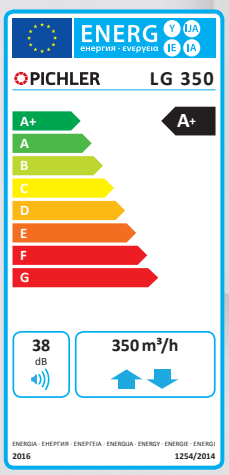
OPERATING AND INSTALLATION INSTRUCTIONS COMPACT VENTILATION UNITS LG 350 & LG 450

in approval

CERTIFIED COMPONENT
Passive House Institute

ErP 2018
EU-Regulation 1253/2014



For details – see the brochure

COMFORT VENTILATION

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Systematic Ventilation.

GENERAL

USER

SPECIALIST PERSONNEL

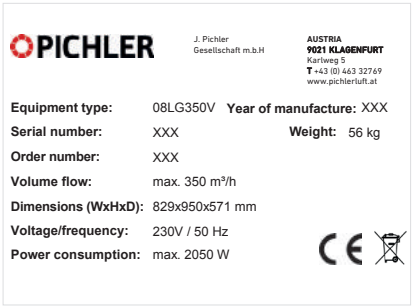
Contents

1. Introduction

The compact ventilation units LG 350 and LG 450 employ state-of-the-art technology. They are characterised by cost effectiveness, ease of use and reliability.

To operate your compact ventilation unit safely, properly and economically, please read this manual carefully and follow the instructions provided.

Use the ventilation unit only when in perfect condition and for its designated use, be aware of safety and any hazards and cognisant of all the notes and information contained in this manual. Should you have any queries or wish to order spare parts, please have the unit mode and serial number (see nameplate on unit) to hand.


PICHLER J. Pichler Gesellschaft m.b.H
AUSTRIA 9021 KLAGENFURT Karlweg 5 T +43 (0) 463 32769 www.pichlerluft.at

Equipment type:	08LG350V	**Year of manufacture:**	XXX
Serial number:	XXX	**Weight:**	56 kg
Order number:	XXX		
Volume flow:	max. 350 m³/h		
Dimensions (WxHxD):	829x950x571 mm		
Voltage/frequency:	230V / 50 Hz		
Power consumption:	max. 2050 W		

Please contact us if you have any further questions or if you lose your documentation.

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2. General information

This chapter contains some general information about the LG 350 and LG 450 compact ventilation units with the MINI or TOUCH control unit.

BEFORE COMMISSIONING THE UNIT, PLEASE READ THESE INSTRUCTIONS CAREFULLY!

This manual contains notes and information on safe operation and proper installation of the LG 350 and LG 450 compact ventilation unit and on its use and servicing. This manual furthermore is to serve as a reference document for servicing to ensure proper execution of the tasks. Keep this operating manual in a safe place and readily available at all times.

Troubleshooting and procedures on the compact ventilation unit may be performed by an installation company (specialist company) only.

Changes reserved:
This manual has been compiled with the utmost care. This does not, however, imply any rights. We constantly strive to improve and optimise our products technically and we reserve the right to modify our apparatus or technical data fully or in part and without prior notification. Your unit may therefore vary slightly from the description in this manual.

Our "General Terms and Conditions" in their latest version shall apply.

3. Function of the ventilation system

With mechanically-controlled residential ventilation, used, damp extract air is conducted away from wet domestic areas, e.g. bathroom, toilet and kitchen, and is replaced with fresh, processed and filtered outdoor air in lounge areas e.g. in living rooms and bedrooms.

Significant energy savings are achieved when the system is operated continuously thanks to highly efficient heat exchangers for heat recovery from extract air to the supply air and the use of energy-efficient fans with cutting-edge EC technology for air flow control. This technology is particularly effective in air-tight building shells and with active thermal insulation. Heat recovery with an efficiency of over 90 % ensures highly efficient operation.

Protection of the heat exchanger by a suitable closed-loop controlled frost protection mechanism and the provision of an effective condensate discharge are of utmost importance in this respect.

4. Designated use

INTENDED USE

The LG 350 and LG 450 compact ventilation units are suited for the installation into ventilation and air conditioning systems for the controlled mechanical deaeration and ventilation of homes, large residential units and offices and for similar purposes with an adjustable air volume flow of up to 350 m^3/h (LG 350) or 450 m^3/h (LG 450).

The purpose of controlled mechanical ventilation and deaeration of domestic areas is to improve the air quality, to reduce the heating energy demand by the use of a highly efficient heat recovery system, and to influence indoor air humidity.

The unit's fields of application and designated use shall be limited to ventilation and air conditioning systems for the extraction of used air and the supply of fresh, temperature-controlled outdoor air at maximum media temperatures between -15 °C and +35 °C. Furthermore, the extracted air must be free of aggressive vapours and substances causing wear.

Any other use shall be deemed contrary to designated use. The manufacturer shall accept no responsibility for damages or consequential damages arising from improper use. Designated use also includes adherence to our prescribed operating and installation instructions.

This unit is available to the general public and is intended for installation in residential or industrial buildings. The unit is used for mechanical aeration and ventilation of indoor air and, combined with heating or cooling systems, also for auxiliary air heating or cooling.

This unit is not intended for use by persons, including children, with limited physical, sensory or mental capacities or lacking experience and/or knowledge, unless under supervision or instruction of a person responsible for their safety. The unit is not suitable for outdoor installation and may be installed in suitable and frost-free interior areas only. The ventilation unit is not suitable for drying new buildings.

In order to prevent the uncontrolled formation of condensate in the unit, continuous operation with an extract air temperature exceeding 25 °C and an extract air humidity of more than 50 % (e.g. private spa area) is to be avoided at outdoor air temperatures of below 0 °C.

The compact ventilation unit is not a ready-to-use product. It must not be put into operation until it has been properly installed and connected to a ventilation system. Only qualified and instructed personnel may work on and with the unit.

Personnel transporting, installing or working on the unit must have read and understood the operating instructions, in particular Section 5, "Safety". The end user must also be instructed on potential hazards.

STIPULATIONS FOR OPERATION WITH FIREPLACES

Local requirements in terms of standards, laws and directives, must be taken into account.

The central air conditioners with heat recovery should not be installed in comparably sized rooms, apartments or facilities with room air dependent heating apparatus unless:

- safety systems are in place to prevent simultaneous operation of room air dependent heating apparatus and units extracting air, or
- special safety systems monitor waste gas extraction of a heating apparatus dependent on room air. Heating apparatus running on liquid or gaseous fuels and drawing in room air, or air conditioning systems, must switch off should a safety system trigger. The air conditioning system must switch off should the safety system trigger in case of solid fuel heating apparatus drawing in room air.

Central air conditioning equipment for controlled ventilation and extraction of air in an apartment or similar facility shall not be installed if the facility has room air dependent heating apparatus connected to waste gas units with multiple infeeds.

For normal operation of central air conditioning systems, it must be possible to close any ducts for combustion air or waste gas systems from heating apparatus dependent on room air. Shutoff systems for waste gas from solid fuel heating apparatus must be manual. The position of the operating lever must indicate the status of the shut-off device. This is deemed complied with if a shut-off system is used to block soot (soot shutoff).

Fire protection requirements

The regional regulatory provisions, especially the fire protection regulations for air conditioning of buildings, as amended, must be taken into consideration when installing the air conditioning system in accordance with the instructions for fire protection.

STIPULATIONS FOR OPERATION WITH EXTRACTOR HOODS

Due to heavy load and irregular operation, the extract air from any kitchen extractor hoods that may be present must not be integrated into the dwelling's air-conditioning system. Extract air from such extractor hoods must be conducted separately to the outdoors by means of an exhaust air pipe via the roof. The supply air has to be provided separately (e.g. by window ventilation).

If an extractor hood is operated without separate introduction of supply air, air volume in the dwelling becomes unbalanced and proper functioning of the domestic air-conditioning system cannot be guaranteed (odour carryover etc.). Another option is to operate the extractor hood in recirculation mode.

LIABILITY

The LG 350 and LG 450 compact ventilation units have been developed and manufactured for controlled mechanical ventilation and deaeration of spaces with purposes similar, for example, to seminar rooms and small offices.

For proper operation of the central air conditioning systems, it must be possible to close any ducts for combustion air and flue gas systems of fireplaces drawing in room air.

Any other use shall be deemed improper and may cause personal injury or damage to the compact ventilation unit, for which the manufacturer cannot be held liable.

The manufacturer accepts no responsibility for any damage due to:

- failure to observe the safety, operating and maintenance instructions provided in this operating and installation manual
- installation of spare parts that have not been supplied by the manufacturer, whereby the system's constructor/installer shall be fully responsible for the use of such spare parts
- normal wear and tear

WARRANTY

The warranty period shall commence after the unit is put into operation, but no later than one month after delivery. The warranty covers replacement of materials only, and excludes claims based on services. The warranty shall be subject to proof of services performed as per our instructions and executed by a licensed installer/specialised company.

Warranty claims are valid for a maximum of 24 months following installation of the compact ventilation unit but are limited to 30 months from the date of manufacture.

Warranty claims shall be limited to material and/or constructional defects occurring during the warranty period. In the event of a warranty claim, the LG 350 and LG 450 compact ventilation units must not be dismantled without prior written authorisation from the manufacturer. The manufacturer's liability shall be limited to spare parts installed by an installation company approved by the manufacturer.

The warranty shall automatically lapse at the end of the warranty period, following improper operation such as operation without a filter, if parts other than original manufacturer-supplied parts are installed, or if unauthorised changes are made to the unit.

The warranty is voided automatically by failure to comply with the information in these operating and installation instructions.

5. Safety

Read these operating and installation instructions carefully and observe the notes on safety during installation, commissioning and servicing or general work on the ventilation unit. Keep the Operating and Installation Instructions near the unit for its entire service life.

Always observe the safety regulations, warnings, indications and remarks in these operating instructions. The specifications given in this document must not be altered. Failure to observe these safety requirements, warning notices, notes and instructions during installation and maintenance works, as well as commissioning, may result in bodily injury or damage to the compact ventilation unit.

The conclusion of a service contract is recommended to ensure that the unit will be inspected at regular intervals. Ask your supplier about approved specialised companies/installers in your area.

SYMBOLS USED

The following safety symbols highlight text containing warnings in respect of danger and potential hazards. Please familiarise yourself with these symbols.

Attention/Note!

Attention! Ignoring this warning may lead to injury or threat to life and limb and/or damage to the unit.

Attention – Hazardous electrical voltage! Ignoring this warning may lead to injury or threat to life and limb.

SAFETY REGULATIONS

Installation, initial start-up, maintenance and repairs must be carried out by an authorised specialist company.

Over and above these operating and installation instructions, local and national regulations and standards shall also apply to the operation of this unit without limitation.

Take instruction from your installer on the unit and on its control unit following installation. The ventilation unit may be used only in accordance with the information provided in Section 4 “Designated Use”.

All safety and danger notices attached to the unit and mentioned in these instructions must be observed.

In the event of malfunctions, switch off the unit immediately and disconnect the power plug. The ventilation unit must be properly secured against restart. Faults must be remedied immediately.

After repairs and maintenance work, qualified personnel must verify that the unit is safe to operate.

Attachment or installation of additional parts and components is not permitted. Any modification of the compact ventilation unit is prohibited. Only original spare parts may be used.

Modifications and alterations to the ventilation unit are prohibited and absolve the manufacturer from all warranties and liability.

Ensure that children do not play with the unit.

UNIT SET-UP

National and local regulations must be observed during installation and setup. The unit must be installed in compliance with national installation regulations.

Installation shall be carried out in accordance with the general, locally applicable building, safety and installation regulations of the relevant community or the water and electricity department and other bodies.

The unit may only be installed in frost-free and dry rooms. The room temperature at the place of installation must be consistently between +5°C min. and +35°C max.

The unit is designed for free-standing installation or wall mounting and must only be mounted on a suitable load-bearing structure. The unit must not be exposed to vibration of any kind.

The proper drainage of condensate accumulating during operation of the ventilation unit will be required, including effective odour blocking traps (siphon). The piping system for water, heating and condensate connections must only be installed by a specialist. The unit must be installed and executed appropriately so as to ensure seal-tightness and effective condensate drainage in order to exclude the possibility of building damage. Effective condensate drainage must be verified on-site prior to initial start-up and after servicing the unit.

