
Read and set time/date	-	-		User	User	User
Select week program no.	-	-		User	User	User
Set custom settings for week program 11	-	-		-	-	User
Read power-on time counter	-	-		-	-	User
Read date of installation	-	-		-	-	User
Manual calibration of nominal rpm						
Guided in PC Tool	-	Installer		-	-	Installer
Network						
Enable DHCP	-	-		-	-	User
Set fixed TCP-IP network address (otherwise automatic using DHCP)	-	-		-	-	User
SW versions						
Read MPCB software version	-	-		Installer	-	User
Read wireless remote software version	-	-		Installer	-	-
Read smartphone app software version	-	-		-	User	-
Read PC Tool software version	-	-		-	-	User
Read HAC software version	-	-		Installer	-	-
Forced test of internal preheater and by-pass						
Started from PC Tool	-	-		-	-	Installer
External override						
Set functionality for digital input	-	-		-	-	Installer
Unit type configuration						
Read unit type	-	-		-	-	User
Select unit type	-	-		-	-	Installer
Read and set serial number	-	-		-	-	Installer
Set unit name	-	-		-	-	Installer
Read unit name	-	-		-	User	User
Read A/B switch position	-	-		-	-	User
House settings						
Select type private/social –(disable step 0 in social)	-	-		-	-	Installer
Select Isolation of house	-	-		-	-	Installer
Select if Fireplace present (defrost under pressure not allowed)	-	-		-	-	Installer

Maintenance and care

Preventative maintenance

Introduction

To keep the unit into specifications, preventive maintenance has to be carried out, with specific intervals to avoid breakdown, inefficient operation and to maximize the expected lifetime, of 10 years or more.

It is important to notice, that intervals between filter maintenance can vary depending on the specific environment. Moving parts are wearing parts, that needs replacements when worn down, dependent on the specific environment.

The factory warranty is only valid if documented preventive maintenance has been carried out. The documentation could be in form of a written log.



WARNING

- Turn off the power supply before applying any work on the unit!
- Only trained and certified technicians are allowed to service the fans. Users are allowed to changes filters only.
- Make sure that all work is finished and the front cover plate is fully mounted before turning on the power supply again. .

Scope of maintenance

The following parts needs preventive maintenance:

Service interval	Task	To be carried out by:
6 month	Filter check. Change if required	User
1 year	Filter replacement	User
	External condensate discharge	Trained engineer
2 years	Heat exchanger	Trained engineer
	Fans	Trained engineer
	Drip tray/internal discharge	Trained engineer
	Internal air ducts	Trained engineer

Replace filters (1 year)

Check or replace filters when the filter alarm sounds, and flashes on the remote control. Always reset the filter timer after a filter replacement. See the remote control manual for more information.

Filter intervals can be adjusted to adapt pollution level in the house, and outdoor air particle content. See how in “User Right” on page 27

Filters must, however, be checked every six months. Dantherm always recommends replacing filters at least once a year. When checking the filters, clean the unit externally around the filter openings with a damp cloth, to maintain good hygiene.

The filters are located behind the small lids, on the front panel

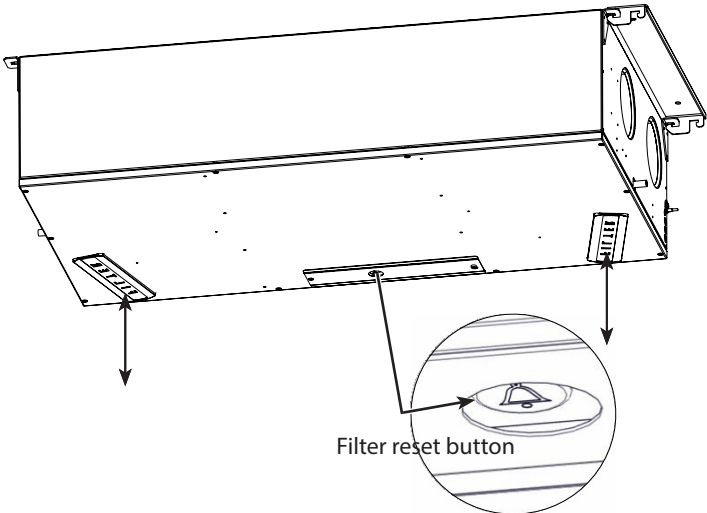


Fig. 25

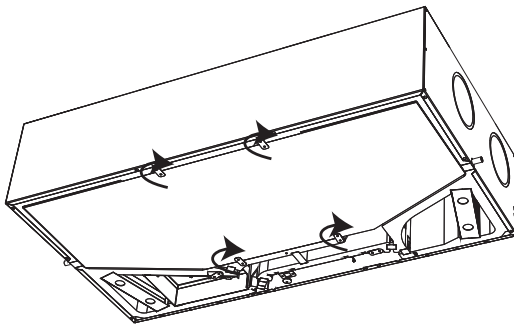
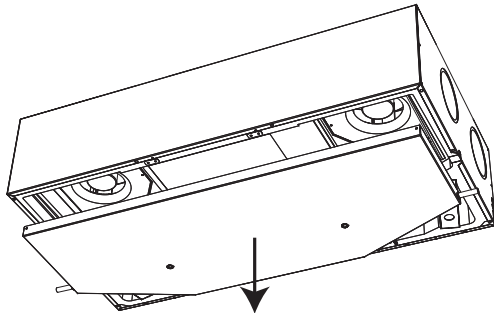
**Drain and hose
(1 year)**

Drain and hose must be checked every year.

