

INSTALLATION MANUAL



ECO 400

Mechanical ventilation with passive heat recovery

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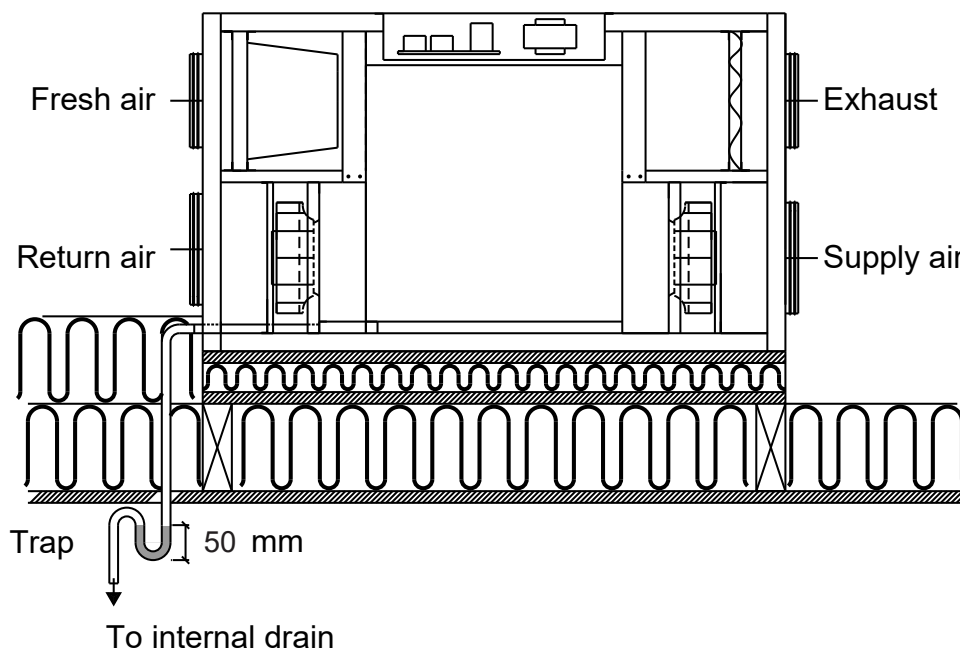
INSTALLATION

IMPORTANT:

Follow these instructions when you install ECO 400:

- 1) The machine must be mounted with an incline of 10-15mm towards the drain pipe, so that the condensed water can run freely into the outlet.
- 2) An airtight trap must be mounted in a frost-free place to compensate for the fan's pressure.
- 3) The trap height must be a minimum of 50mm.
- 4) It must be ensured that the drain pipe goes downwards all the way to the outlet.
- 5) Pour 1 litre of water into the machine's condensate tray to ensure that it runs away unobstructed. It must be checked that there is water in the trap every year during boiler season.
- 6) If the trap is installed where the temperature can go below 0C°, then the trap must be safeguarded against freezing with a thermostat and electric heating element that turns on when the temperature goes below +2C°.
- 7) Alignment of airflow on supply and exhaust must be performed before taking into use. It is important that there is air balance in the house.
- 8) It is recommended that you close ceiling inlets etc. until the machine starts up and alignment is complete.

KVM Genvex A/S always recommends precise planning of the set-up for your Genvex product in relation to the placement of the living space. As this refers to a technical product that includes fans and/or heat pumps, it can in rare cases, when combined with inappropriate installation conditions, result in unsatisfactory noise or vibrations. As a general rule, it is always recommended that the technical unit be installed so that it is not placed in the immediate vicinity of a bedroom. It is also recommended that the Genvex unit be secured to the building construction – i.e. fixed to a heavy foundation such as concrete. It must also be ensured that no transfer of sound or vibrations through materials that are in contact with the technical unit can take place. If there is a risk of reproduction of noise or vibrations, additional installation of vibration damping materials is recommended as well as soundproofing of the set-up space.



Lack of water in trap = water damage

Dimensions drawings in mm

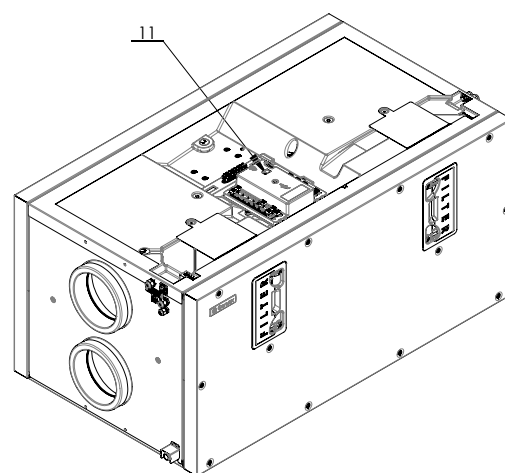
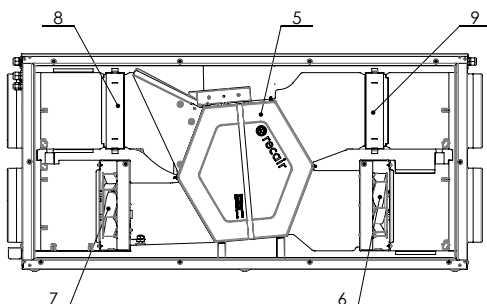
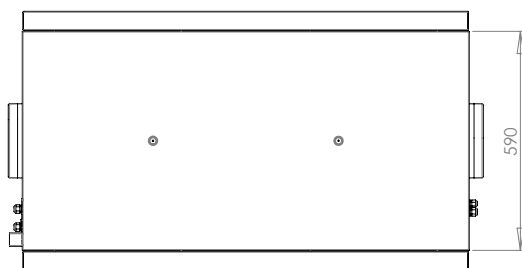
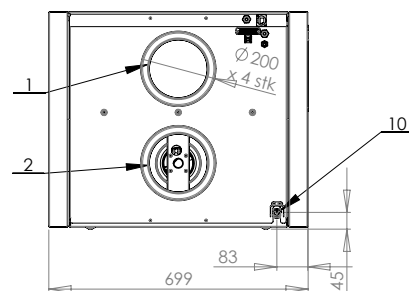
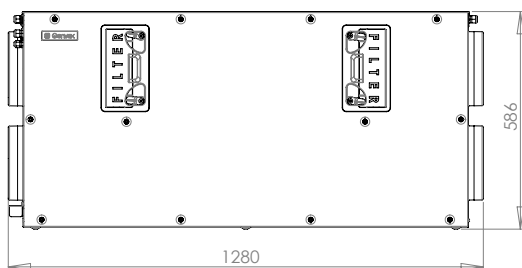
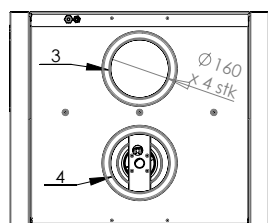
1. Fresh air
2. Exhaust
3. Extract air
4. Supply air
5. Heat exchanger
6. Supply air fan
7. Extract air fan
8. Fresh air filter
9. Exhaust air filter
10. Condensate outlet
11. Electrical connection

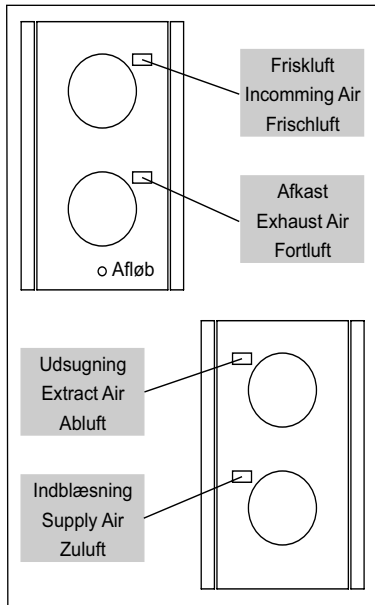
ECO 400 is supplied as right-facing (as shown in the drawing below). If you wish to flip the orientation of the unit, you can remove the front cover and back plate, mount the back plate on the front and turn the unit 180° around.