The maximum permissible load must be observed when transporting the unit.

Components of the ventilation plant, e.g. air ducts which may need to be installed in unheated areas, must be properly insulated to prevent heat loss or condensate formation (for temperatures under dew point). Observe all locally-applicable construction and fire protection guidelines, regulations and standards. If necessary, appropriate suitable measures must be taken when installing the unit, e.g. the installation of fire dampers in air ducts, etc.

ELECTRICAL CONNECTION WORK

Warning of hazardous electrical voltage! Disregarding the hazard may result in death, injuries, or damage to material assets. Before carrying out any work on live parts, the unit must always be disconnected completely from the power supply (all poles) and secured against being switched back on.

The earth contact plug and socket-outlet on the power connection makes it possible to disconnect all poles of the unit from the power supply.

Electrical connection work and work on the system's electrical components may be carried out by authorised electricians only, in compliance with national and local regulations.

Before opening the unit and when carrying out work on the unit, e.g. maintenance work and repairs, etc., the unit must be deenergised (disconnection of the voltage supply for all poles) and must be protected against restart for the duration of the work performed.
The compact ventilation unit is designed for a 230 V/50 Hz voltage supply.

Work practices that could compromise the unit's safety are prohibited! To ensure safe operation, safety devices must not be removed or bypassed.

Electrical equipment and the unit's warning and protective devices must be inspected regularly to ensure that they are in perfect working order. In the event of faults in the electrical power supply or the identification of defects, e.g. loose connections or burnt cables, the unit must be switched off immediately.

Damaged or faulty power supply cables to the unit must be repaired immediately to avoid hazards.

The unit may not be operated until safe operational conditions are restored.

Fault finding and immediate remediation of electrical defects and malfunctions shall be carried out by authorised electricians only. All protective measures must be inspected (e.g. earth resistance etc.) after completion of electrical work on the unit. For details, see Section 17, "Electrical Connection".

PLANT OPERATION

Operation of the ventilation unit is permitted only if all built-in parts provided, e.g. silencers etc., have been properly connected.

In the event of errors or any damage that can cause harm to persons or property, the system must be put out of operation immediately. Further use must be actively prevented until the unit is fully repaired.

If error messages occur or any damage is indicated, the ventilation unit must be switched off and disconnected from the power system immediately. Be aware of your safety and of hazards when opening the unit or when removing cover plates. Work practices that could potentially damage the unit are prohibited.

The unit may only be operated with connected air ducts or installed system components such as acoustic dampeners to ensure that fans or electrical components, for instance, cannot be touched by hand.

The compact ventilation unit may be operated only in accordance with the project documentation, which shall comply with the Equipment and Product Safety Act and the pertinent provisions of the EC Directives and Standards.

Consider environmental impacts and refrain from installing the ventilation unit in the vicinity of flammable liquids or gases, in swimming pools or in areas exposed to chemicals.

Never operate the ventilation unit without an air filter. Air filters must be checked regularly for dirt and damage and replaced, if necessary. The air filters must be changed at least every six months or when the "Change Filter" message appears on the control unit. Use original replacement filters only. If the plant is not used in summer, the air filters must, for hygienic reasons, be replaced prior to restarting.

When operating the ventilation unit simultaneously with ambient air-dependent fireplaces, the safety regulations and standards must be complied with. When using fireplaces dependent on ambient air, the combustion air supply must be provided separately. See the provisions specified in Section 4, "Stipulations for operation with fireplaces".

Due to the heavy impact and inconsistent operation, extractor hoods must in no case be integrated into the exhaust duct of the compact ventilation unit. See the provisions specified in Section 4, "Provisions in connection with extractor hoods". Exhaust air extractor hoods must be operated via separate air pipes with suitable air replenishment, e.g. by means of window ventilation or in air recirculation mode.

User guide

6. Customer service

Please contact the installer of your ventilation and air conditioning system or contact us directly for any questions relating to the LG 350 or LG 450 compact ventilation unit supplied.

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7. Design of the ventilation unit

The LG 350 and LG 450 compact ventilation units with PHI certificate are used for the controlled mechanical aeration and ventilation of homes, larger residential houses, offices and similar applications and are suited for free-standing installation or wall mounting in frost-free rooms.

Their range of use extends to residential spaces from approx. 100 m^2 to approx. 350 m^2 with a standard room height, in passive or low-energy houses, with an adjustable air volume flow of up to 350 m^3/h (LG 350) or 450 m^3/h (LG 450).

Operation is simple and intuitive and, with an Internet connection (LAN connection) can also be carried out via the PICHLERluft app.

The optional expansion options by the CO_2 sensor module and the humidity sensor allow for demand-driven ventilation operation.

The LG 350 and LG 450 compact ventilation units are provided with:

- a compact, thermal bridge-free and thermally insulated EPP housing
- a device enclosure of galvanised sheet steel, powder-coated in RAL 9010 on the outside
- a highly efficient heat recovery system with an air-to-air counterflow heat exchanger made of recyclable plastic with an efficiency of 93 % in the case of LG 350 and 90 % in the case of LG 450
- optionally with additional moisture recovery
- a 100 % automatic integrated bypass to work around the heat exchanger, if required
- selectable, automatically working frost protection switch for the heat exchanger, optionally available with an electrical pre-heater battery
- energy-saving radial fans in state-of-the-art EC motor technology
- an integrated volume flow measurement, which guarantees balanced operation on the supply and extract air sides. Even if the system pressure is changed, the air volume flow is maintained, e.g. if the filter is contaminated.
- outdoor air filter of quality class ISO ePM1 70 % and extract air of quality class ISO Coarse 80 %
- integrated filter monitoring – when the time internal is reached, the "Filter replacement" message is output on the control unit
- filter replacement can be carried out without tools
- an internally wired electronic controller
- as a standard feature, with the MINI control unit for setting the basic functions
- optionally with the comfortable TOUCH control unit, with an integrated room temperature sensor for enhanced operation and display, as well as with an optional swiveling console. The TOUCH operating control unit can be attached directly to the ventilation unit on a swiveling console.
- optional connection of a heater, cooling or combination battery for the additional conditioning of the supply air

8. MINI control unit

FUNCTIONS

The following compact ventilation unit functions can be configured with the MINI control unit:

- Selection of the "Standby" or "Basic ventilation" operating mode
- Ventilation level of the compact ventilation unit
- Change-over between summer, winter, or automatic operation
- Display of filter replacement messages
- Display of fault messages via LED

BUTTONS AND LEDS

The ventilation unit is operated by means of four buttons.

Summer, winter or automatic operation

The two buttons on the left-hand side switch over between summer, winter or automatic operation.

Summer
The summer or bypass operation supports cooling of the living area.

Under certain conditions, the heat exchanger can be avoided by means of the bypass and the cold outdoor air is directly blown into the room.

Winter
In winter operation, the outdoor air is always conveyed via the heat exchanger.

Automatic operation Switch-on/switch-off
By pressing the [Summer] and [Winter] buttons at the same time, automatic operation is activated, automatically changing between summer and winter operation, depending on the outdoor temperature. Active automatic operation is indicated when the summer and winter LED is lit. By pressing the [Summer] or [Winter] button, automatic operation is deactivated.

CHANGING THE VENTILATION LEVEL

The two buttons on the right-hand side change the ventilation level of the unit. With the [+] button, the ventilation level is increased until Level III is reached, which corresponds to a boost ventilation process. After one hour of operation in the highest ventilation level, the system automatically returns to the normal setting, Level II. Alternatively, you can stop the boost ventilation mode manually before one hour has passed. Simply press the [-] button on your control unit.

Standby or basic ventilation
If a ventilation level lower than I is selected, the unit either switches to standby or to basic ventilation operation. For details, see Section 9, "Ventilation level".

LEDs
The different states of the ventilation unit are indicated by LEDs. Three LEDs display the current ventilation level.

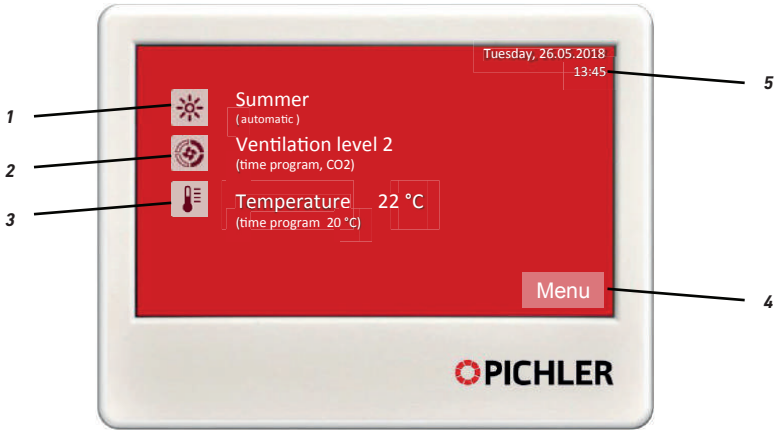
The LEDs for summer, winter, or automatic mode are located on the left-hand side, arranged next to the corresponding buttons.

Filter replacement
The potential need for filter replacement is indicated by the LED on the bottom left. For details regarding the subject of filter replacement, see Section 11, "Filter maintenance".

Error messages
The LED for error messages is located on the bottom right. Please contact your installer! For details with regard to the error messages, see Section 19, "Error description".

9. TOUCH control unit

START MENU



1 Current operating mode
2 Ventilation level
3 Temperature (indoor air, supply air or extract air)
4 Menu
5 Date and time

OPERATING MODE

The active operating mode is displayed by various buttons. The operating mode can be changed by pressing the button. The following operating modes are available:

Summer
The summer or bypass mode supports cooling of the living area.

Under certain conditions, the heat exchanger is avoided by means of the bypass and the cold outdoor air is directly blown into the room.

Winter
In winter mode, the outdoor air is always conveyed via the heat exchanger.

Automatic
In automatic operation, an automatic change-over from summer to winter operation is carried out, depending on the outdoor temperature.

Automatic operation is indicated in brackets below the current operating mode.

VENTILATION LEVEL

The general principle should be observed: "Provide as much ventilation as is necessary"

Adjusting the air volumes requires the necessary knowledge and is carried out by the specialist during commissioning.

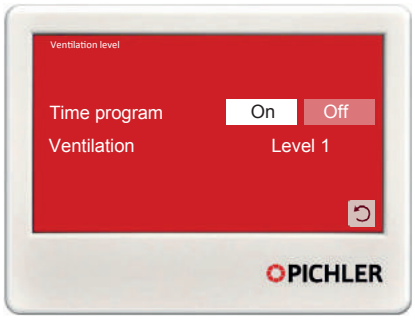
The ventilation levels can be configured in the "Standby" or "Basic ventilation" mode. Depending on these settings, selection of the lowest ventilation level establishes standby or basic ventilation mode.

If ventilation is too low, poor indoor air quality or mould formation may result in living areas.

If ventilation is too high, indoor air may become too dry – particularly in the colder months.

The active ventilation level is displayed by various buttons. The ventilation level can be changed by pressing the button. The following selection options are available:

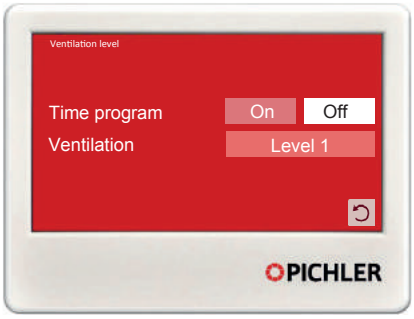
Time program

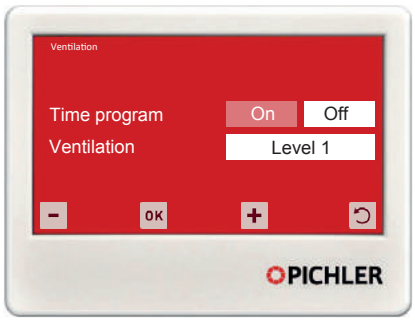


The system runs at the ventilation level that is currently programmed. The time program can be programmed in the [menu] under [Settings].

Demand-driven air volume control is established on a higher level with both the time program and the manual selection of the ventilation level and with connected and configured CO_2 and/or humidity sensors. Programming is carried out in the [Settings] > [Additional functions] menu item.

Manual selection





When the time program is deactivated [OFF], the ventilation level can be selected manually. This selection is executed via the [+] and [-] buttons and the [OK] button in the lower area of the control unit.