Check that the hose is secured properly to the unit, and that there is water in the water trap. Check that the hose is not wrinkled and that there is a minimum gradient of 1% from the unit to the drain. If the hose is routed to different surrounding temperatures, make sure the hose is protected against frost damages.

**Unit driptray
(2 year)**

Ensure that the condensate drain is not blocked in the drip tray. Clean the drip tray with soapy water and a brush or cloth every other year, to ensure good hygiene inside the unit. Please follow this procedure to clean the drip tray:

Step	Action	Illustration
1	Disconnect the 230V AC power supply, and remove the unit cover. See "Fig. 22" on page 21	
2	Remove the drainage hose and turn all shown locks 90°	
3	Gently remove the drip tray. Please be aware, that if the unit is underneath the ceiling, it can contain a small amount of water.	
4	Clean and re-insert the drip tray (please check fans according below if needed, prior to inserting the drip tray)	
5	Re-assemble the unit. Check if one water exit is connected, and the opposite drip tray spigot is blocked.	

**Fan
(2 year)**

Clean the fan blades every other year using compressed air or a brush. Each fan blade should be clean in order to keep the fan balanced. Gently spin the fans and listen for bearing noise. If so the fan are worn out, and needs to be replaced.

WARNING: Be careful not to remove the metal balancing pieces mounted on the fan blades.

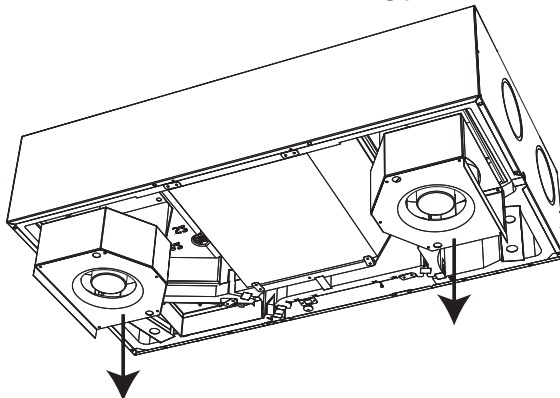


Fig. 26

**Heat exchanger
(2 year)**

Check the heat exchanger for dust and dirt every other year. Clean the heat exchanger with a soft brush and a vacuum cleaner at all four inlets. In special cases, e.g. if there are signs of accumulated, dirty condensate in the heat exchanger, it may be necessary to remove the exchanger from the unit and clean the exchanger with soapy water. Turn the four locks, and the heat exchanger can be removed.

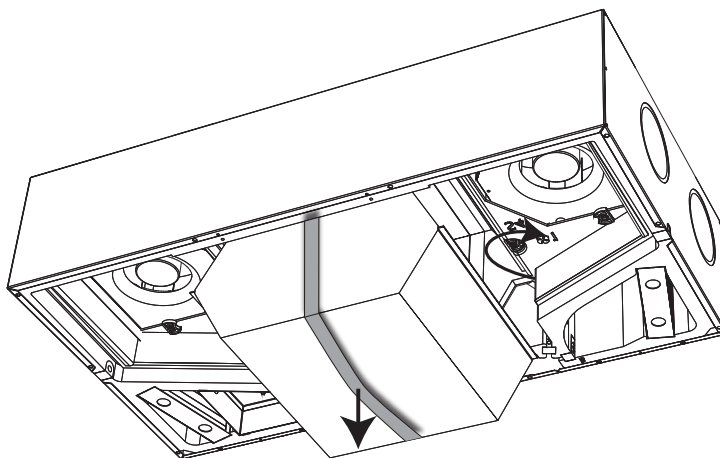


Fig. 27

Trouble shooting

Introduction

This section shows how to acknowledge and understand possible operation errors. For a proper error search, Dantherm strongly recommends to have a remote control connected and operative with the unit.

Error signalling

Any possible error will be displayed on:

Device	Signal
Unit	Acoustic buzzer signal from the main PCB. Connect a remote or PC Tool, in order to get the specific error shown. LED for filter reset
Handheld remote control	Acoustic buzzer signal as well as displaying a specific error code.
Wired remote control (HCP 10/11)	Acoustic buzzer signal and flashing LED. The number of flashes corresponds to an error code, followed by a 5 second break. See Error list.
PC Tool	Displaying error number, as well as being able to log specific operations, over a longer time span.
Smartphone APP	Displaying a specific error code.

Error list

Errors shown on the display, is a three digit information. F. ex. "E12" means error number 12.