The unit must be placed on a firm base so that vibrations from the unit do not reproduce down through the ceiling and walls, and also so that the condensate outlet and its required trap can be led frost-free to an internal drain, as the unit can release up to 8 litres of condensed water per day during wintertime.

In order for service and maintenance to be carried out on the unit, there must be a minimum of 600mm free space out from the entire front of the unit and a fixed and passable surface. If the unit is placed in the loft, there must be unobstructed access from the loft hatch to the unit.

Weight: 56 kg





Duct connection

A yellow label is affixed to all duct pipes, which indicates which ventilation ducts shall be connected to the different pipes.

Supply air connected

The duct system from the unit to the supply air in the living space.

Exhaust air connected

The duct system from the wet room to the unit.

Fresh air connected

The duct system from the fresh air hood/fresh air grate from outside or from the ground exchanger to the unit.

Return outlet connected

The duct system from the unit to the exhaust hood/exhaust grate to the outside.

Duct system

It is recommended that the duct system is executed in spiral pipes joined with fittings with a rubber seal to ensure a tight and durable duct system.

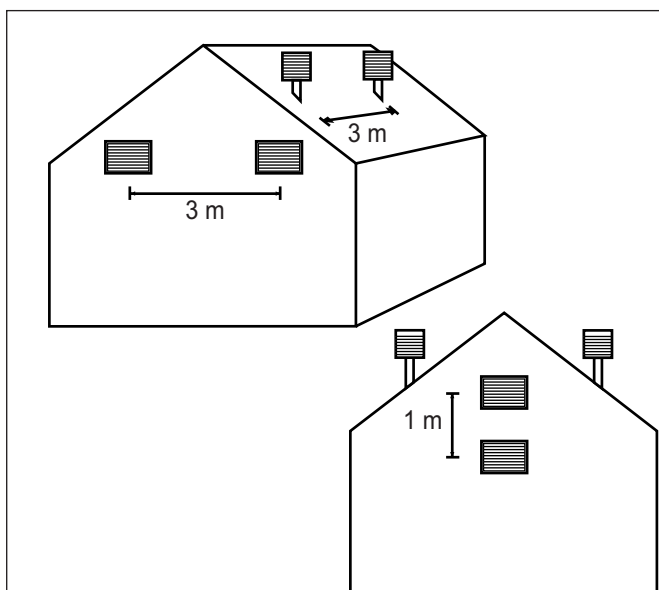
In order to achieve a satisfactory noise level from the unit, sound-locks should always be mounted on the air intake and exhaust duct system between the unit and the first air intake and exhaust fittings.

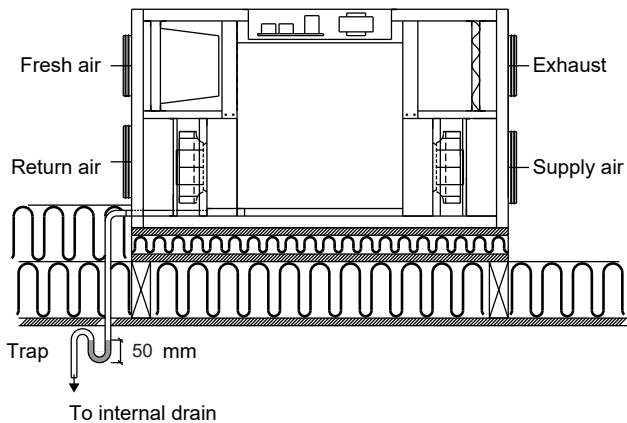
It is recommended that the rate of airflow in the ducts is dimensioned to be low enough that the air intake and exhaust fittings do not emit noise.

When positioning the fresh air and exhaust hood/grate, it must be ensured that the two air streams do not short circuit and thus also that the return air is not sucked out again.

When placing a grate, the northern or eastern side of the house is recommended in order to achieve optimal comfort in houses/apartments.

Minimum distance: 3 metres





Lack of water in trap = water damage

Condensate drain

The units produce up to 8 litres of condensed water every 24 hours. It is therefore essential that the condensate outlet is correctly installed and the unit has an incline in the direction of the condensate outlet.

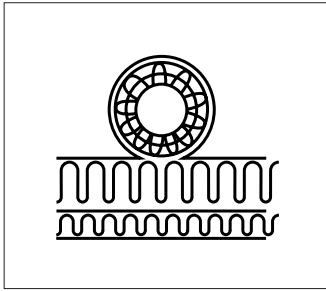
The trap must be airtight, e.g. by bending a 15mm copper pipe to form a water trap (see sketch on the left) between the drainpipe on the unit (1/2" connector) and the trap can either be led to a fixed PE pipe or an adapter can be used that goes from a 1/2" to a 15mm hose connector. Should a hose connector be used, then remember however to properly secure the hose with a clamp. From the trap and onwards to the internal drain, the installation must be fitted with a required drop of 1%.

If the unit is mounted in a cold loft space, the condensate outlet pipe must be insulated so that the condensed water in the pipe does not freeze.

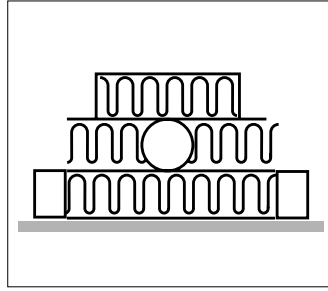
It is also recommended that the trap be installed in a warm room below so that you ensure the water in the trap does not freeze.

If in terms of installation, it is not possible to safeguard the condensate outlet pipe against frost by insulating it, then it is necessary to mount a thermostat-controlled heating tape around the condensate outlet drain.

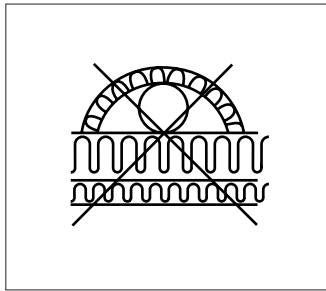
If hanging the unit on a wooden wall, a vibration damper is recommended to prevent the transfer of vibrations.



Insulation of ducts, alt. A



Insulation of ducts, alt. B



Incorrect insulation of ducts

Insulation of ducts in cold loft spaces

If you wish to take advantage of the unit's high heat recovery rate (efficiency rate), it is essential that the ducts are insulated correctly.