Standby configuration

Ventilation level 1
The unit is running in ventilation level 1

Ventilation level 2
The unit is running in ventilation level 2

Ventilation level 3
The unit is running in ventilation level 3

By selecting ventilation level 3, the boost ventilation function is activated. After one hour of operation in the highest ventilation level, the system automatically returns to the ventilation level set previously. Alternatively, you can stop the boost ventilation process manually before one hour has passed by selecting a lower ventilation level.

Standby
The unit is in Standby mode. The fans are not moving.

Configuration of basic ventilation

Ventilation level 1
The unit is running in ventilation level 1.

Ventilation level 2
The unit is running in ventilation level 2.

Ventilation level 3
The unit is running in ventilation level 3.

By selecting ventilation level 3, you activate the boost ventilation function. After one hour of operation in the highest ventilation level, the system automatically returns to the ventilation level set previously. Alternatively, you can stop the boost ventilation process manually before one hour has passed by selecting a lower ventilation level.

Basic ventilation
The unit is running with a minimum air volume. The fans are running at a low speed.

DEMAND-DRIVEN AIR VOLUME CONTROL

Higher-level air volume control

There are various configurations and operating modes that result in your ventilation unit being operated with air volumes other than those set, e.g.:

CO_2 concentration-based control (Fig. 1)

Acceptable indoor air should not exceed a CO_2 concentration of 1000 ppm, meaning that active ventilation should take place every 1 to 2 hours. A living room ventilation unit with CO_2 concentration-based control (CO_2 sensor module available as part of the accessories) automatically ensures that a defined CO_2 value of 900 ppm is not exceeded.

Humidity concentration-based control (Fig. 2)

The relative humidity is a factor that also contributes significantly to a comfortable living climate. Acceptable humidity is defined by a comfort window.

In the case of a ventilation unit with humidity concentration-based control (RH sensor module available as part of the accessories), a permanently defined relative humidity setpoint of 65% is stored. If this value is exceeded, the ventilation unit switches to the highest fan level for 60 minutes.

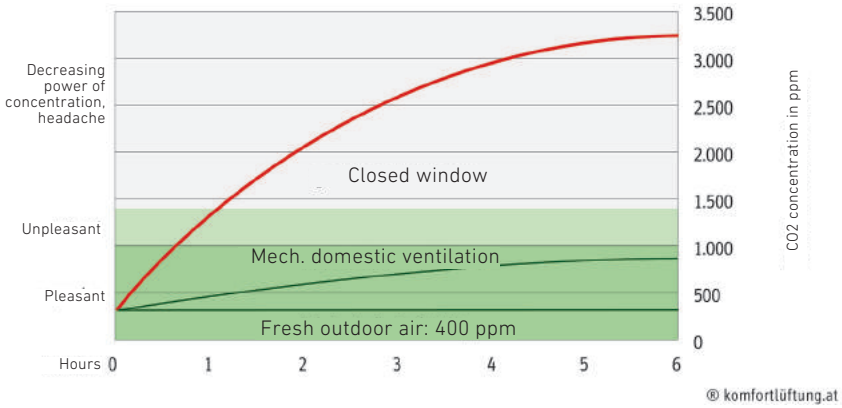


Figure 1: Schematic diagram showing the increase in CO2 concentration in a flat/room with occupants with and without mechanical ventilation.

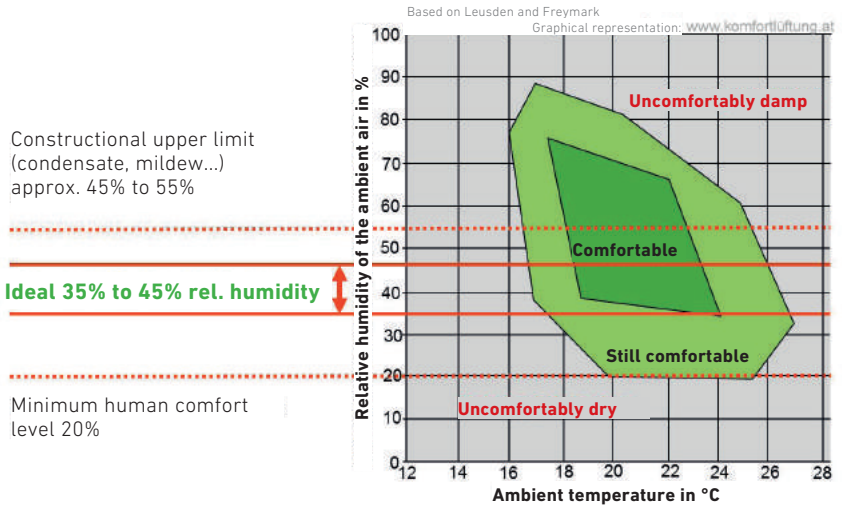
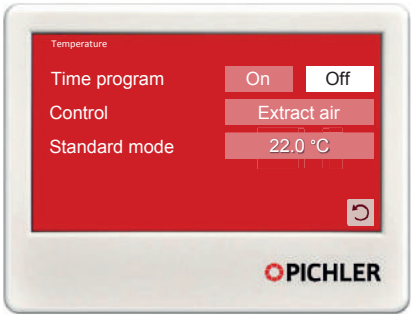


Figure 2: Representation of the comfort window as a function of the air temperature and relative humidity.

TEMPERATURE

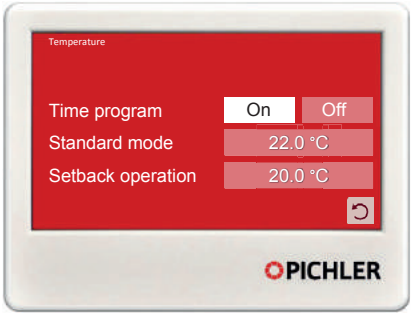
Depending on the setting, closed-loop control is based on the indoor air, extract air or supply air temperature. The desired temperature can be entered via the control unit. The "Settings" item under "Temperature control" in Section 9 provides more information on this subject.

Deactivated time program [OFF]



Setpoint temperature in normal operation.
When the time program is deactivated, this temperature is always the temperature defined for the control process.

Activated time program [ON]
(for different time-of-day setpoint temperatures)



Setpoint temperature in normal operation and in setback mode.
When the time program is activated, a switch-over between these two setpoint temperatures is carried out.

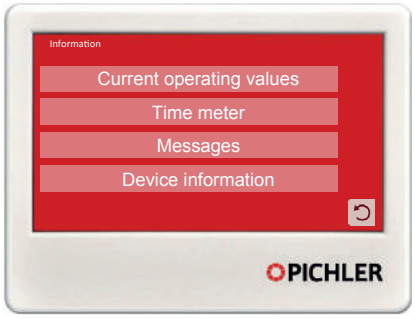
The temperature is controlled in the standard design of the ventilation unit via the integrated bypass circuit and is limited by the outdoor air conditions without the use of the optionally available heater, cooling or combination batteries in the supply air.

MAIN MENU

The main menu will open when the Menu button is pressed. Information on the ventilation unit is displayed here, and various settings can be made and actions performed.

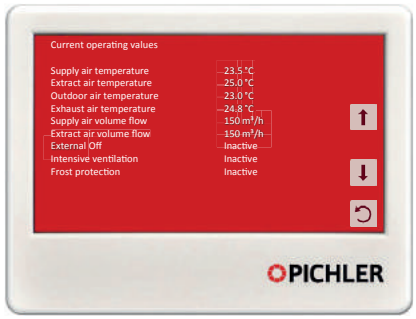
By pressing the Home button you return to the Start menu.

INFORMATION

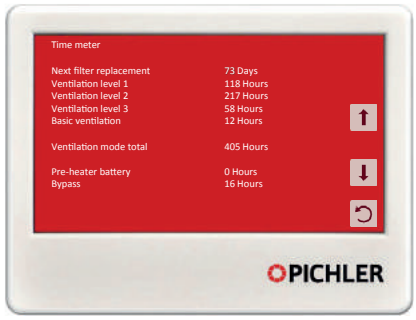


Current operating values, operating hours, messages and firmware versions can be retrieved under the [Information] menu item.

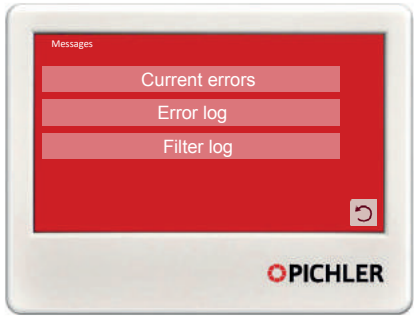
Current operating values



Time meter



Messages

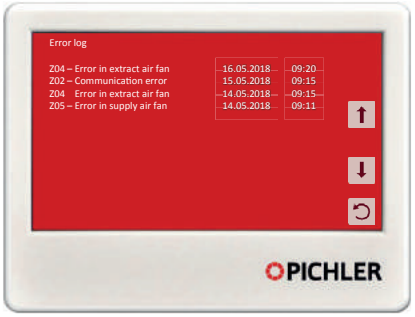


The current errors and error logs, e.g. regarding a filter replacement, are shown here.

Current errors

Active errors are shown here.

Error log



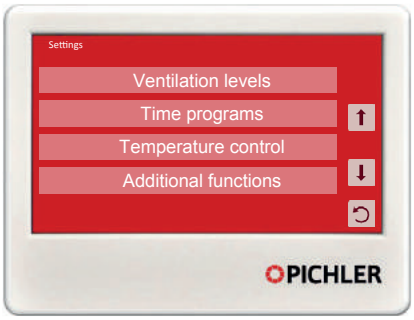
A history of the last 100 errors is listed here.

Filter log

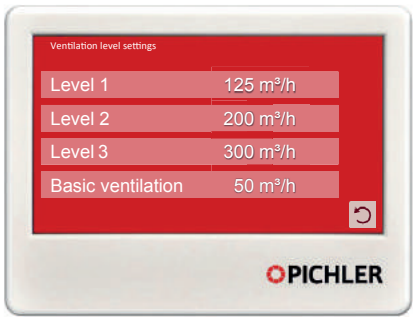
The filter replacement processes carried out are documented here.

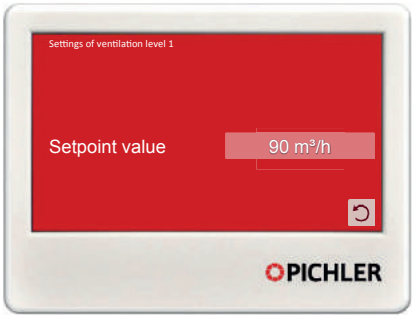
Device information
Firmware versions used for the controller and control unit as well as the type of ventilation unit are shown here. The device ID shown is relevant for remote access via the Internet (remote maintenance) or when utilising the Pichler app.

SETTINGS



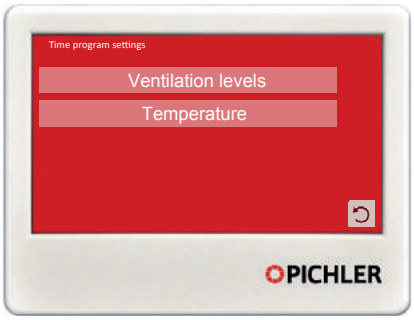
Volume flow per ventilation level





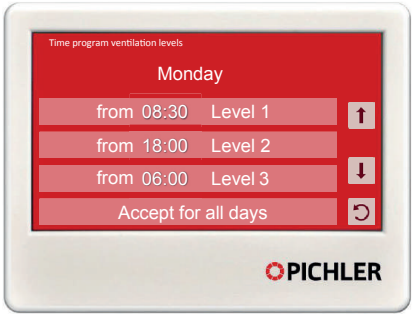
The volume flow for each individual ventilation level can be set here.

Time programs

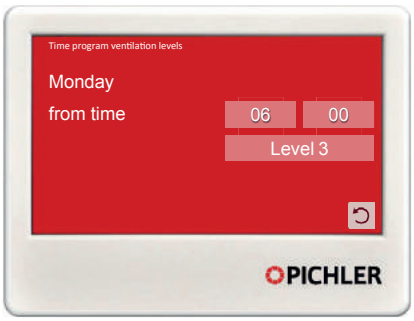


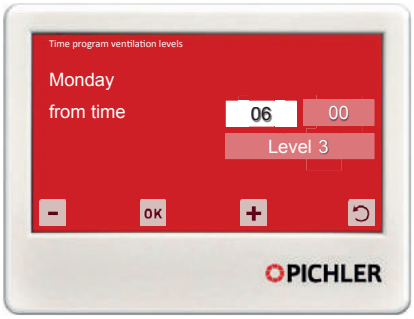
Various settings for the ventilation level and the temperatures can be carried out for each day of the week.