How to read the error list:

Column	Description	Code	Meaning
A	Number of flashes in display (Wired control)	-	-
B	LED in foil panel	Y	Yellow LED flashing
		R	Red LED flashing
C	Sound	0	No beep
		1	One beep/hour
		2	One beep/sec

Resetting errors

After completion of any inspection or repair, due to possible errors, the unit can be reset by disconnecting / re-connect the 230V AC power. This will reset the controller, and the unit will start normal operation, and also restart a new search for possible errors. This could last up to 15 minutes.

See below list for a full description:

A	B	C	Error code	Fault	Possible cause	Action required	Reset
-	Y	1	-	Filter alarm	Filter period expired	Unmount filters and examine for dirt Change filters and reset alarm	Reset alarm and reset filter by pressing and holding alarm button for 5 seconds
					Filters are not dirty, so filter period is too short	Extend the filter timer period	On wireless remote press and hold center button for 10 seconds
					Filters are dirty	Change filters and reset alarm	
					Filters are very dirty, filter period is too long	Change filters and reset alarm Shorten the filter timer period	Same procedure can be used to reset filter before alarm.
1	R	1	E 1	Exhaust air fan	Exhaust air fan power cable not connected	Connect Exhaust air fan power cable	Manual reset by pressing alarm button on foil panel or by powering unit off/on
				No rotation speed (tacho) feedback from the exhaust air fan	Exhaust air fan control cable not connected	Connect Exhaust air fan control cable	
					Exhaust air fan does not work	Replace Exhaust air fan	
				Exhaust air fan cannot run the desired RPM	Fan speed setpoint is too high	Lower fan speed setpoint	Automatic reset after 140 seconds, but alarm will appear again if problem is still there
					Fan is defect	Replace fan	
2	R	1	E 2	Supply air fan	Supply air fan power cable not connected	Connect Supply air fan power cable	Manual reset by pressing alarm button on foil panel or by powering unit off/on
				No rotation speed (tacho) feedback from the supply air fan	Supply air fan control cable not connected	Connect Supply air fan control cable	
					Supply air fan does not work	Replace Supply air fan	
				Supply air fan cannot run the desired RPM	Fan speed setpoint is too high	Lower fan speed setpoint	Automatic reset after 140 seconds, but alarm will appear again if problem is still there
					Fan is defect	Replace fan	

A	B	C	Error code	Fault	Possible cause	Action required	Reset
3	R	0	E 3	By-pass damper does not close as expected	Switch position A: Bypass is closed, but supply temperature is lower than expected	Check if bypass is enabled in PC-Tool	Automatic reset if efficiency is high enough for 30 seconds
						Check if bypass is blocked	
						Check mechanical connection between bypass actuator and bypass valve	
					Switch position B: Bypass is closed, but exhaust temperature is higher than expected	Check electric connection between controller and bypass	
						Check controller output	
				By-pass damper	Dirty extract air filter	Change filters	Automatic reset if efficiency is high enough for 30 seconds
				Reduced heat recovery due to low extract flow	Poor balancing of the air flows	Adjust the system	
					A bathroom extract fan is creating under-pressure in the house	Remove the extract fan from the bathroom and instead connect the extract air from the bathroom to the ventilation system	
					A kitchen extract fan is creating under-pressure in the house	Create heated replacement air for the extraction hood. If not possible open a window/door while the extraction hood is running	
					A stove fan is creating under-pressure in the house	Contact supplier of chimney/stove to secure safety precautions	
3	R	0	E3	Bypass is closed, but supply temperature is lower than expected	Dirty supply air filter	Change filters	
				Flows are not balanced. There are much more extract air than supply air	Poor balancing of the air flows	Adjust the system	

A	B	C	Error code	Fault	Possible cause	Action required	Reset
4	R	1	E 4	Extract air temperature sensor (T1) Control board measure that temperature sensor is either open or shortcut circuit	Temperature sensors are not mounted correct Resistance in one of the temperature sensors is too low or too high Resistance in temperature sensors are OK	Mount temperature sensors correct Change temperature sensors Change control board	Automatic reset if temperature is within normal range for 30 seconds
5	R	1	E 5	Supply air temperature sensor (T2) Control board measure that temperature sensor is either open or shortcut circuit	Temperature sensors are not mounted correct Resistance in one of the temperature sensors is too low or too high Resistance in temperature sensors are OK	Mount temperature sensors correct Change temperature sensors Change control board	Automatic reset if temperature is within normal range for 30 seconds
6	R	1	E 6	Extract air temperature sensor (T3) Control board measure that temperature sensor is either open or shortcut circuit	Temperature sensors are not mounted correct Resistance in one of the temperature sensors is too low or too high Resistance in temperature sensors are OK	Mount temperature sensors correct Change temperature sensors Change control board	Automatic reset if temperature is within normal range for 30 seconds
7	R	1	E 7	Exhaust air temperature sensor (T4) Control board measure that temperature sensor is either open or shortcut circuit	Temperature sensors are not mounted correct Resistance in one of the temperature sensors is too low or too high. Resistance in temperature sensors are OK	Mount temperature sensors correct Change temperature sensors Change control board	Automatic reset if temperature is within normal range for 30 seconds
8	-	0	E 8	Room air temperature sensor (T5)	Only shown on wireless remote		Automatic reset
9	-	-	E 9	Not used			