Genvex recommends the following:

Supply and extract ducts

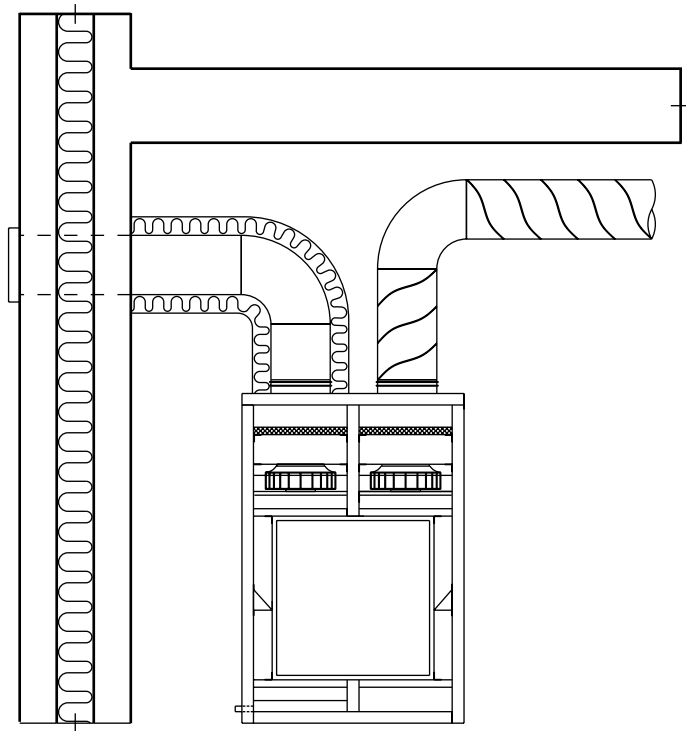
In order to minimise heat loss from the duct system in cold loft spaces, the air intake ducts and exhaust ducts must be insulated with a minimum of 100mm insulation. If the alternative insulation type (A) is used, it is recommended that the insulation is carried out using 2 x 50mm slatted mats with paper or aluminium foil on the outside and the joints between the 2 layers of insulation displaced. If the ducts are laid along on the rafters, the alternative 'B' can be used. The insulation must always be packed close around the ducts.

Fresh air and return ducts in cold spaces

It is recommended that fresh air and exhaust ducts are insulated with a minimum of 50mm insulation finished with aluminium foil. The fresh air duct is insulated to ensure that the warm air in the loft in summertime is able to heat up the fresh air.

Be careful to secure the insulation closely where the return duct is led through the roof or out through the gable in order to prevent condensation damage.

Contact your local supplier for guidance regarding national guidelines on insulation.



Insulation of ducts in heated spaces

Genvex recommends the following:

Supply and extract ducts

In a warm loft space, the supply and exhaust ducts must be insulated with 50mm insulation finished with aluminium foil.

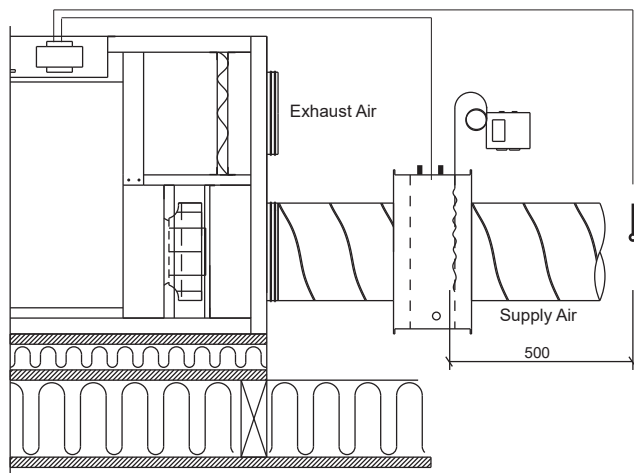
Supply and extract ducts that lead into heated rooms in the building should not be insulated unless cooling, bypass or ground heating exchanger is used. In this case, the supply duct should be insulated.

Fresh air and return ducts

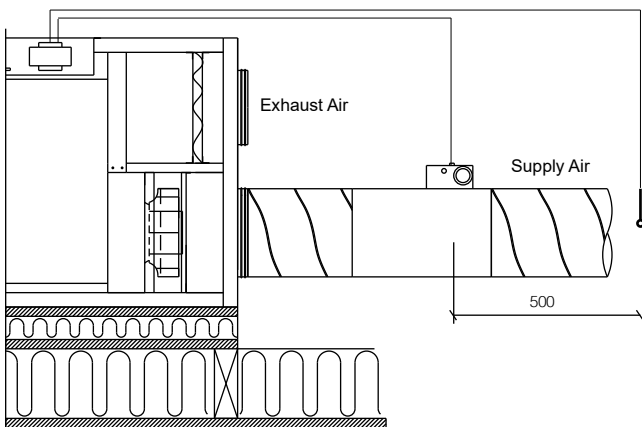
In warm loft spaces and heated rooms in the building, fresh air and return ducts should be insulated with a minimum of 50mm insulation. In addition, the external insulation should be clad with plastic or aluminium foil to avoid condensed water accumulating in the insulation.

Contact your local supplier for guidance regarding national guidelines on insulation.

If using a ground heating exchanger, 100mm insulation is recommended on the fresh air duct.



With water reheating plate



With electric reheating plate

Reheating of the supply air

As the countercurrent heat exchanger cannot recover all the heat from the exhaust air to the supply air, the supply air will be around 1-4°C lower in winter than the room temperature in the building. If it is required to use the unit for heating, a water or electric after heating plate can be mounted that can heat up the supply air to room temperature.

Water based reheating surface

To safeguard the water reheating plate against frost damage, ice frost sensors must be mounted on the unit and the plate insulated. The ice frost sensor is mounted at the back on the water after heating plate's slats. The sensor for controlling the motor valve is mounted in the supply duct approx. 500mm after the water reheating plate, so that it is not affected by radiant heat from the heating element. The water connection to the water reheating plate must be carried out by an authorised fitter.

Electric reheating plate

The sensor for controlling the electrical heating plate in the supply duct is mounted about 500mm after the electric reheating plate so that it is not affected by radiant heat from the heating element.

Electrical installation

The electrical connection must be carried out by an authorised electrician. See the electrical diagram supplied. The cable between the unit and the control panel is a 4-wire for Optima 251, maximum 50m and an 8-wire for Optima 260, maximum 10m.



Inspection and alignment of the unit

In order to achieve optimal operation of the unit, it must be aligned using airflow measuring equipment.

If there is a wish to run the unit prior to alignment, you can do the following before running the unit:

1. Check that the Genvex unit is mounted correctly and that all the ducts are properly insulated.
2. Check that the covers can be opened so that it is possible to carry out service and maintenance on the unit.
3. Check that the filters are clean (can be dirty after mounting).
4. Check that the condensate outlet is mounted correctly with a trap and is safeguarded against frost. Pour 1 litre of water into the condensate tray and check that it runs unobstructed away through the condensate outlet pipe.
5. Set all supply ducts so that the valve that is closest to the unit opens 3 times from a closed position, while the outer valve opens 8 times from closed position. The middle valves should open 4-7 times depending on how close they are on the unit.

Set all exhaust valves so that the exhaust valve in the kitchen opens 8 times, the exhaust valve in the bathroom/toilet opens 7 times and the exhaust valve in the utility room opens 6 times from a closed position.

6. If an reheating plate has been mounted on the unit, then set the supply air temperature to 0-3°C under room temperature in the building.

The unit can now be put into operation and run until the unit can be aligned with airflow measuring equipment.

START-UP AND MAINTENANCE

Optimal alignment of the unit

In order to align a Genvex home ventilation unit, a calibrated airflow measuring device must be used.

Before carrying out alignment, check that the 6 points in the section "Inspection and alignment of the unit" have been carried out. The unit can then be put into operation.

It is recommended that the unit is aligned by an authorised Genvex retailer.

If needed, contact Genvex on +45 7353 2700.

Maintenance of the unit with control via Optima design display (combined with Optima 251 controls)



Remember to turn off the power before opening the unit.

Filters

When the filter timer reaches the set value for filter change, the screen saver will display "Alarm!" and the message "Change filter" will flash.

Stop the unit at either the unit's main power switch or the switch on the electrical panel. Open the front cover and remove the filter. Once the filter has been replaced, reset the filter timer.

If you wish to clean the filters at a different time interval, this can be adjusted in the User Menu.

Maintenance of the unit with control via Optima 100 design display (combined with Optima 260 controls)



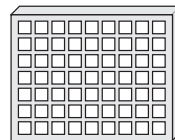
Remember to turn off the power before opening the unit.