Time program ventilation level

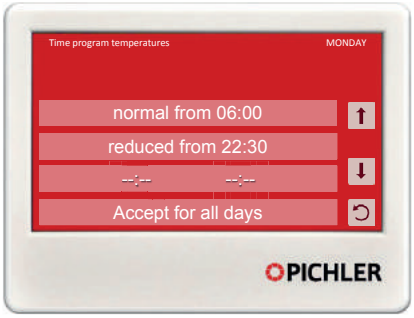


A total of three switching times for the change-over to another ventilation level is provided per day. With the "Accept for all days" button, the switching points of the day currently selected can be accepted for all other days of the week.
Switching point for operation with ventilation level 3.





Time program temperatures

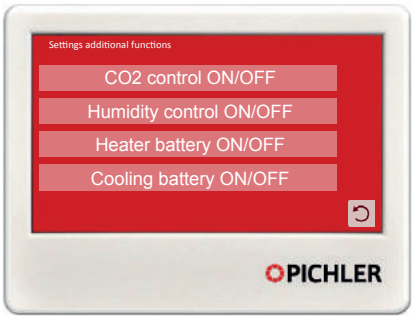


A total of three switching times for the change-over to another setpoint temperature is provided per day. With the [Accept for all days] button, the switching points of the day currently selected can be accepted for all other days of the week.

Temperature control

Depending on the setting, the closed-loop control process is carried out on the basis of the room air, extraction air or supply air temperature.

Additional functions



The additional functions configured by the specialist during commissioning can be activated and deactivated here. The precondition is the installation of the optional sensors or the heater, cooling or combination battery.

CO_2 concentration-based control
Enables the higher-level air volume control as a function of the CO_2 concentration measured.

Humidity control
Changes automatically to operation with ventilation level 3 when the relative humidity exceeds 65%.

Heater battery
Enables re-heating of the supply air downstream of the ventilation unit. This function is only provided in winter operation.

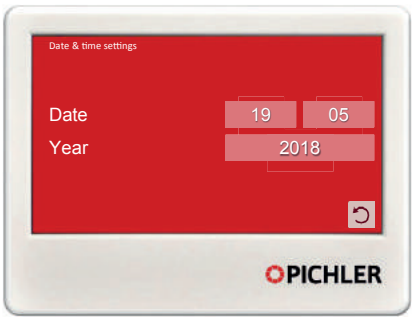
Cooling battery
Enables cooling of the supply air downstream of the ventilation unit. This function is only provided in summer operation.

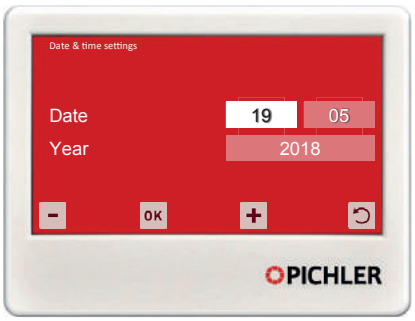
When a combination battery (cooling battery that can also be used for heating) is used, the heater battery and the cooling battery must be activated.

Date & time

In this menu item, various date and time settings can be carried out.

Date





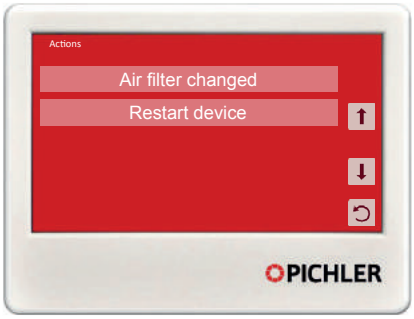
In the date field, the current day and month are set. The active field is highlighted in white. By pressing the [+] or [-] button, the value is changed. By pressing the [OK] button, the value is accepted.

Time

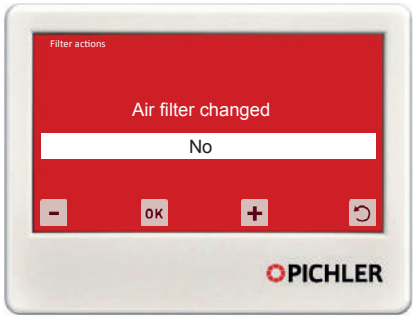
Language

The menu is available in German, English, French, Dutch, Slovenian, Italian, Czech and Slovak.

ACTIONS



Air filter changed



If the air filters are changed outside the filter replacement interval specified, without any filter message, the filter timer should be reset under [Menu] > [Actions]. This process is documented automatically in the filter log.

Restart device

If a device restart is required, it can be carried out here. In this process, all settings are maintained. During the restart process, the “Device information” is shown on the control unit.

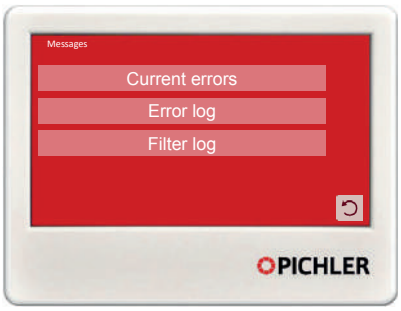
10. Faults & messages

MINI CONTROL UNIT

The error states of the compact ventilation unit on the MINI control unit are indicated by flashing patterns on the error LED. A detailed description of the flashing codes can be found in Section 19, "Error description".

For further processing, please contact your installer.

TOUCH CONTROL UNIT



By pressing the [Current errors] button, they are displayed in a new window in clear text.

In addition, the history of these errors is stored in the error log.

If the error is not remedied by a restart of the compact ventilation unit, please contact your installer.

11. Filter maintenance

FILTER MESSAGE ON THE MINI CONTROL UNIT

When the filter life (factory setting 90 days) has elapsed, the control unit reports the necessity of a filter inspection. This is effected via the LED provided for this purpose, which is then continuously lit in yellow.

CLEARING THE FILTER MESSAGE ON THE MINI CONTROL UNIT

Filter replacement required
Reset the filter counter after changing the filter.

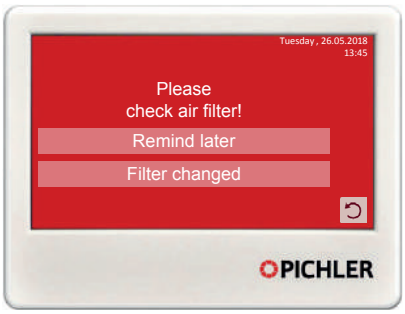
Press the [+] button and the [-] button at the same time for 5 seconds in order to do this. The filter message disappears after entering this combination.

Premature filter replacement
If the air filters are replaced prematurely, the filter counter must be reset without a pending filter message.

In order to do this, also press the [+] and [-] button simultaneously for five seconds.

FILTER MESSAGE ON THE TOUCH CONTROL UNIT

The control unit will remind you of the necessity of a filter inspection when the filter life (factory setting 90 days) has elapsed. Filters must be replaced immediately if very dirty. Otherwise, they should be replaced at least every six months, depending on outdoor air pollution levels.



CLEARING THE FILTER MESSAGE ON THE TOUCH CONTROL UNIT

Filter replacement required
When the filters are changed, this must be confirmed via the [Filter changed] button, resetting the filter life.

If the filters remain in the unit, the filter life is extended via the [Remind later] button by a further 90 days.

Premature filter replacement
Reset the filter signal on the control unit after every filter change! (see Section 9, item “Actions”)

FILTER REPLACEMENT

Only original replacement filters of the specified quality class may be used in the filter replacement process.

When replacing the air filters, avoid soiling the unit and its components. Dirty air filters must be immediately and suitably disposed of. The used air filters can be disposed of as residual waste.

How to proceed when replacing a filter:

1. Filter message on control unit.

2. Remove the filter cover (Item 1) by pressing the latches positioned on the sides towards the inside.

3. Pull out the two air filters (Items 2 and 3) by the sleeves.

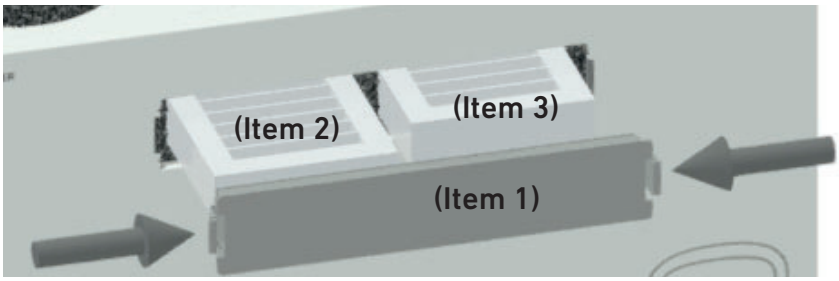
Keep the operating time of the compact ventilation unit without air filters as short as possible.

4. If necessary, insert the new air filters and close the filter cover.

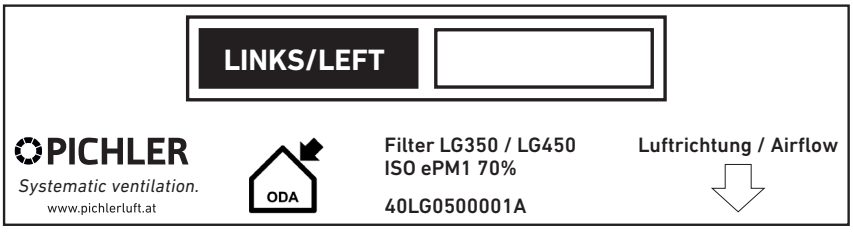
When inserting the new filters, please observe the mounting position (direction of air).

Spare filter

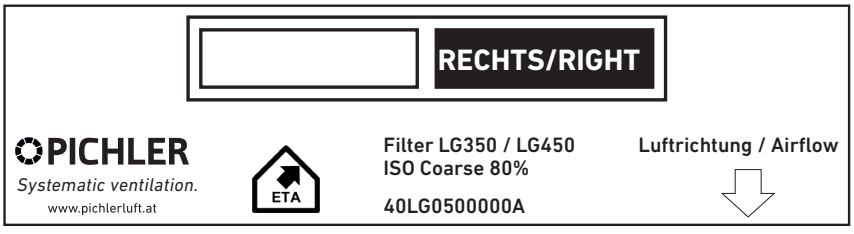
Symbol	Designation	Item no.:
ODA	**Outdoor air filter (ODA)** Quality class: ISO ePM1 70%	40LG0500001A
ETA	**Extract air filter (ETA)** Quality class: ISO Coarse 80%	40LG0500000A



Filter cover (Item 1)



Outdoor air filter (ODA), installation in the left filter shaft (Item 2)



Extract air filter (ETA), installation in the right filter shaft (Item 3)

Mounting / installation

12. Scope of supply, transport, storage and disposal

SCOPE OF SUPPLY

The scope of supply includes:

- A pluggable compact ventilation unit including a data cable for the control unit
- The MINI or TOUCH control unit (depending on the order)
- The operating and installation instructions
- The wall mounting bracket
- The height-adjustable feet for free-standing installation

On delivery of the unit, check that the type and serial number on the nameplate correspond with the information on the order and delivery documents, that the equipment is complete, including any optional accessories, and that all parts have been delivered in perfect condition.

Any transport damage and/or incomplete delivery must be reported immediately in writing to the forwarder or supplier.

TRANSPORT, STORAGE AND PACKAGING

The compact ventilation unit is supplied in a transport packaging. The safety markings on the packaging must be observed. The unit must be stored in its packaging in suitable, dry rooms.

- Dimensions of the packaging unit (W x H x D): 850 x 1100 x 590 mm
- Weight including the packaging unit: approx. 75 kg without optional accessories

In order to avoid potential transport damage, the LG 350 and 450 compact ventilation units must be handled with care and secured accordingly during transport.

Ensure that the unit is not damaged from being toppled or overturned. Avoid knocks and blows during transportation.

Applicable safety and accident regulations must be complied with during transportation.

If transported manually, ensure that necessary human lifting and carrying forces are reasonable.