A	B	C	Error code	Fault	Possible cause	Action required	Reset
10	R	0	E 10	Outdoor temperature < -13 °C	-	-	Automatic restart after 1800 seconds
11	R	0	E 11	Supply temperature < +5 °C	Low temperatures extracted from nonheated rooms	Ensure heating in all ventilated rooms Alternatively, close the vents to rooms, which are not heated	Manual reset by pressing alarm button on foil panel or by po-wering unit off/on Firmware version 2.9 and up, also has automatic restart after 600 seconds
				Reduced heat recovery due to low extract air temperature	Poor insulated ducts in cold environments	Improve insulation of ducts	
				Reduced heat recovery due to low extract flow	Dirty extract air filter	Change filters	
					Poor balancing of the air flows	Adjust the system	
					A bathroom extract fan is creating under-pressure in the house	Remove the extract fan from the bathroom and instead connect the extract air from the bathroom to the ventilation system	
					A kitchen extract fan is creating under-pressure in the house	Create heated replacement air for the extraction hood. If not possible open a window/door while the extraction hood is running	
					A stove fan is creating under-pressure in the house	Contact supplier of chimney/stove to secure safety precautions	

A	B	C	Error code	Fault	Possible cause	Action required	Reset
12	R	2	E 12	Overheating Any one of the internal sensors, is measuring a temperature > 70 °C.	Overtemperature caused by fire in- or outside the ventilation unit Overtemperature caused by the combination of a pre- or afterheater and too low airflow	Check ventilation unit and surroundings for fire Check ventilation unit and surroundings for fire Check which sensor is measuring a high temperature. Check for blocked air flow and dirty filters. If necessary, raise minimum air flow setting	Alarm display can be reset by pressing alarm button or by powering unit off/on. However unit cannot start before conditions for alarm has disappeared
13	-	0	E 13	Communication error / low signal Only shown on wireless remote No wireless signal Wireless signal is too weak	 Ventilation unit is powered off Antenna not mounted on unit Remote is too far away from the ventilation unit	 Power on the ventilation unit Mount antenna Move closer to the ventilation unit Mount antenna extension cable	Retry is every 5 minutes or if a button is pressed
14	R	2	E 14	Fire alarm Duct connected fire thermostat (Accessory) Input is normally closed (NC), but now it is open	Fire or smoke sensor connected to this input is active Nothing connected to this input	Check for smoke or fire Check if sensor and connection is OK Mount short circuit accessory	Alarm display can be reset by pressing alarm button or by powering unit off/on. However unit cannot start before conditions for alarm has disappeared

A	B	C	Error code	Fault	Possible cause	Action required	Reset
15	R	1	E 15	High water level (Accessory)	The water drain is clogged	Clean the water drain	Automatic reset when input is closed again
				Water level is too high	The water drain is mounted wrong	Check that water drain is mounted in the correct side and piping is not above level of the drain.	
					Auxillary drain pump not running.	Check pump	
						Check fuse	
				Water level is not too high	Water level sensor disconnected	Check wiring	
					Water level sensor is Normally Open (NO)	Configure or change water level sensor so it is Normally Closed (NC).	
					Digital input configured wrong	Check configuration of digital input using PC-Tool	
16	R	2	E16	Firmware 2.9 and up: FPC Fail (accessory) Only active if the accessory "Fire Protection Controller" is connected to the unit.			Manual reset by pressing alarm button on foil panel or by powering unit off/on
				No communication with Fire Protection Controller	Fire Protection Controller with this address has previously been installed but is no longer reachable	Check connection to Fire Protection Controller	
				A position feedback for a Fire damper is missing	A firedamper is closed but should be open	Check powersupply for the firedamper	
						Check the fire-dampers internal firedetector	
				Failure at monthly-, weekly- or manual fire damper test	Fire damper is stuck in either open or closed position	Something is blocking the fire damper.	
						Fire damper is connected wrong	
						Fire damper is defect	

Appendix

Technical data

Introduction

This table shows the technical data.