Filters

When the light diode D5 for filter change on the display flashes on the control panel, the filters need changing. Stop the unit at the unit's main power switch. Change the filters and reset the filter timer. If you want to clean the filters at a different time interval, this can be adjusted in the control panel instructions under Section 3.3, Filter alarm.



It is not recommended that you vacuum or apply air pressure to the filter as this will cause a deterioration in filter efficiency.



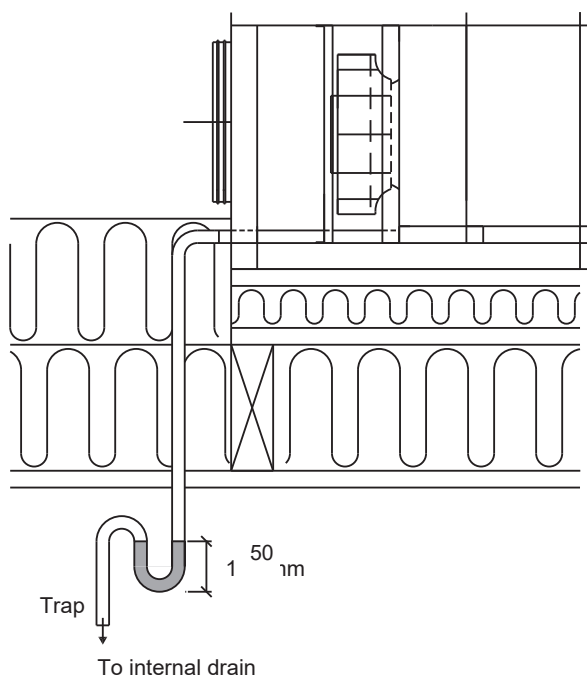
G4: Standard filter (Coarse filter class G4)

F5: Fine filter (Fine filter class F5)

F7: Pollen filter (Fine filter class F7)



Danger of cutting oneself on sharp slats. The slats must not be damaged.



Condensate drain

In connection with the autumn filter change, the condensate outlet should be checked for blockages of dirt, and if there is water in the trap.

Pour 1 litre of water into the condensate tray and see whether it runs away unobstructed. If the condensate outlet is not working, this may lead to water damage in the building.

Countercurrent heat exchanger

The countercurrent heat exchanger should be inspected annually. If it is dirty, take it out and wash in warm, soapy water and if necessary, flush well in a bathroom, using a hand shower.

Fans

Remember to turn off the power.

Check the fans every year for dirt on the fan wheels.

Remove the front cover on the unit. Clean the fans with a brush, bottle cleaner or paintbrush. Please note that the balancing wheels on the fan wheels should not be removed, as this will result in an unequal weight and thereby result in a higher noise level as well as wear to the fans.

Supply and extract valves

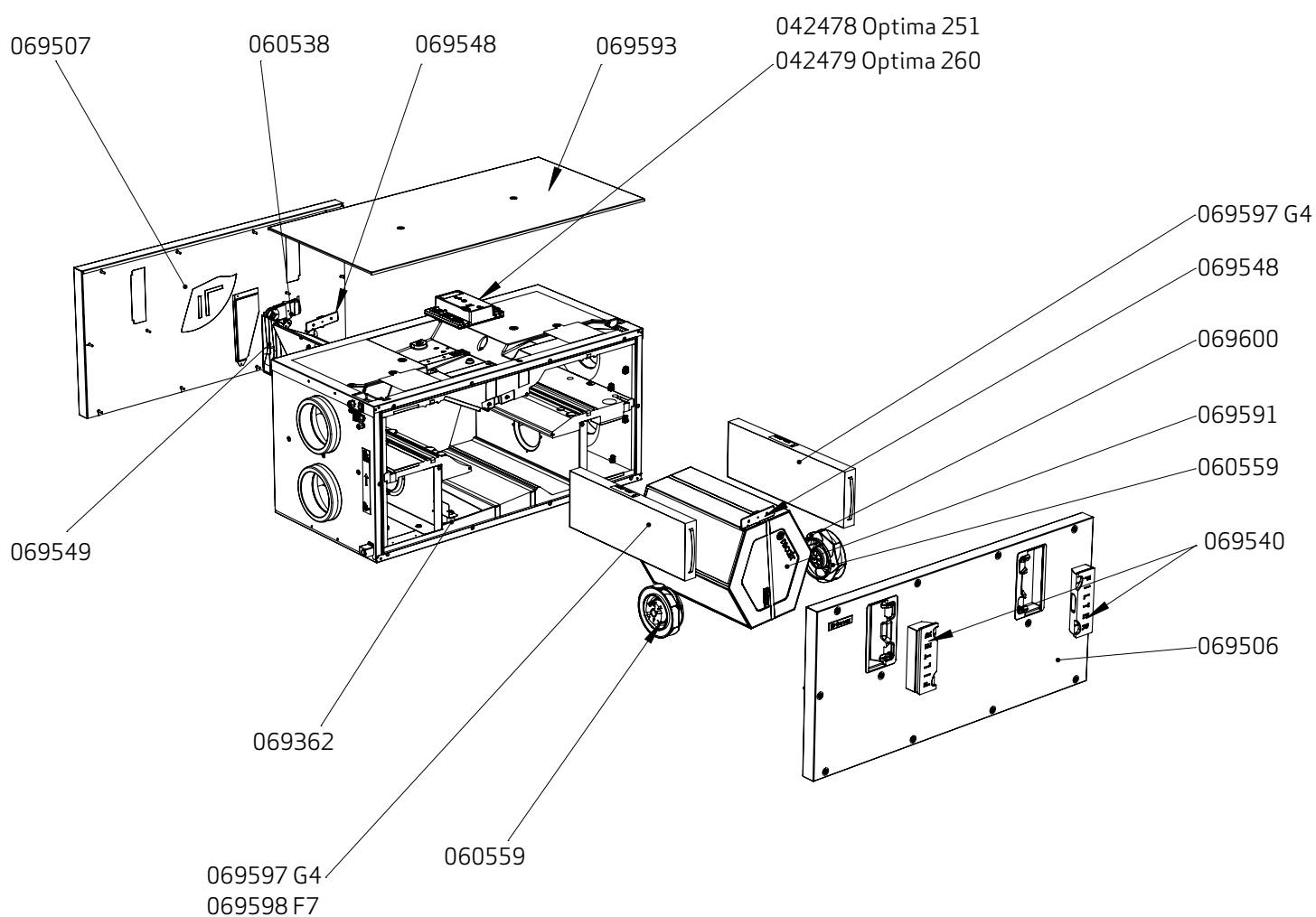
Clean the valves by wiping them with a damp cloth.

Be careful that the valve does not turn around and change the amount of air.

Service

Should you be unable to maintain your unit yourself, you can arrange a service agreement with Genvex's service department. Should errors occur on the unit, please contact Genvex's service department.

SPARE PARTS



Product number	Description
069506	Front cover
069540	Filter cap
060559	EC fan
069591	RC exchanger
069648	Plastic bracket
069597	G4 filter
069362	Niveau switch
069549	Plastic bypass flap
069591	Electrical box OPT.251
042479	Electrical box OPT.260
069507	Back cover
069538	Bypass motor
069593	Metal cover

TROUBLESHOOTING

Safety thermostat in electrical heater (optional equipment)

If an error occurs on an electrical heater, the safety thermostat will disconnect.

The heater is equipped with a fire thermostat that automatically cuts off the power supply, if the temperature exceeds 50 °C. If the temperature decreases, the heater automatically re-engages.