DISPOSAL

The packaging materials must be disposed of in accordance with local regulations; wooden pallets or cartons must be recycled, for instance.

Units that are no longer in working order must be dismantled by a specialised company and properly disposed of via suitable collection centres in accordance with the Waste Electrical and Electronic Equipment Ordinance (WEEE), which provides for the implementation of community law, Directive 202/95/EC (RoHS) and Directive 2002/96/EC (WEEE Directive).

13. Technical data

VERSIONS FOR FREE-STANDING AND WALL MOUNTING

Item number with standard heat exchanger	08LG350	08LG450
Item number with standard heat exchanger and an integrated pre-heater battery	08LG350V	08LG450V
Item number with enthalpy exchanger	08LG350F	08LG450F
Item numberwith enthalpy exchanger and an integrated pre-heater battery	08LG350FV	08LG450FV

TECHNICAL SPECIFICATIONS

Tipo di apparecchio	**LG 350 (V)**	**LG 350 F (V)**	**LG 450 (V)**	**LG 450 F (V)**
Scambiatore di calore	Standard	Scambiatore a entalpia	Standard	Scambiatore a entalpia
Portata in volume dell'aria min - max (regolabile a livelli di 5 m^3/h)	50 - 350 m^3/h	50 - 350 m^3/h	50 - 450 m^3/h	50 - 450 m^3/h

Parametri di riferimento secondo EN13141-7:2010				
Rapporto termico $\eta_{\Theta,SU}$ [1]	93 %	81 %	91 %	79 %
Rapporto termico $\eta_{\Theta,EX}$ [1]	86 %	75 %	84 %	71 %
Potenza in ingresso specifica SEL[1]	0,18 Wh/m^3	0,16 Wh/m^3	0,22 Wh/m^3	0,21 Wh/m^3
Potenza in ingresso specifica SEL[2]	0,19 Wh/m^3	0,17 Wh/m^3	0,24 Wh/m^3	0,21 Wh/m^3
Perdite esterne	< 0,50 %		< 0,40 %	
Perdite interne	< 0,50 %		< 0,40 %	

Parametri di riferimento secondo i criteri PHI				
Campo d'applicazione certificato	71 - 277 m^3/h		71 -350 m^3/h	
Livello di disponibilità termica $\eta_{eff,WRG}$ Campo d'applicazione secondo PHI	90 %	85 %	89 %	81 %
Recupero dell'umidità	-	76 %	-	76 %
Efficienza elettrica η_{elec}	0,22 Wh/m^3	0,22 Wh/m^3	0,25 Wh/m^3	0,24 Wh/m^3
Potenza assorbita in modalità stand-by	3 W			

Classificazione filtro dell'aria ai sensi di EN ISO 16890	
Filtro dell'aria esterna	ISO ePM1 70 %
Filtro per aria di scarico	ISO Coarse 80 %

Condizioni d'esercizio	
Temperatura ambiente consentita (punto d'installazione)	Da +5 a +35 °C
Temperatura d'esercizio consentita (aria esterna)	Da -15 a +35 °C

Impianto elettrico		
Collegamento elettrico	230 V / 1 ~ / 50 Hz / 16 A	
Classificazione IP	IP40 per condutture dell'aria collegate	
Potenza max. senza VHR	180 W	350 W
Potenza max. con VHR	2050 W	2250 W

Materiali	
Componente interno	EPP e lamiera d'acciaio zincata
Alloggiamento	Lamiera d'acciaio zincata e con verniciatura a polvere RAL 9010
Scambiatore di calore	Polistirolo con grigli ignifuga
Scambiatore a entalpia	Membrana polimerica

Alloggiamento	
Raccordi conduttura dell'aria	4 x Ø 160 mm (per nipplo in acciaio Safe o manicotto EPP DN160)
Scarico condensa	AG 1 1/4"
Dimensioni (L x H x P)	829 x 950 x 571 mm
Peso senza accessori facoltativi	56 kg circa

[1] with 70% of the max. volume flow
[2] in accordance with the calculation basis complying with the specifications of prEN13171-7:2018 relating to an air temperature of 20°C

SOUND DATA

LG 350		Item	Housing radiation			Outdoor air connector			Supply air inlet			Exhaust air connector			Extract air outlet		
		m^3/h	245	277	350	245	277	350	245	277	350	245	277	350	245	277	350
		Pa	50	100	100	50	100	100	50	100	100	50	100	100	50	100	100
Midband frequency	125 Hz	L_w in dB	37	38	41	36	37	39	45	47	50	41	49	51	37	39	44
	250 Hz		46	49	50	43	43	41	55	55	57	51	54	56	43	43	43
	500 Hz		31	34	38	26	30	34	43	46	49	42	45	49	25	28	32
	1000 Hz		27	30	34	23	28	30	40	44	47	40	44	48	23	26	30
	2000 Hz		21	25	30	17	21	26	42	45	50	41	46	50	18	21	26
	4000 Hz		< 15	< 15	19	< 15	< 15	< 15	33	38	44	32	38	44	< 15	< 15	17
	8000 Hz		< 15	< 15	< 15	< 15	< 15	< 15	23	29	36	21	28	37	< 15	< 15	< 15
	Total L_{WA} in dB(A)		**38**	**41**	**45**	**34**	**36**	**37**	**49**	**52**	**56**	**47**	**51**	**55**	**33**	**36**	**38**

Note: Tolerances for sound data ± 2 dB, measured in compliance with EN ISO 9614-2

LG 450		Item	Housing radiation			Outdoor air connector			Supply air inlet			Exhaust air connector			Extract air outlet		
		m^3/h	315	350	450	315	350	450	315	350	450	315	350	450	315	350	450
		Pa	50	100	100	50	100	100	50	100	100	50	100	100	50	100	100
Midband frequency	125 Hz	L_w in dB	41	43	44	39	44	47	49	51	51	51	52	60	44	44	47
	250 Hz		50	51	50	43	42	44	56	57	61	53	56	61	44	43	45
	500 Hz		37	40	52	32	35	43	48	50	70	48	49	64	31	33	41
	1000 Hz		32	33	40	30	32	36	45	48	52	46	48	55	30	31	36
	2000 Hz		27	30	35	25	28	32	48	50	55	48	51	56	25	27	32
	4000 Hz		< 15	19	26	< 15	16	22	40	44	51	41	44	52	16	19	24
	8000 Hz		< 15	< 15	< 15	< 15	< 15	< 15	32	37	46	33	38	47	< 15	< 15	17
	Total L_{WA} in dB(A)		**43**	**45**	**49**	**37**	**38**	**43**	**53**	**56**	**67**	**53**	**56**	**63**	**37**	**39**	**42**

Note: Tolerances for sound data ± 2 dB, measured in compliance with EN ISO 9614-2

Technical specifications LG 350 (V)

PASSIVE HOUSE CERTIFIED IN ACCORDANCE WITH PHI CRITERIA

Degree of heat provision: $\eta_{eff,\,t,\,WRG}$ = 90 %
Comfort criterion: T_{SAir} = +16,5 °C bei T_{FAir} = -10 °C
Flow efficiency: $\eta_{elec.}$ = 0,22 Wh/m³

Technical specifications LG 350 F (V) with moisture recovery

PASSIVE HOUSE CERTIFIED IN ACCORDANCE WITH PHI CRITERIA

Degree of heat provision: $\eta_{eff,\,t,\,WRG}$ = 85 %
Average moisture ratio: η_X = 0,76
Comfort criterion: T_{SAir} = +16,5 °C bei T_{FAir} = -10 °C
Flow efficiency: $\eta_{elec.}$ = 0,22 Wh/m³

Technical specifications LG 450 (V)

PASSIVE HOUSE CERTIFIED IN ACCORDANCE WITH PHI CRITERIA

Degree of heat provision: $\eta_{eff,\,t,\,WRG}$ = 89 %
Comfort criterion: T_{SAir} = +16,5 °C bei T_{FAir} = -10 °C
Flow efficiency: $\eta_{elec.}$ = 0,25 Wh/m³

Technical specifications LG 450 F (V) with moisture recovery

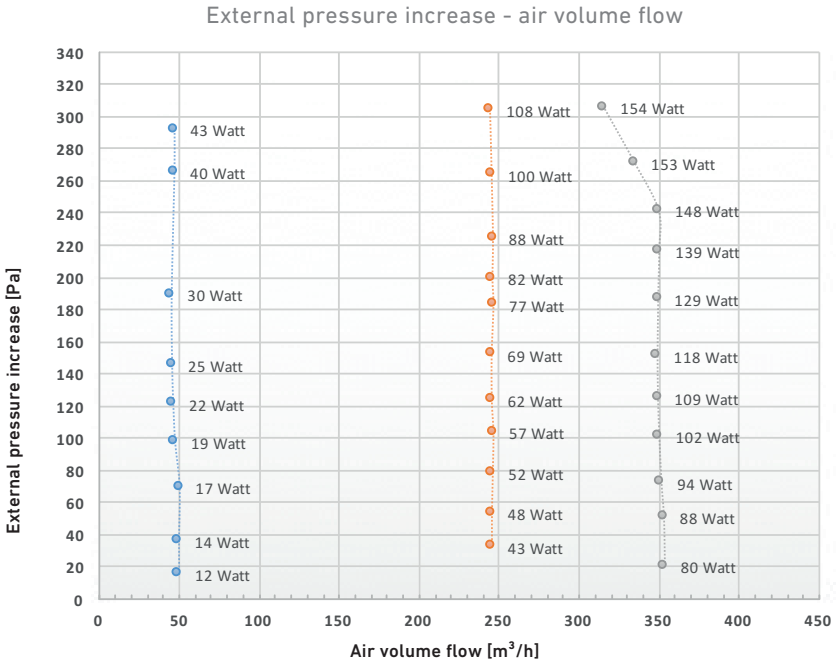
PASSIVE HOUSE CERTIFIED IN ACCORDANCE WITH PHI CRITERIA

Degree of heat provision: $\eta_{eff,\,t,\,WRG}$ = 81 %
Average moisture ratio: η_X = 0,76
Comfort criterion: T_{SAir} = +16,5 °C bei T_{FAir} = -10 °C
Flow efficiency: $\eta_{elec.}$ = 0,24 Wh/m³

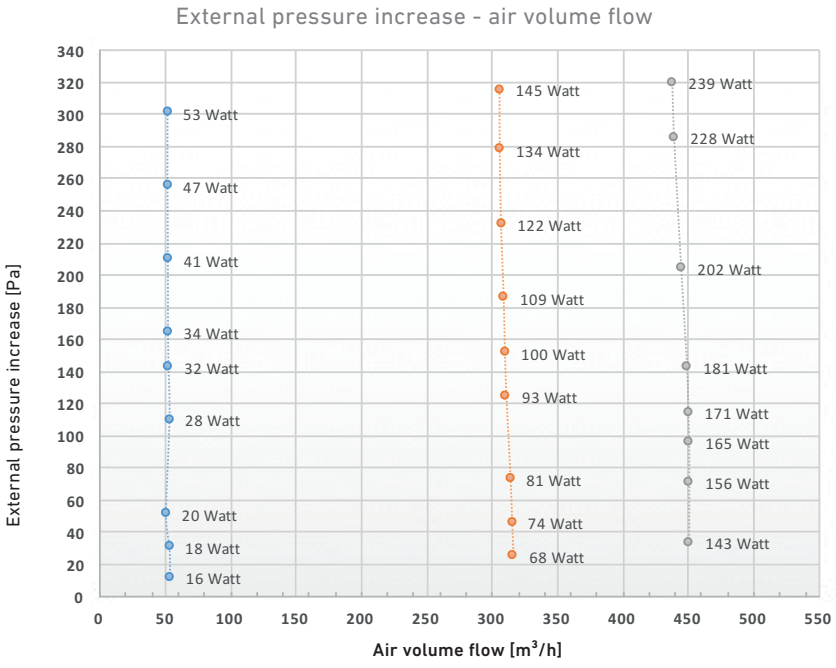
CHARACTERISTIC CURVE – EXTERNAL PRESSURE INCREASE – AIR VOLUME FLOW

The characteristic curves shown are applicable to unit type with supply air (ISO ePM1 70 %) and extract air filter (ISO Coarse 80 %) and with an electrical pre-heater battery.

The total power specified takes the power consumption for the two fans in the supply air and exhaust air as well as the power consumption of the controller into consideration.