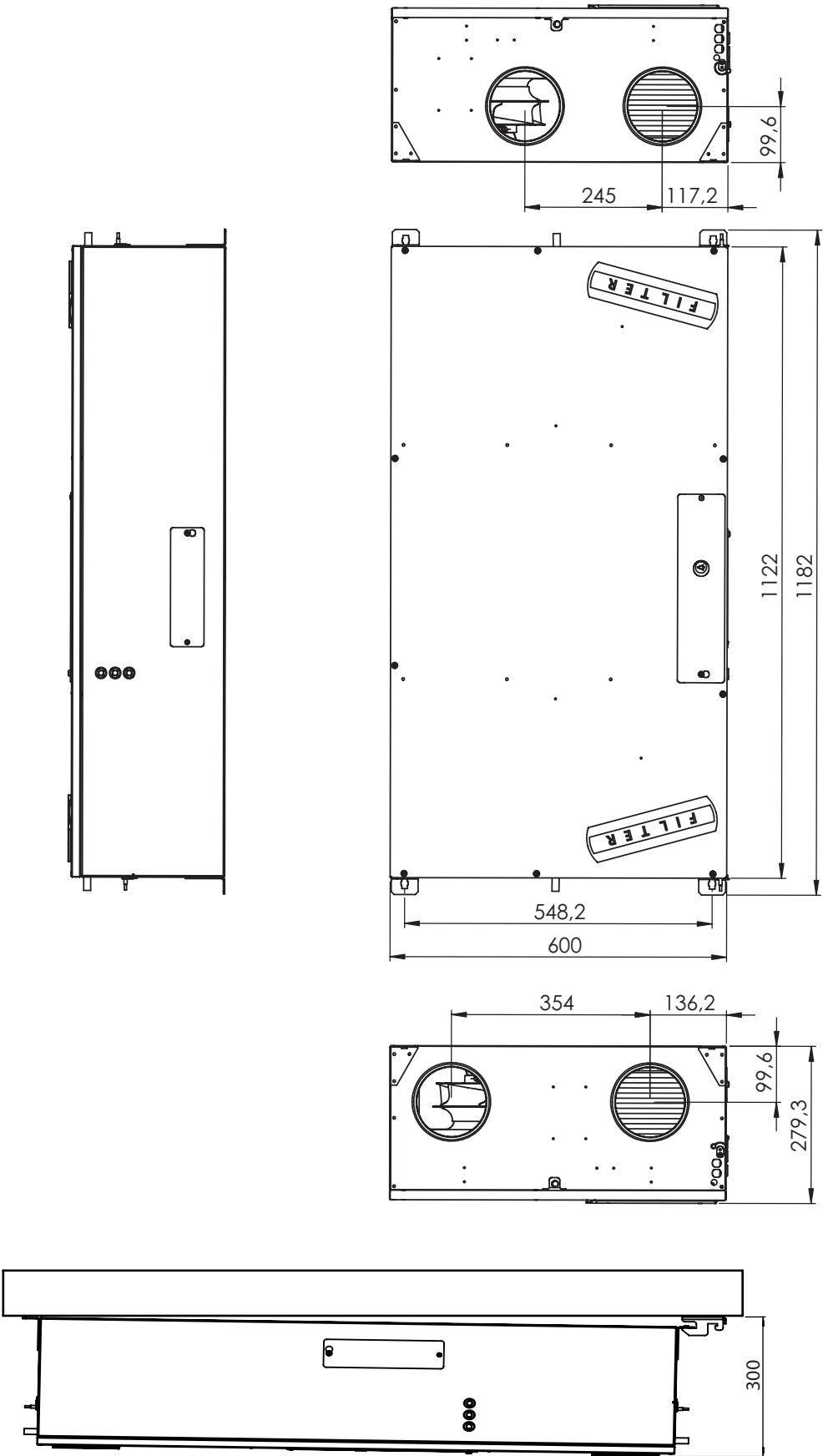
SPECIFICATION	Abbr.	Unit	HCC 360	HCC 260	HCC 360
			P2	P1	E1
Max. nominal flow	V	m3/h	220	180	180
Operating range DIBt	VDIBt	m3/h	-	70 to 140	-
Operating range Passivhaus @100Pa	VPHI	m3/h	-	50 to 180	-
EN 13141-7 reference flow @50Pa	Vref	m3/h	154	126	126
PERFORMANCE					
Thermal efficiency DIBt	ηDIBt	%	-	93,8	-
Thermal efficiency Passiv Haus	ηPHI	%	-	93	-
Thermal efficiency EN 13141-7 @ reference flow	ηEN	%	88	94	80
Cabinet sound power level @ reference flow	Lw(A)	dB(A)	40	45	46
Duct sound power level (supply/extract) @ 140 m3/h & 100Pa	Lw(A)	dB(A)	58/44	60/45	61/43
Filters according to EN779:2012	class	-	ISO Coarse (ePM1 optional on supply)		
Filters according to ISO 16890	class	-	ISO Coarse (ePM1>50% optional on supply)		
Installation surrounding temperature range	tSURR	°C	+12 to +40		
Maximum humidity in extract air @25°C	RH	%	55		
Outdoor temperature range (without preheating installed)*	tODA	°C	-12 to +45		
Outdoor temperature range (with pre-heating installed)	tODA	°C	-15 to +45		
CABINET					
Dimensions (without bracket)	WxHxD	mm	600 x 1122 x 279		
Spigots / Duct connections	Ø	mm	Ø125 - female		
Weight	m	kg	34		
Heat conductivity of the polystyrene insulation	λ	W/(mK)	0,031		
Heat transfer coefficient of the polystyrene insulation	U	W/(m2K)	U<1		
Leakage (external and internal) according to EN 13141-7			<2% (Class A1)		
Drainage hose (Accessory)	Ø		1/2"		
Cabinet colour	RAL	-	no paint/raw Alu-zinc		
Fire classification of polystyrene insulation according to DIN 4102-1	class	-	B2		
Fire classification of polystyrene insulation according to EN 13501-1	class	-	E		
ELECTRICAL					
Voltage	U	V	230		
Max. power consumption (without/with preheater)	P	W	161 / 1061	127 / 1027	161 / 1061
Frequency	f	Hz	50		
IP-class	class	-	20		

* In order to ensure balanced ventilation, preheater is recommended when outdoor temperature is below -5 degrees.