As an additional security there is a built-in thermal cut-out, which disengages if the temperature exceeds 100 °C. Re-engaging must be done manually.

Does not apply to PTC electrical heaters.

The system is not running

Unit stopped

Possible error

- Fuse in main board has blown, no power to unit.
- One of the fuses on the circuit board of the unit is blown.
- Loose wire, no power to unit.
- Loose wire between unit and control panel.
- Faulty or incorrectly set week program.
- Filter timer has switched the system off.

Condensed water is leaking from the unit

Possible error

- Condensate outlet blocked by dirt.
- The condensate outlet is not adequately protected against freezing at low outdoor temperatures.

Air faults

No supply air

Possible error

- Faulty supply air fan
- Clogged supply air filter
- Clogged fresh air grill due to dirt and leaves during the fall and snow and ice during the winter.
- Fuse on the circuit board is blown.
- The unit is in defrost mode (supply air fan stops)
- Incorrect value set in User menu item 2.

No extract air

Possible error

- Faulty extract air fan
- Clogged extract air filter.
- Fuse on the circuit board is blown

Cold supply air

Possible error

- Clogged heat changer.
- Faulty extract air fan.
- Clogged extract air filter.
- Electrical reheater is disconnected at the over heating thermostat (only units with electrical reheater installed).
- Air in the heating pipes, faulty thermostat / motorvalve, incorrect setting of control panel.

Within the guarantee period (0-2 years)

The installer from whom you have bought the system.

After the guarantee period (2 years ->)

The installer from whom you have bought the system or the Genvex service department (+45 7353 2765).

Before calling, please write down the data from the inscription plate (silver plate on the unit).

Alarms

Filter timer

The control has a filter timer to guarantee that the filter is changed and that optimal operation is established. When the timer reaches the set value, "Chg. filter" will flash in the display until the filters have been changed.

When the filters have been changed, the button for the filter symbol must be held down until "Alarm!", "Chg. Filter" and the exclamation mark disappears and the unit reverts to normal operation.

Com error

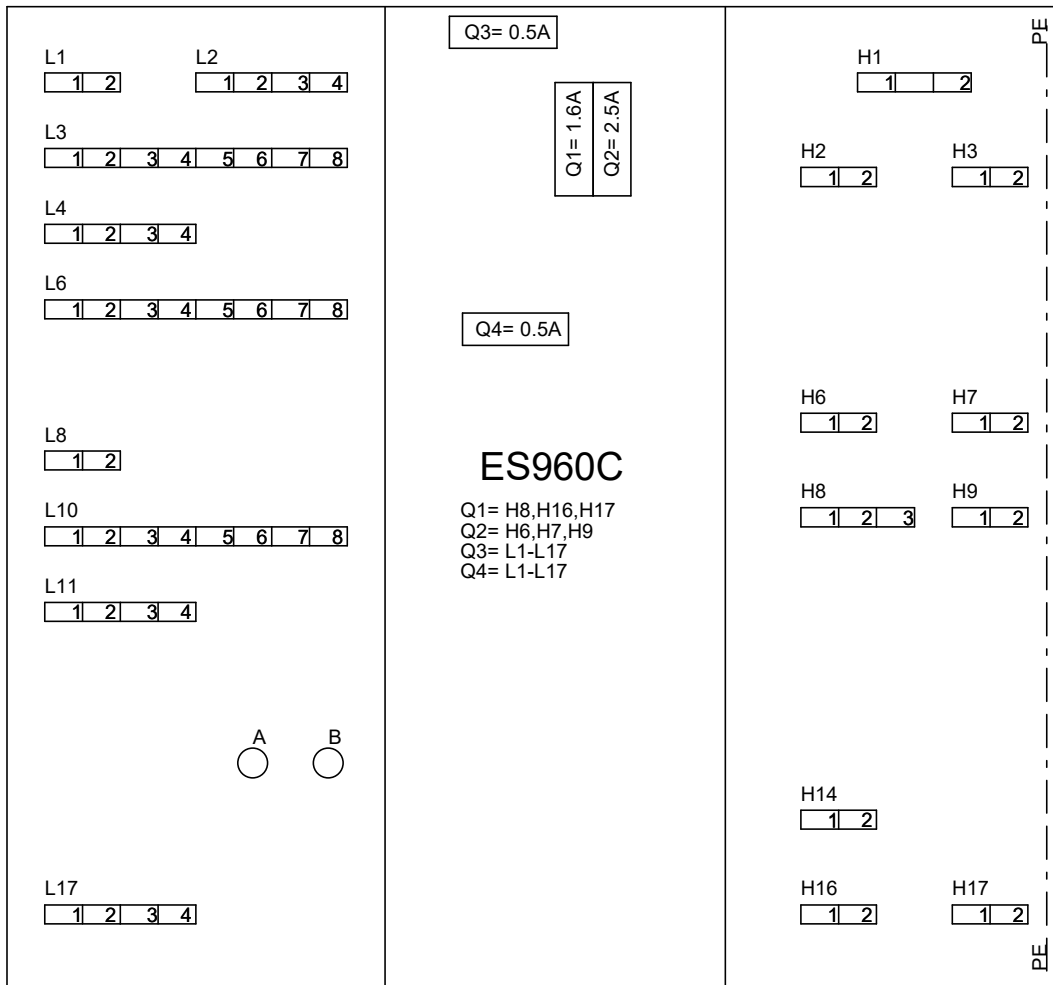
This error appears when there is no communication between the display and control. Check that the wiring is correct on terminals 21 to 24.

21	Signal
22	Signal
23	10 Volt
24	0 Volt

Frost protection error

This error message will be displayed if a water reheater is fitted to the system and the temperature of the water reheater is too low, causing a danger of frost burst. The control will stop the system and open the motor-operated valve to keep the heater warm.

ELECTRICAL DIAGRAM - OPT251

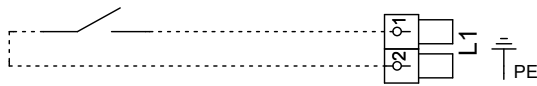


A = LED Flash - Power on
 B = LED Flash - Communication to Optima Display
 Q = Fuse

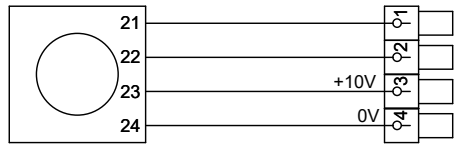
L1 = Potential free input for optional:
 Humidistat, Extractor hood ,CO2
 L2 = Optima Display
 L3 = Sensors T1,T3,T4,T7
 L4 = Humidity sensor P1
 = Demand CTRL B1
 L6 = Sensors T8,T9
 L8 = External stop
 L10 = Modulating Pre / Reheating
 L11 = 0-10V Motorvalve Reheating
 0-10V Belimo LM230ASR bypass
 L17 = 0-10V extract air fan and
 0-10V supply air fan

H1 = Mains connection 230 VAC
 H2 = (R2) Electric Reheater 230VAC
 H3 = (R3) Electric Preheater 230VAC
 H2,H3 = Max. load total 1800W
 H6 = (R10) Motorvalve Reheating,
 Belimo LM230ASR 230VAC
 H7 = (R10) Fan, extract air 230VAC
 H8 = (R12) Saia-UCK ON/OFF Bypass 2x230VAC
 H9 = (R10) Fan, supply air 230VAC
 H14 = (R6) Belimo CM230-F-R ON/OFF Bypass 230VAC
 H16 = (R8) Belimo CM230-F-R ON/OFF Bypass 230VAC
 H17 = (R9) AUX relay 230VAC