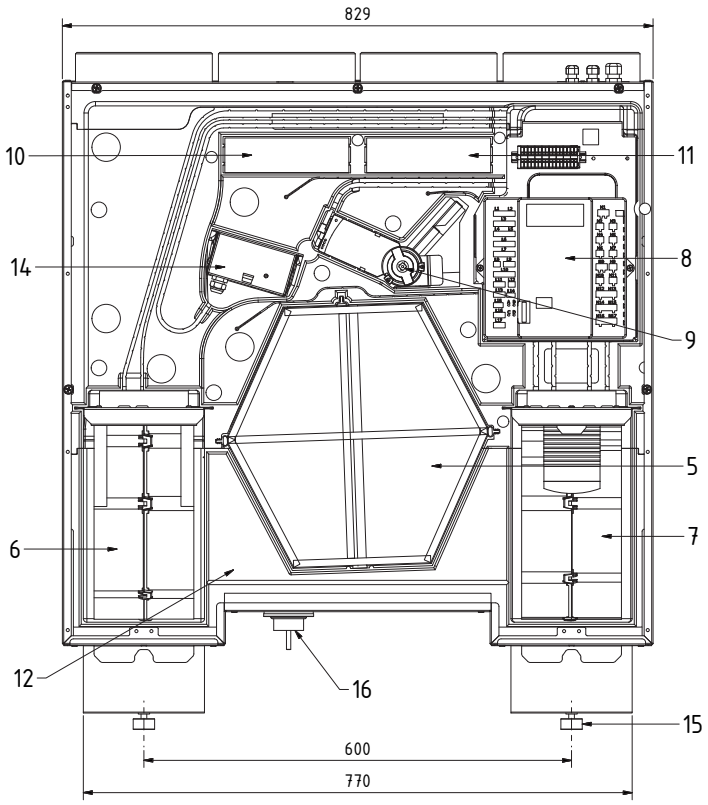


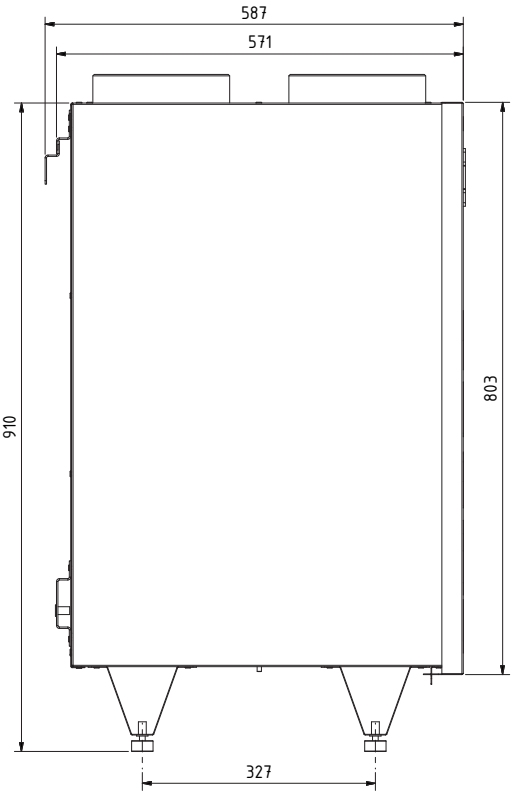
LG 350 V compact ventilation unit

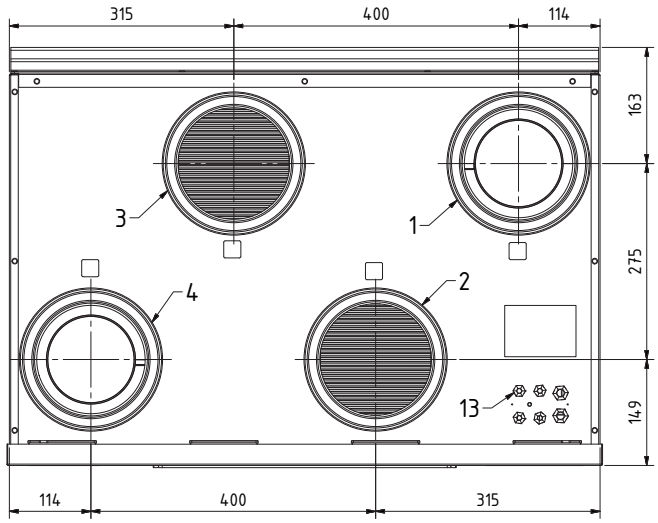


LG 450 V compact ventilation unit

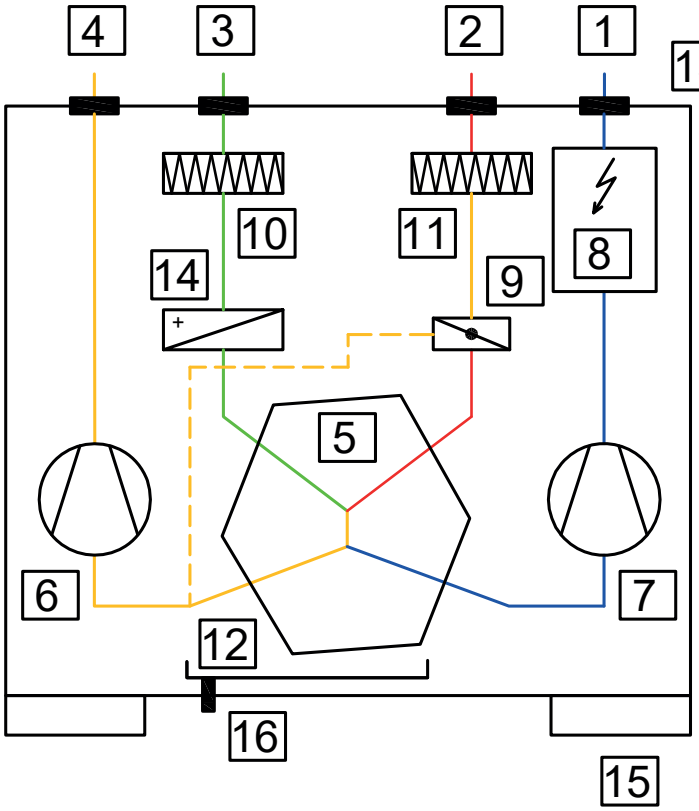
UNIT DESIGN







1 *Supply air DN 160*
2 *Extract air DN 160*
3 *Outdoor air DN 160*
4 *Exhaust air DN 160*
5 *Counterflow heat exchanger*
6 *Exhaust air fan*
7 *Supply air fan*
8 *Controller*
9 *Bypass flap*
10 *Outdoor air filter*
11 *Extract air filter*
12 *Condensate tray*
13 *Cable feed-throughs*
14 *Electric pre-heater battery (optional)*
15 *Height-adjustable feet*
(Removable adjustable foot brackets)
16 *Condensate outlet DN 40*



1 Supply air DN 160
2 Extract air DN 160
3 Outdoor air DN 160
4 Exhaust air DN 160
5 Counterflow heat exchanger
6 Exhaust air fan
7 Supply air fan
8 Controller
9 Bypass flap
10 Outdoor air filter
11 Extract air filter
12 Condensate tray
13 Cable feed-throughs
14 Electric pre-heater battery (optional)
15 Height-adjustable feet (Removable adjustable foot brackets)
16 Condensate outlet DN 40

1. Supply air inlet (SUP)
Connecting piece for the supply air duct via which the processed, fresh air is conveyed into the rooms.

2. Extract air outlet (ETA)
Connecting piece for the extract air duct via which the used air is transported from the rooms.

3. Outdoor air connector (ODA)
Connecting piece for the outdoor air duct via which the unprocessed air flows into the unit from the outside.

4. Exhaust air connector (EHA)
Connecting piece for the exhaust air duct via which the used air flows from the unit to the outside.

5. Counterflow heat exchanger (enthalpy exchanger)
The efficient heat exchanger serves to transfer the heat from the warmer to the cooler air. Furthermore, enthalpy exchangers additionally provide for the transfer of humidity.

6. Exhaust fan
Provides for the required air volume flow in the extract or exhaust air.

7. Supply fan
Provides for the required air volume flow in the outdoor or supply air.

8. Controller
To the internally prewired controller, the control unit, a LAN cable, and, in addition, optional components such as external sensors, pumps, flaps, etc. can be connected. Furthermore, via a micro USB interface, the customer service can configure the operating parameters and possibly available optional components.

9. Bypass flap with actuator
Serves to bypass the heat exchanger, if necessary.

10. Outdoor air filter
Dust and impurities are filtered out of the outdoor air via the outdoor air filter.

11. Extract filter
Coarse contaminations are filtered out of the extract air via the extract air filter, in order to protect the inside of the device against pollution.

12. Condensate tray
Condensate which accumulates during operation in the heat exchanger is collected via the condensate tray.

13. Cable feed-throughs
The cable feed-throughs are used to establish electrical connections to connect the control unit with optional system accessories such as temperature sensors, etc.

14. Electric pre-heater battery
Serves to protect the condensate in the heat exchanger from freezing when outdoor temperatures get very cold. Via the optional electric pre-heater battery, the outdoor air is preheated, depending on the outdoor air and exhaust air temperature (see Section 13, "Safety devices").

If a water or brine battery is optionally used in order to protect the heat exchanger against frost, these components must be properly protected against freezing when there is frost.

15. Height-adjustable feet
Serve to align the ventilation unit horizontally in order to ensure reliable drainage of the condensate.
In the case of wall mounting, the adjustable foot brackets can be easily removed.

16. Condensate drainage
Via the condensate drain connected, which is to be provided with an effective odour blocking trap (siphon), the accumulating condensate water is drained.

SAFETY DEVICES

To ensure safe operation of the system, safety devices and covers must never be rendered inoperative; nor may measures be taken to bypass or dismantle them.

In the event of errors or any damage on the ventilation unit, which may cause harm to persons or property, the system must be put out of operation immediately and must be protected against restart.

Further use must be actively prevented until the unit is fully repaired.

The repair must only be carried out by a specialist company.

14. System description and expansion options

FROST PROTECTION OPTIONS

There is a risk of the heat exchanger freezing on the exhaust air side, particularly during winter months with moderate to severe frost, depending on the extract air temperature and air humidity. Appropriate measures must be taken to protect the heat exchanger against ice formation at low outdoor air temperatures.

Various systems are available to monitor defrosting of the heat exchanger. Possible strategies to protect the heat exchanger against freezing are outlined below.

Frost protection by reduction of the supply air volume flow

This operating mode is not suitable for frost protection in passive houses! This operating mode does not guarantee a balanced air flow volume between supply air and extract air during defrosting!

As a standard, the compact ventilation unit is provided with an automatic frost protection system for the heat exchanger.

Frost protection via the extract air defrosting:

- The defrosting mechanism is only activated at outdoor air entry temperatures of below -4 °C.
- If the exhaust temperature falls below the "Defrost On" parameter, the defrosting process is started.
- Furthermore, the difference in temperature between extract air and supply air is monitored. The defrost process also starts when the "Defrost differential" parameter setting is exceeded.

Defrost process:
The supply air volume flow with a consistent extract air volume flow is continuously reduced and is finally switched off. After the defrost period has elapsed, the rotational speed on the supply air fan is increased continuously again.

Electrical pre-heater battery

The LG 350 and LG 450 compact ventilation units are optionally available with an integrated, electrical pre-heater battery, by means of which the cold outdoor air is pre-heated if necessary.

Frost protection via infinitely variable control of the pre-heater battery:
- At an outdoor air intake temperature of below -4 °C, the pre-heater battery is activated.
- With the infinitely variable setting and control of the pre-heater battery, the temperature is maintained above freezing and therefore prevents freezing of the heat exchanger.
- If the outdoor air intake temperature increases to over -3 °C, the pre-heater battery is switched off again.
- If the ventilation unit with integrated pre-heater battery is switched off manually, a stopping time of the fans for cooling of the pre-heater battery is activated.

If the device is equipped with an enthalpy exchanger, the values specified above will deviate.

Overheating protection
In order to provide protection against overheating in the event of an error, the integrated pre-heater battery is equipped with an installed mechanical safety temperature limiter (STL). If a temperature of approx. +50 °C is reached, the power supply to the electric battery is interrupted and the anti-freeze heating is switched off. The safety temperature limiter that is triggered is reset by pressing the white button on the pre-heater battery with a pointed object.