Enclosure dimensions

Dimension
illustration

This illustrates the dimensions of the unit:



Schematics

Unit schematics

This illustration shows the PCB with unit connections :

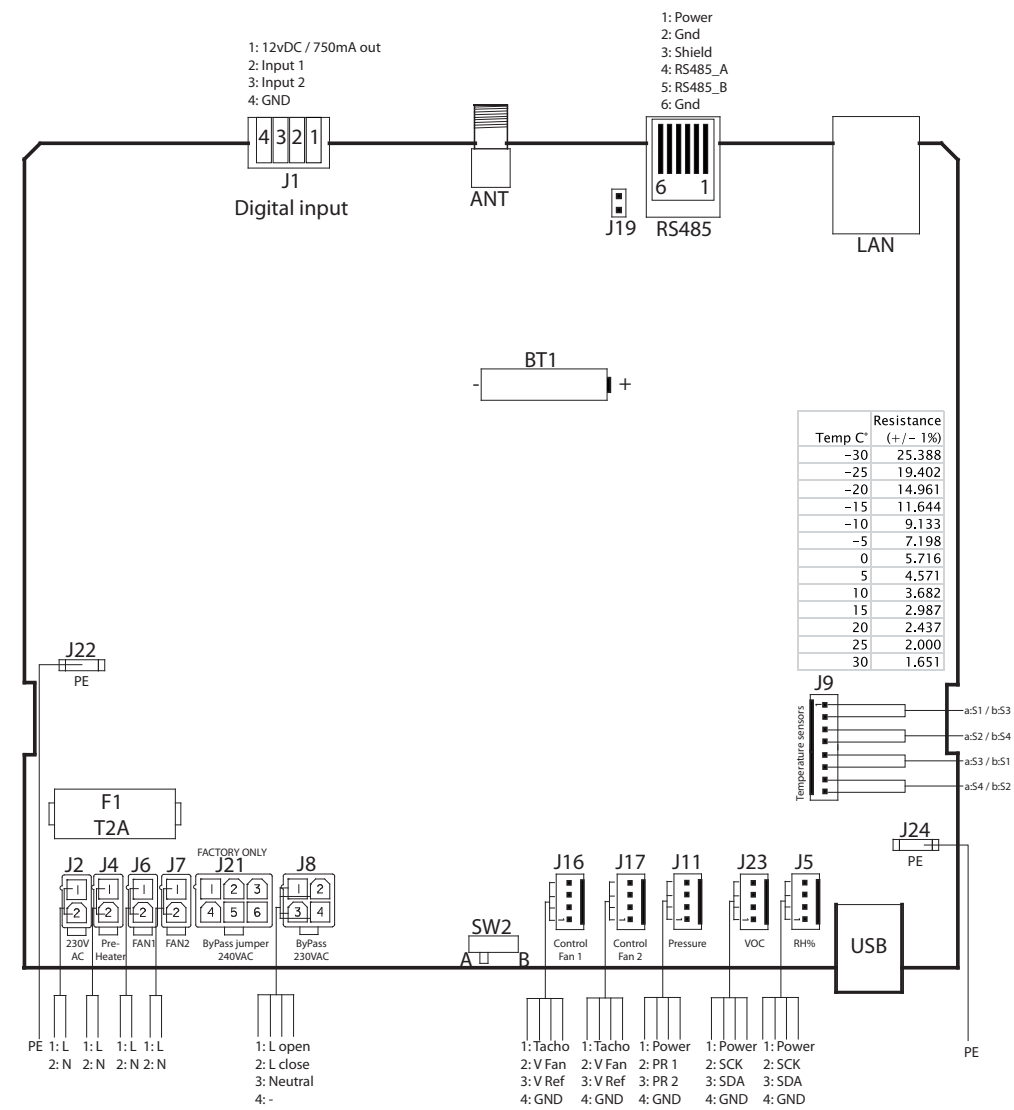
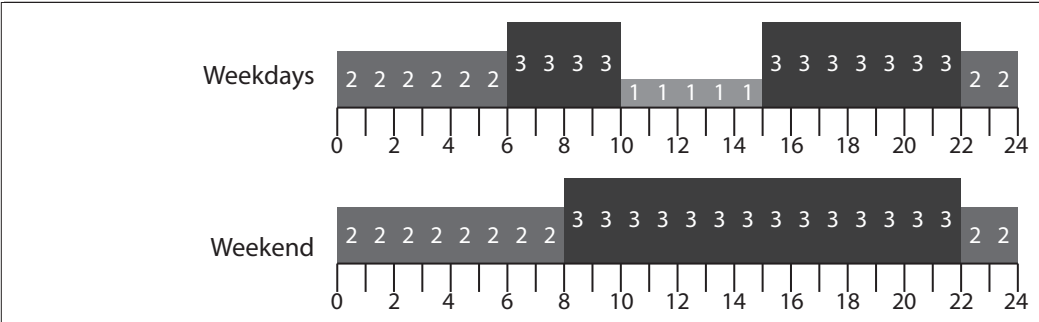