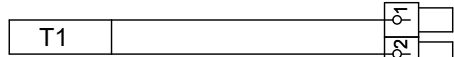
Potential free input
for optional:
Humidistat,
Extractor hood,
CO2



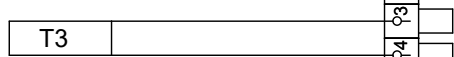
Optima Design



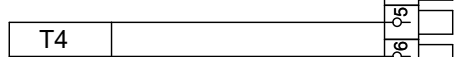
Sensor, supply air



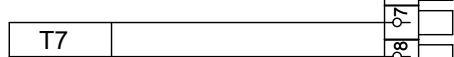
Sensor, fresh air



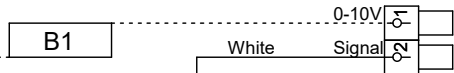
Sensor, exhaust air



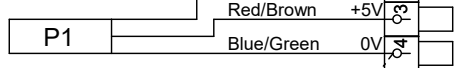
Sensor, extract air



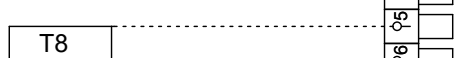
Demand CTRL B1



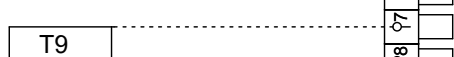
Humidity sensor P1



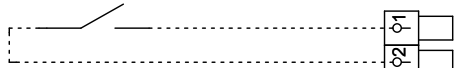
Sensor Frost



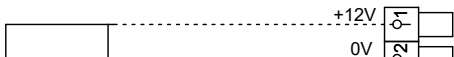
Sensor Option



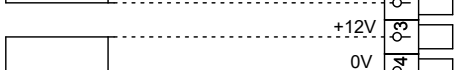
External stop



Modulating
Preheating



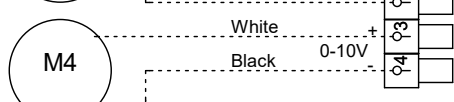
Modulating
Reheating



Control signal
Motorvalve
Reheating



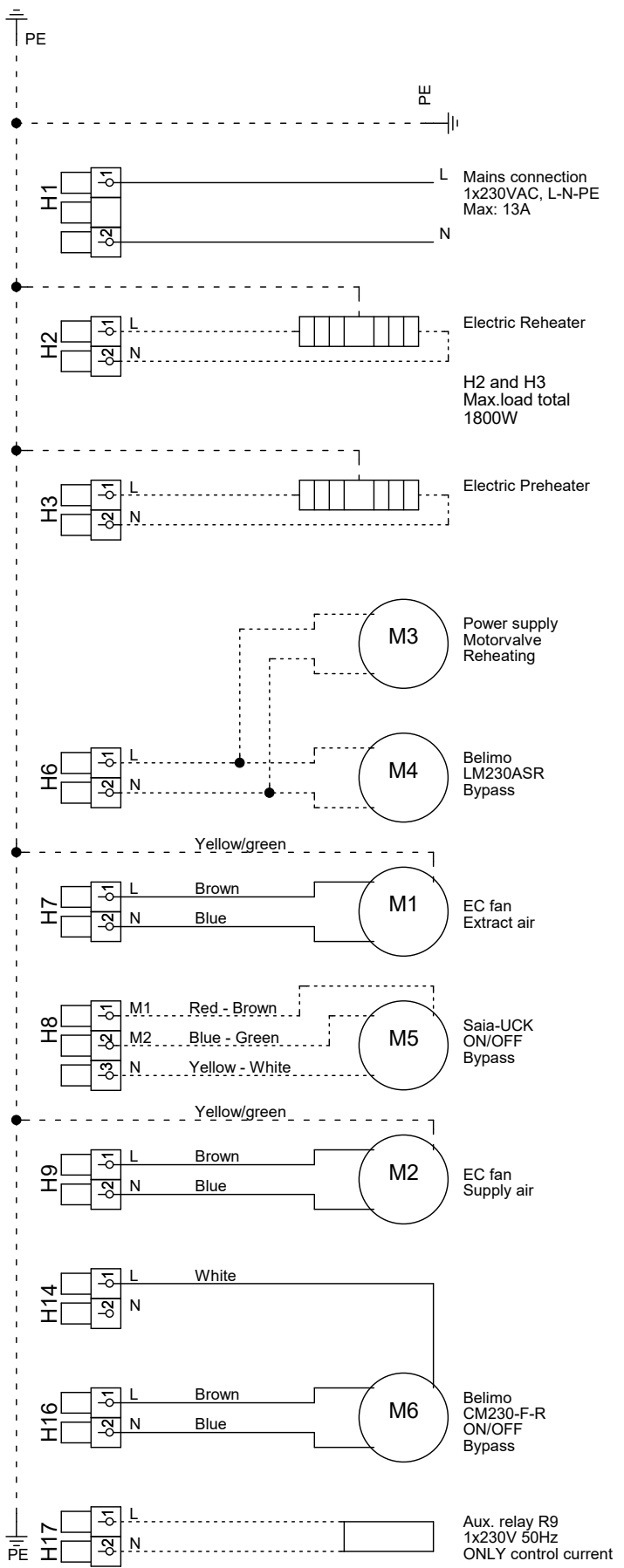
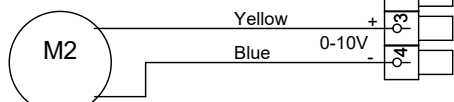
Belimo
LM230ASR
Bypass