Geothermal heat exchanger

Optimal frost protection can be achieved with cold outdoor air temperatures by integrating a geothermal heat exchanger (GHE) into the ventilation system.

The following information must be observed for execution of a geothermal heat exchanger:
- The heat exchanger is laid in the ground with waterproof pipes at a frost-free depth with due consideration of the system's cleanability options.
- The manufacturer's guidelines for implementation must be observed.
- Condensate drainage must be provided for.
- A sufficient descent for condensate drainage must be provided for.
- If the air pipe is routed through an external wall, effective sealing against moisture ingress must be ensured.
- Sufficient distance from other parts, e.g. water pipes, foundations, etc. must be maintained during positioning in order to prevent frost damage.
- The option of indirect pre-heating via a circulatory system with frost-protected heat carrier, for instance, should preferably be used in ground containing hazardous substances (e.g. radon contamination).

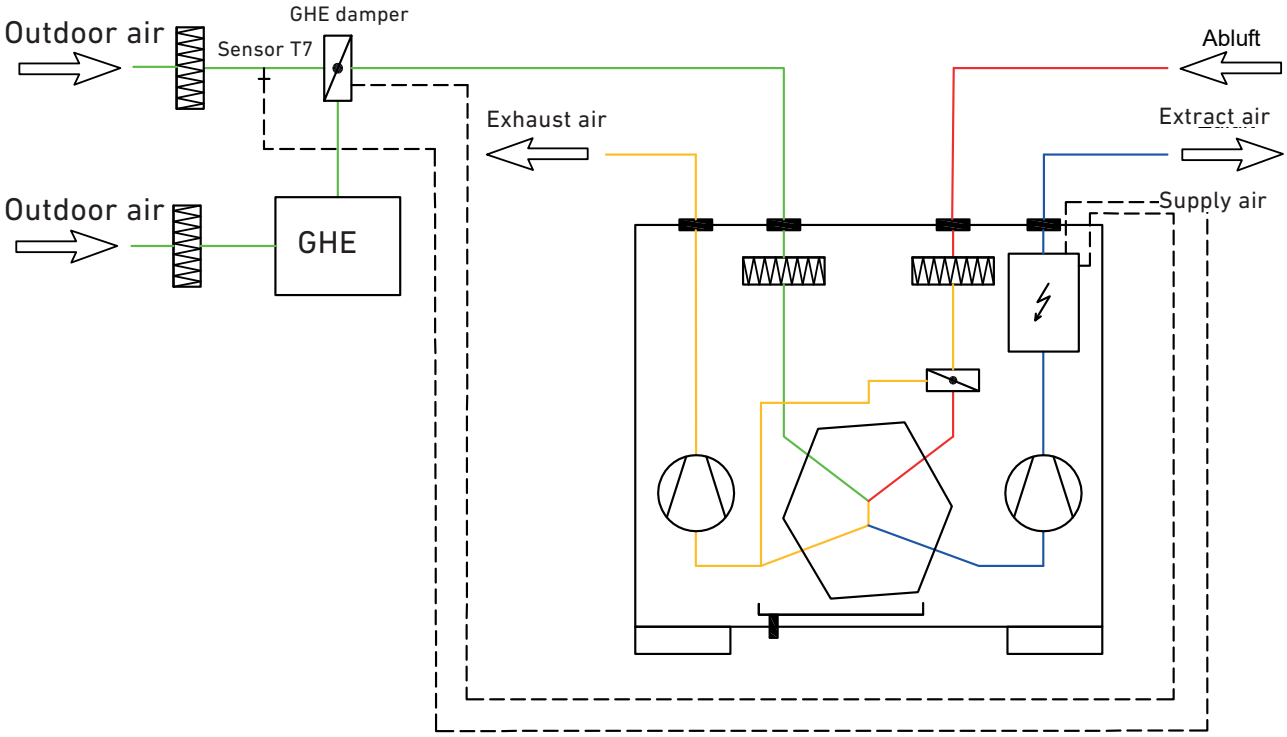
To ensure energy efficiency and air hygiene, geothermal heat exchangers must be carefully planned and implemented. The relevant guidelines and standards must be observed. In particular, among other things, ease of cleaning and a suitable filter concept must be ensured.

The use of a geothermal heat exchanger with a changeover flap must be specifically activated in the ventilation unit. PC software is used for this purpose.

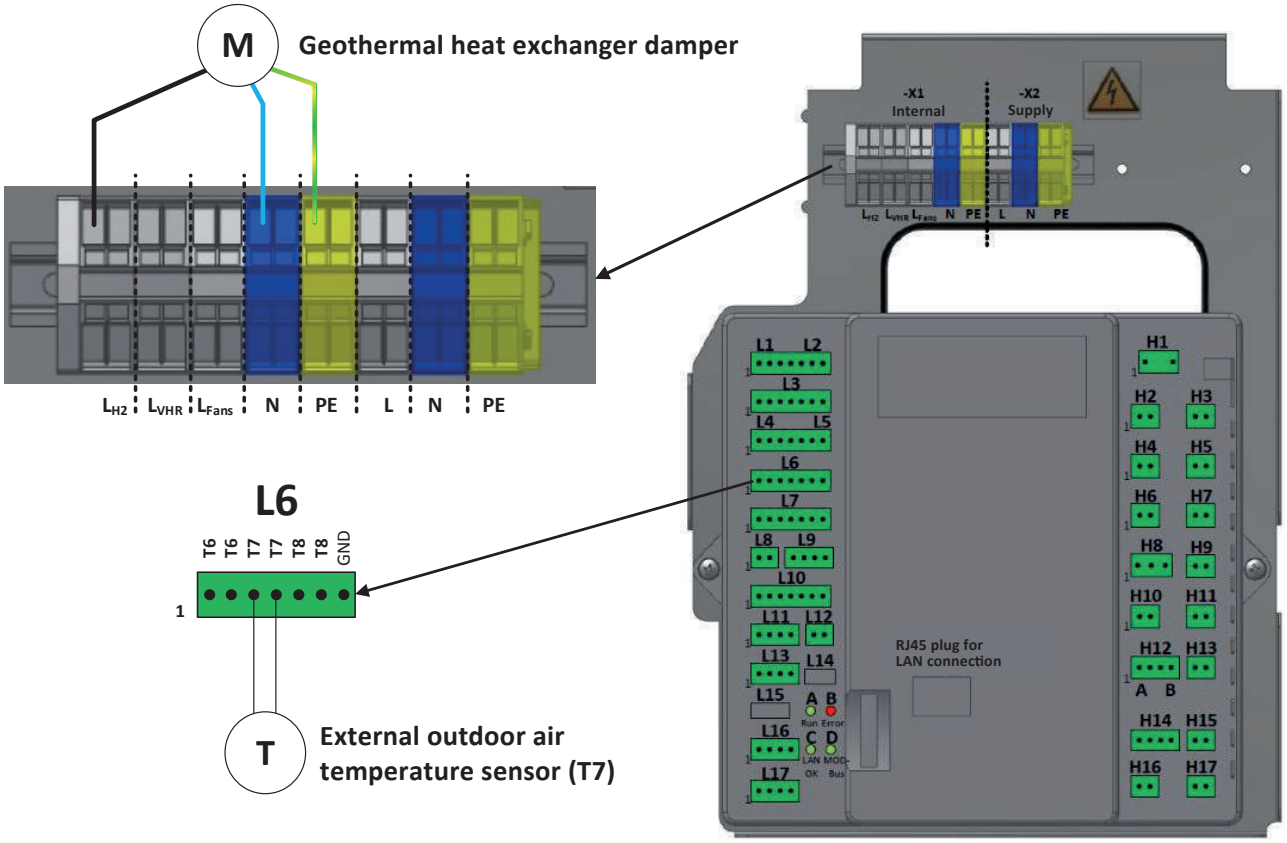
Geothermal heat exchanger (GHE) winter mode
The geothermal heat exchanger is connected via the changeover flap when the outdoor temperature (optional outdoor temperature sensor required) falls below the geothermal heat exchanger's parameterised winter threshold value. In this case, the outdoor air is drawn in via the geothermal heat exchanger and is therefore pre-heated.

Geothermal heat exchanger summer mode
In summer, the geothermal heat exchanger is connected when the outdoor temperature (optional outdoor temperature sensor required) exceeds the geothermal heat exchanger's parameterised summer threshold value. In this case, the outdoor air is drawn in via the geothermal heat exchanger and is thus pre-cooled.

The impact of the geothermal heat exchanger significantly depends on the local conditions, the operating mode and the dimensioning of the device.



Schematic diagram of a ventilation unit with optional geothermal heat exchanger



Terminal assignment for the geothermal heat exchanger flap

Brine geothermal heat exchanger

Brine geothermal systems extract energy from the earth in winter via a brine pipe. The system may also be used for cooling in summer. The heat or cold is transferred indirectly to the outdoor air via an external air register in the air duct system.

Compared to other frost protection mechanisms such as electrical pre-heater batteries, brine geothermal systems provide the benefit of requiring only little energy for operation. Their advantages compared to the geothermal heat exchanger are for instance hygienic aspects, simple laying and good controllability.

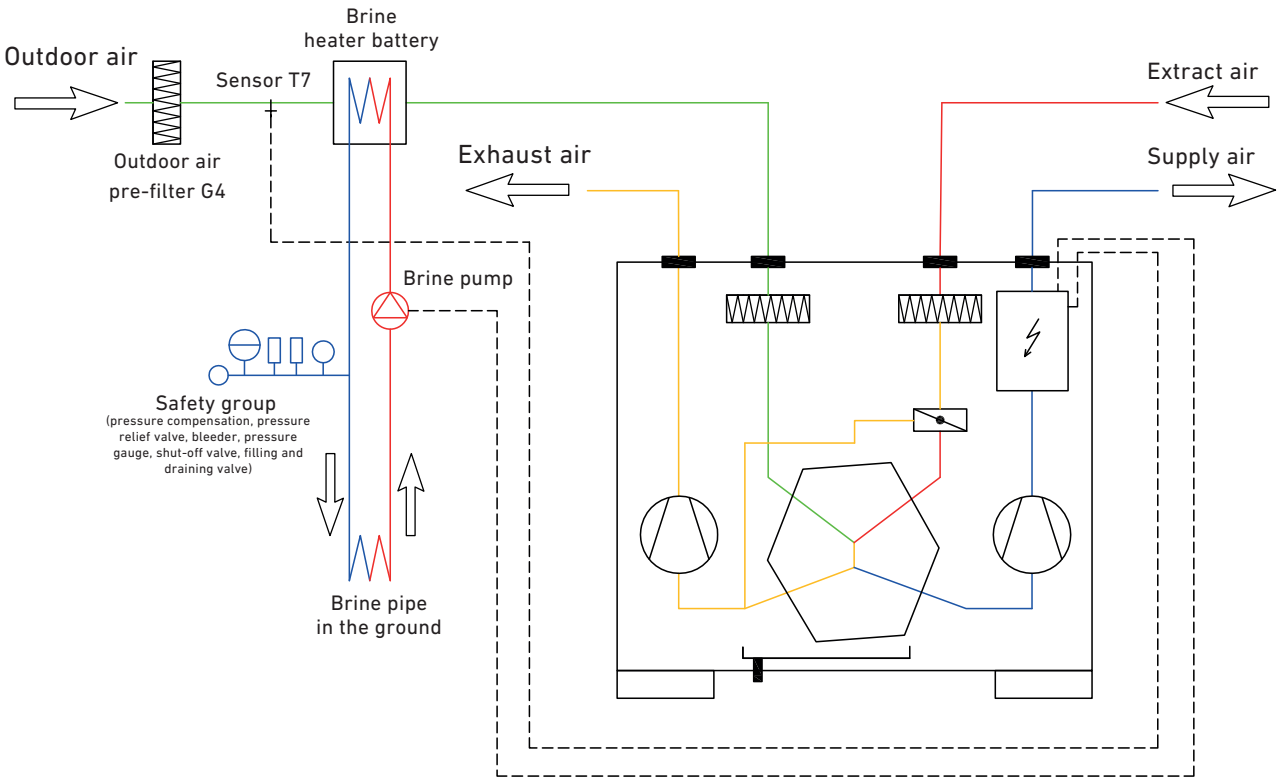
Indirect pre-heating via a circulatory system with frost-protected heat carrier, for instance, should preferably be used in ground containing hazardous substances (e.g. radon contamination).