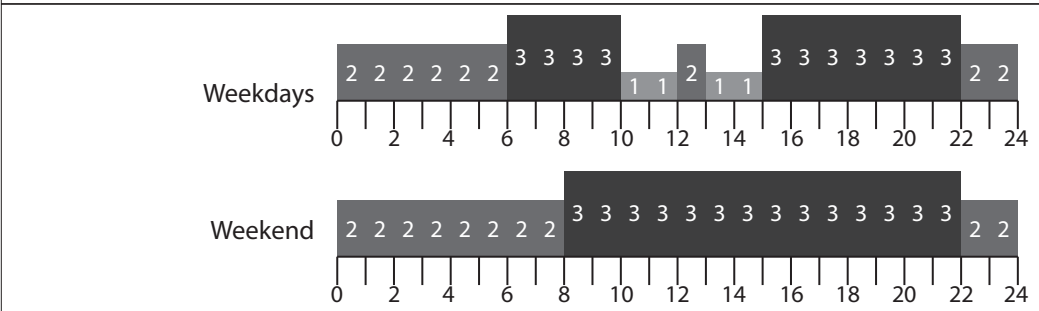
Fig. 28

Week program specification

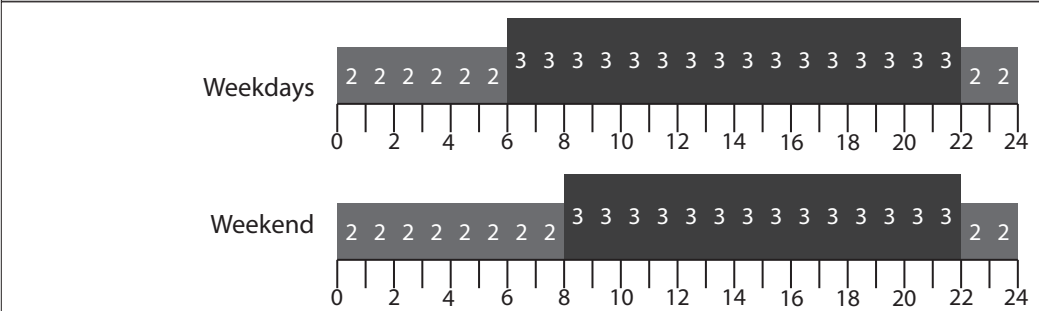
Program 1



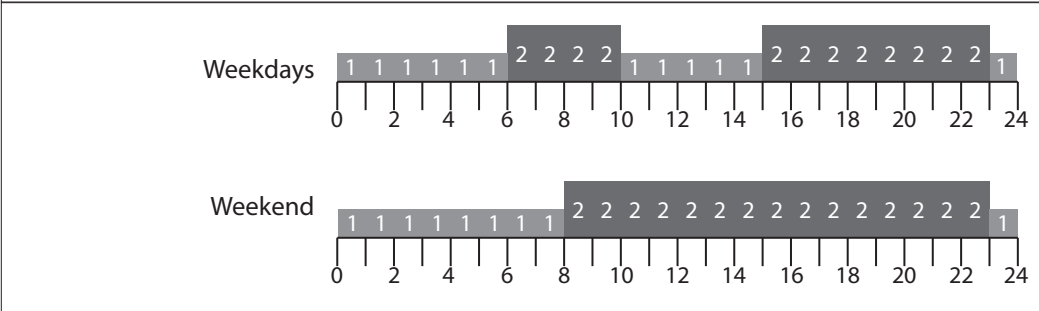
Program 2



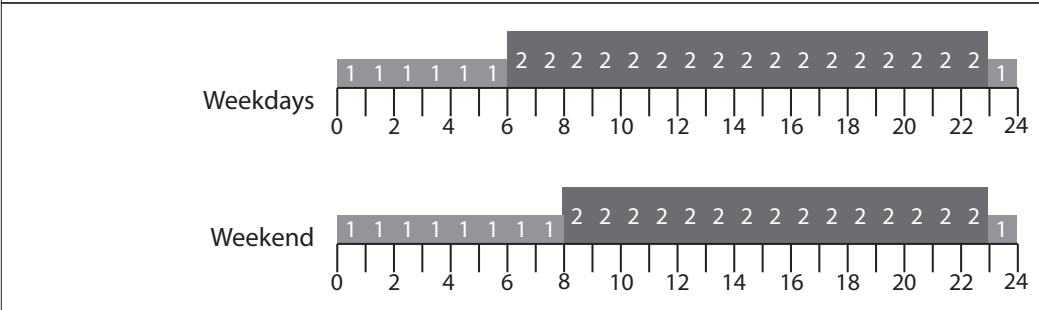
Program 3



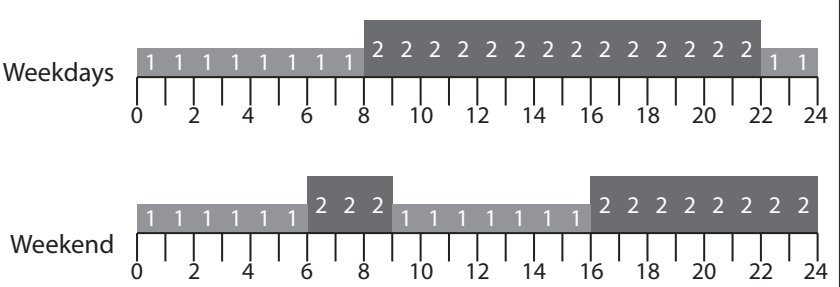
Program 4



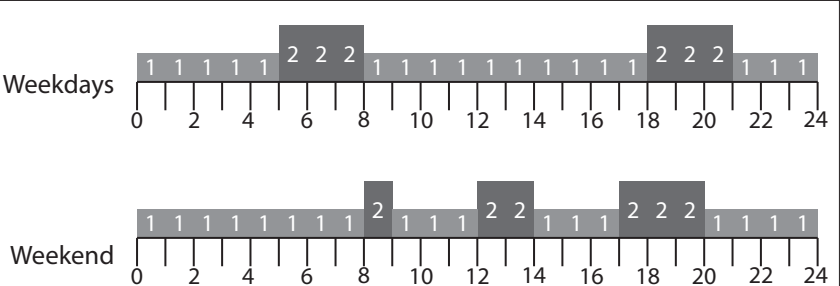
Program 5



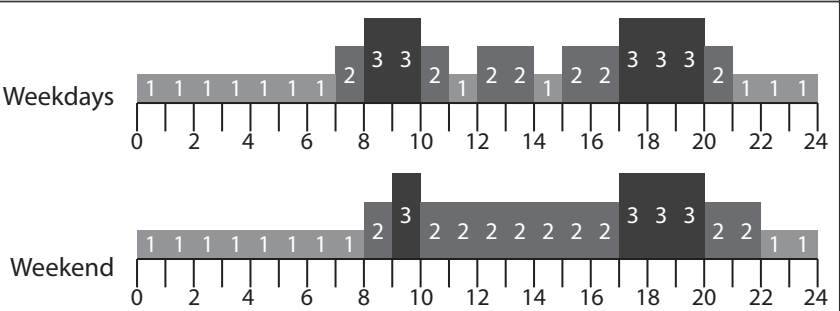
Program 6



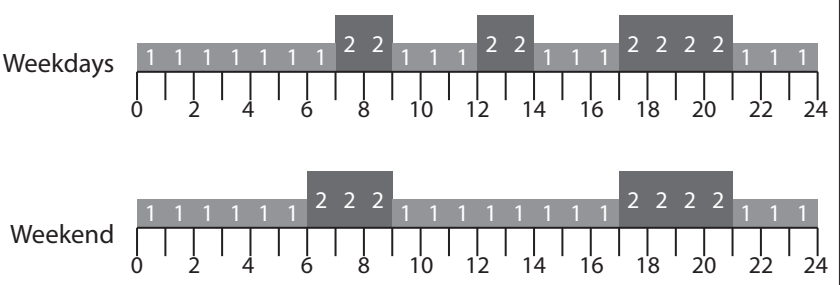