EC fan
Extract air



EC fan
Supply air



Mains connection
1x230VAC, L-N-PE
Max: 13A

Electric Reheater

H2 and H3
Max.load total
1800W

Electric Preheater

Power supply
Motorvalve
Reheating

Belimo
LM230ASR
Bypass

EC fan
Extract air

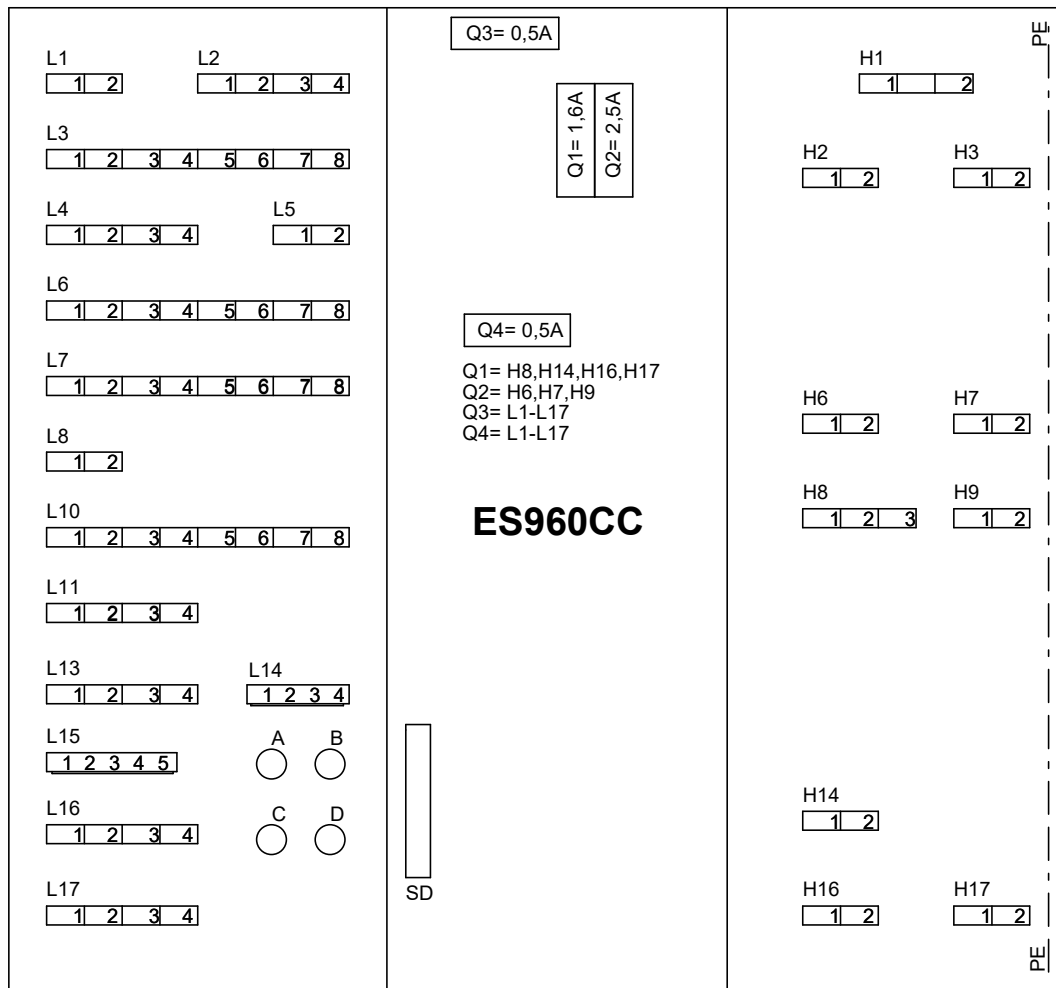
Saia-UCK
ON/OFF
Bypass

EC fan
Supply air

Belimo
CM230-F-R
ON/OFF
Bypass

Aux. relay R9
1x230V 50Hz
ONLY control current

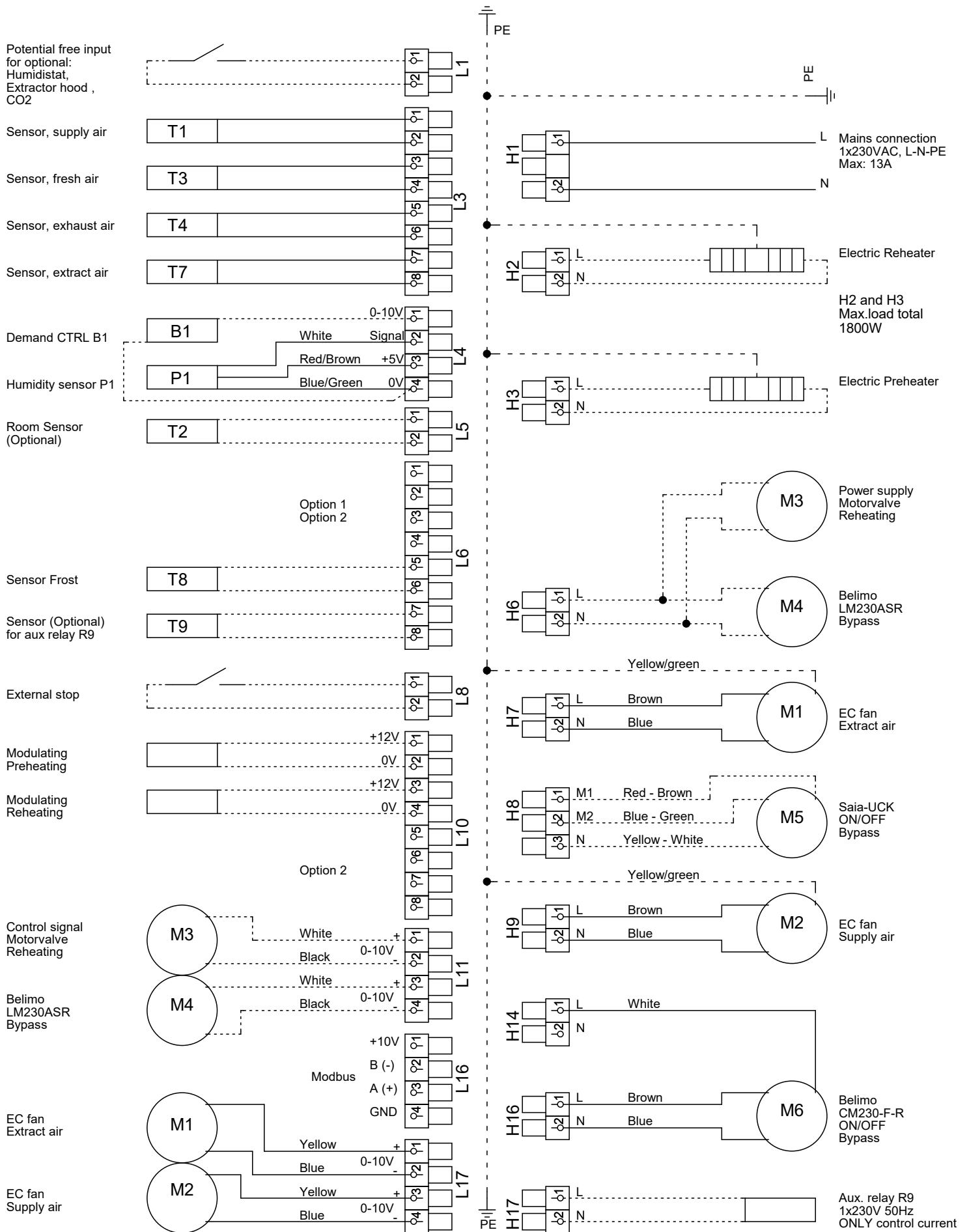
ELECTRICAL DIAGRAM - OPT260



- A = LED Flash - Power on
- B = LED Flash - Startup
- D = LED Flash - Loads the program from sd card
- Q = Fuse