Program 7



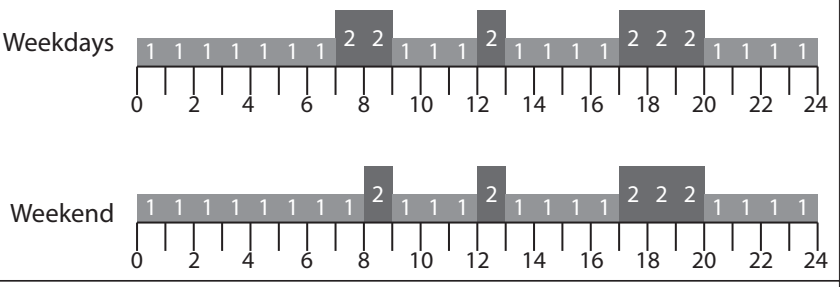
Program 8



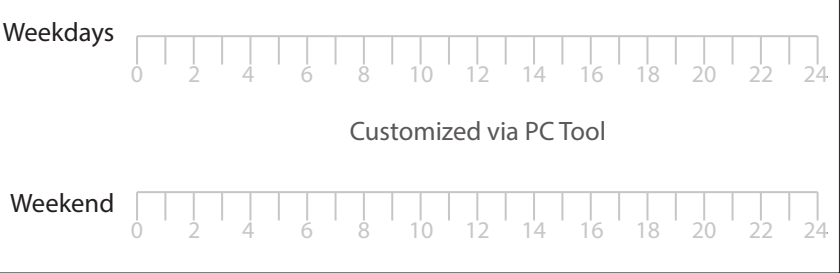
Program 9



Program 10



Program 11





Spare parts

Spare parts, where to find If the need for spare parts occurs, please visit Dantherms webshop:
shop.dantherm.com



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Der tages forbehold for trykfejl og ændringer (da)

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