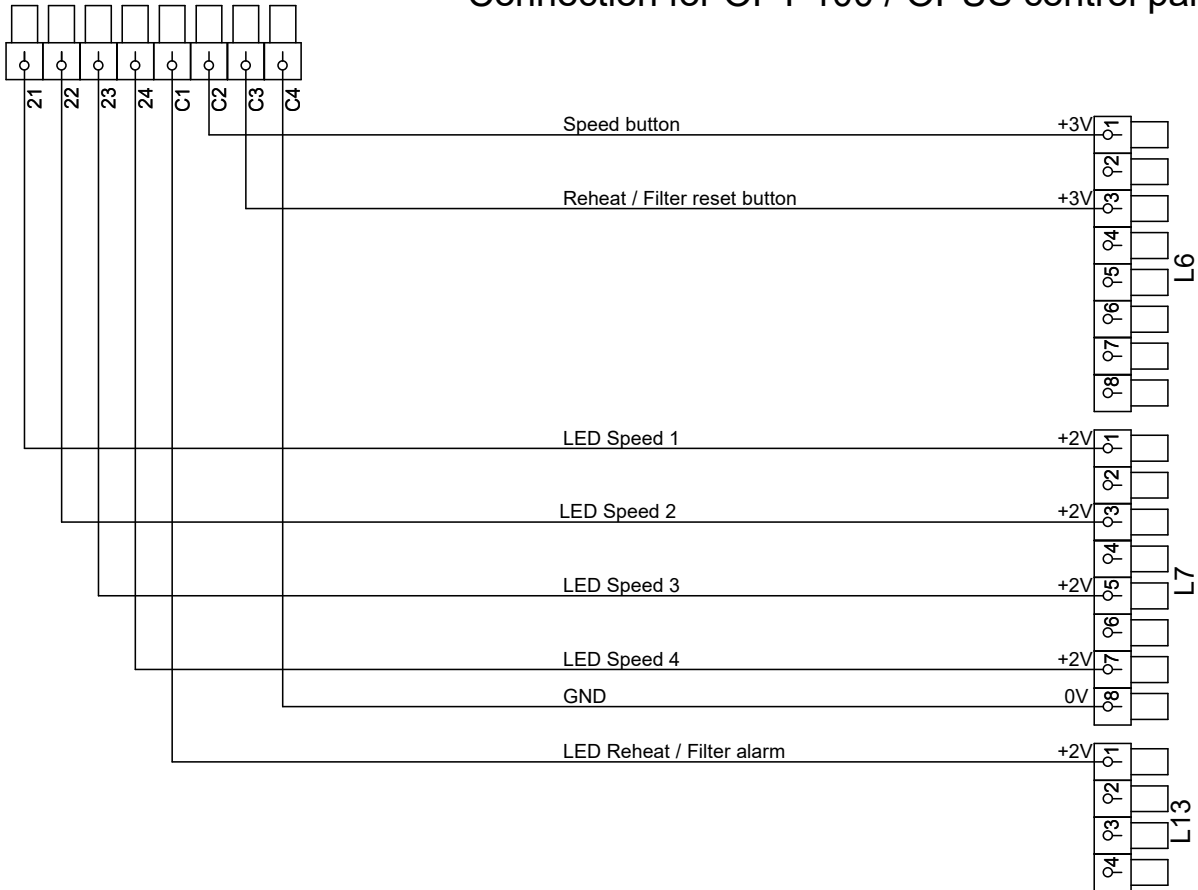
- L1 = Potential free input for optional:
Humidistat, Extractor hood ,CO2
- L2 = Optima Design (option 3)
- L3 = Sensors T1,T3,T4,T7
- L4 = Humidity sensor P1
= Demand CTRL B1
- L5 = Room sensor T2 (optional)
- L6 = Option 1 & 2, Sensors T8,T9
- L7 = Option 1
- L8 = External stop
- L10 = Modulating Pre / Reheating & Option 2
- L11 = 0-10V Motorvalve Reheating
0-10V Belimo LM230ASR bypass
- L13 = Option 1
- L14 = Data logger socket
- L15 = Programming socket
- L16 = Modbus
- L17 = 0-10V extract air fan and
0-10V supply air fan

- H1 = Mains connection 230 VAC
- H2 = (R2) Electric Reheater 230VAC
- H3 = (R3) Electric Preheater 230VAC
- H2,H3 = Max. load total 1800W
- H6 = (R10) Motorvalve Reheating,
Belimo LM230ASR 230VAC
- H7 = (R10) Fan, extract air 230VAC
- H8 = (R12) Saia-UCK ON/OFF Bypass 2x230VAC
- H9 = (R10) Fan, supply air 230VAC
- H14 = (R6) Belimo CM230-F-R ON/OFF Bypass 230VAC
- H16 = (R8) Belimo CM230-F-R ON/OFF Bypass 230VAC
- H17 = (R9) AUX relay 230VAC



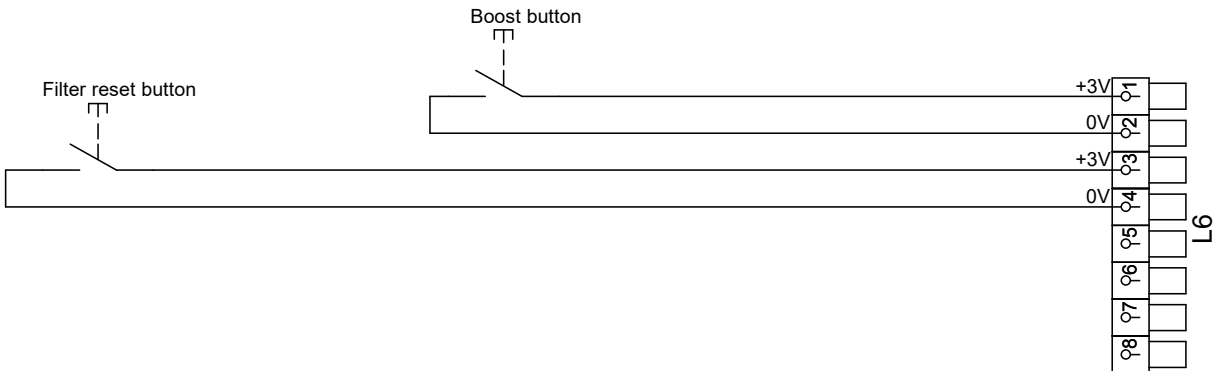
OPT 100/OPUS DISPLAY

Connection for OPT 100 / OPUS control panel

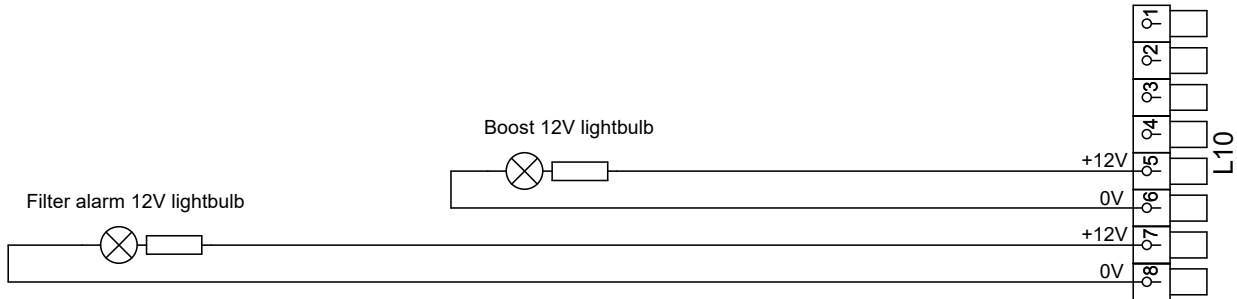


Option 1

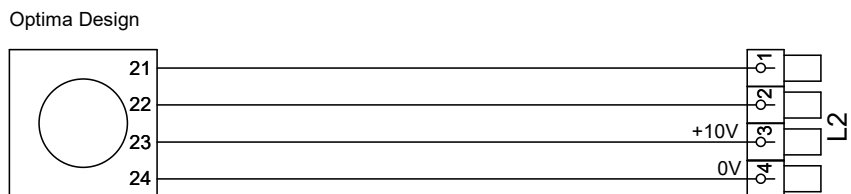
Connection for boost button and filter reset button



Option 2



Connection for Optima Design



Option 3

DECLARATION OF CONFORMITY

The declaration of conformity can be found on our website: www.genvex.com

THE AIR WE BREATHE

All
Genvex
systems are
rated with
energy label
A

The original Genvex units are assembled by skilled and experienced technicians and have a lifetime that in many cases is measured in decades. The units are approved by all applicable standards and are easy to operate and service. Last – but not least all Genvex systems are developed with focus on compact dimensions and ease of installation and can be integrated discreetly in all types of homes.

We are part of the NIBE Group – a family of companies that specialize in supplying hot water, heating and home comfort to homeowners worldwide.



Genvex – The original Danish Ventilation System

Genvex is a genuine Danish original. We invented the ventilation system more than 40 years ago, and we are still ahead of the pack when it comes to development and production of the strongest and most durable ventilation system.

Our unit is working in thousands of homes providing fresh clean air – free of pollen, dust and harmful particles. This helps to strengthen the health of the house and to make the indoor environment healthy and comfortable for lots of families. At the same time, our system is an important element when it comes to saving energy in homes and in society as a whole – in fact you can recover up to 95% of the heat energy with a Genvex system.

Please visit www.genvex.com to see a list of our distributors