The manufacturer's guidelines for implementation must be observed. The brine heater battery must be protected against contamination by an external coarse dust filter integrated into the air pipe system. The brine pump is activated automatically, depending on the outdoor air temperature.

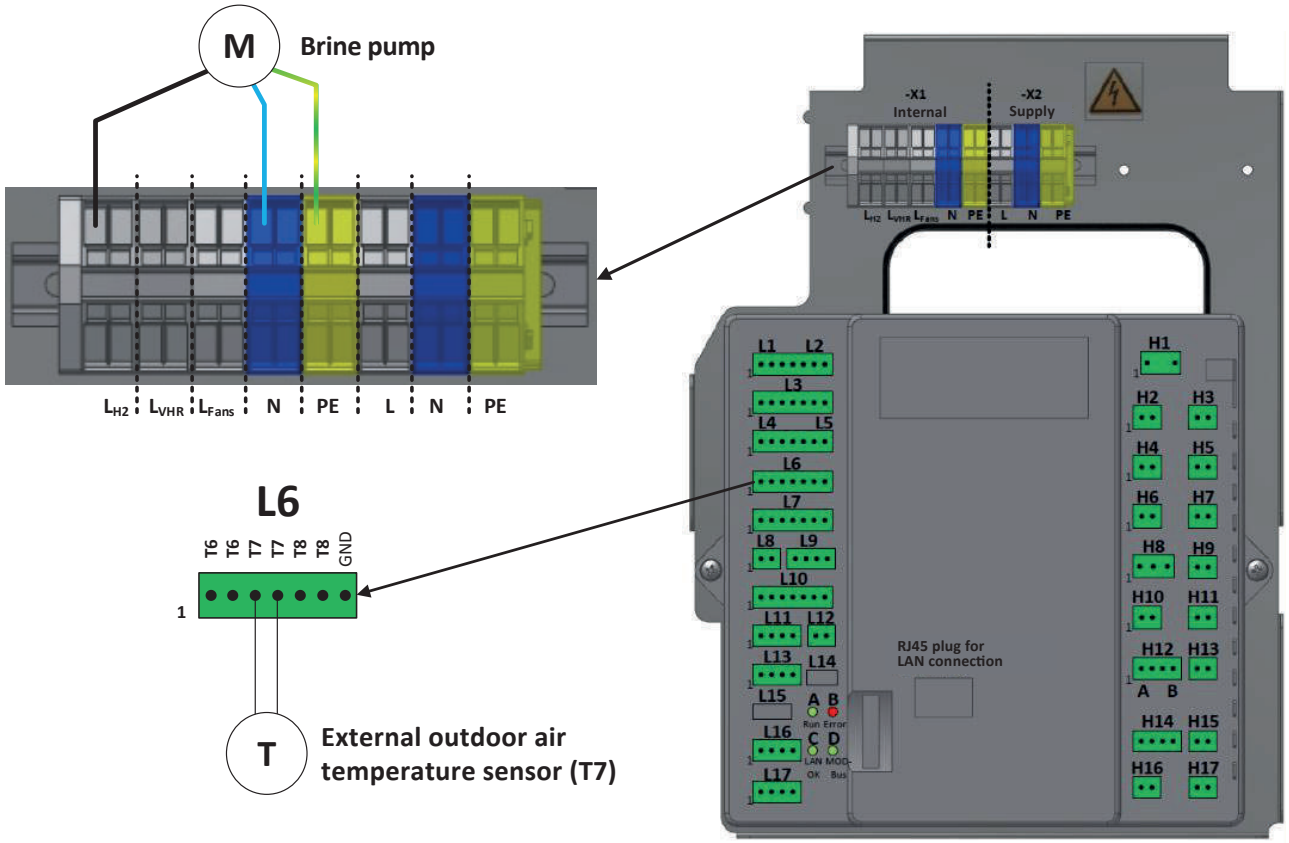
Support of a brine geothermal heat system must be activated by means of the PC tool in the controller of the ventilation unit. PC software is used for this purpose.

Brine geothermal heat – winter mode
If the outdoor temperature (optional outdoor temperature sensor required) falls below the geothermal heat exchanger's winter parameter, a relay switches on the brine pump.

Brine geothermal heat – summer mode
If the outdoor air temperature (optional outdoor air sensor required) exceeds the geothermal heat exchanger's summer parameter, a relay switches on the brine pump.



Schematic diagram of a ventilation unit with optional brine geothermal heat exchanger



Terminal assignment for brine geothermal heat exchanger

SYSTEM EXTENSION FOR EXTERNAL SUPPLY AIR CONDITIONING

In order to increase or reduce the supply air temperature for the room, an external heater, cooling or combination battery can be activated by means of the ventilation unit controller.

These devices are configured by PC software. The setpoint selection for the temperature and recording of the room temperature are effected via the TOUCH control unit (see Section 9, "Settings" and Section 21, "Spare parts and accessories").

External electric re-heating battery

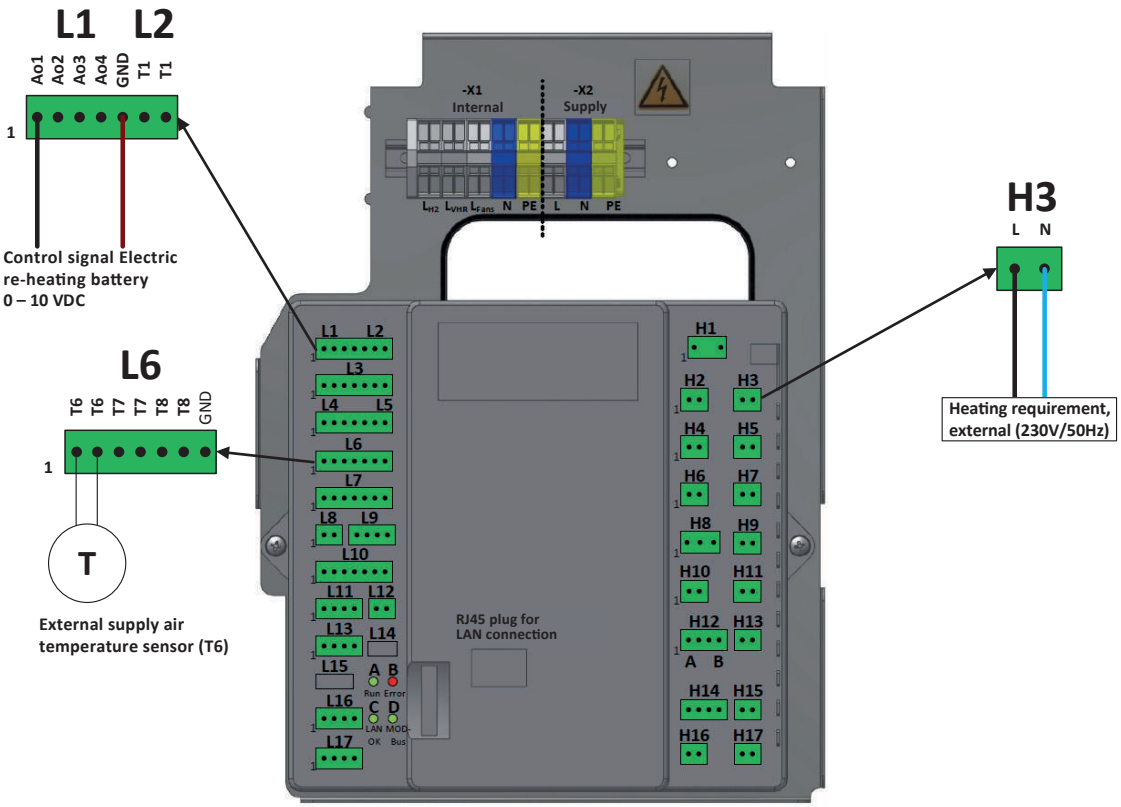
Via an external, infinitely variable electric heater battery which is connected downstream in the supply air of the ventilation unit, the supply air temperature (T6) can be increased.

In order to control the electric re-heating battery, an additional temperature sensor must be connected downstream to the battery. If no temperature sensor is connected, an error message is output.

If the electric re-heating battery is active, the fan will continue running for 120 seconds when the unit is switched off.

The "Additional heating" operating mode is only active in winter operation!

Operation of the external electric re-heating battery requires a separate voltage supply. The heater battery is controlled via an external 230 V contactor and a 0-10 V signal.



Terminal assignment for an external electric re-heating battery

External warm water re-heating battery

Via an external water re-heating battery which is connected downstream in the supply air of the ventilation unit, the supply air temperature can be increased.

Mixing operation of the 3-way water valve is continuously controlled via a 0-10 V signal. The external supply air temperature sensor must be installed downstream to the warm water heater battery and connected to the closed-loop control (T6). If no temperature sensor is connected, an error message is output.

Frost protection

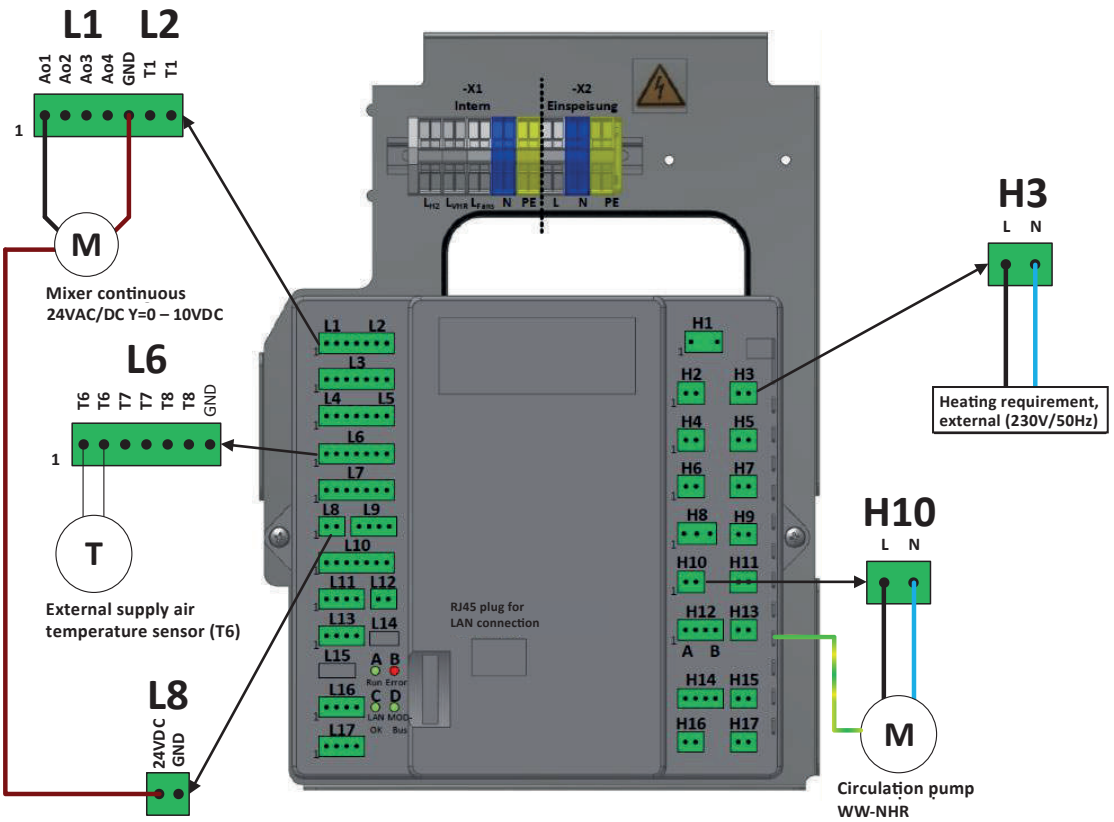
If the warm water re-heating battery is configured in the controller, the input (Di3) can be used as contact. This contact is used for the purpose of frost protection of the re-heating battery.

If the contact is opened via an external frost protection thermostat, the ventilation unit switches to frost protection and reports an error. The frost protection thermostat is to be positioned on the return pipe of the warm water re-heating battery.

In this error status, the mixer is opened and the circulating pump is activated. The fans are switched off until the frost hazard warning is cancelled again.

Additionally, the same frost protection mechanism is applied when the temperature on the integrated supply air sensor drops below +5 °C.

The "Additional heating" operating mode is only active in winter operation!



Terminal assignment for an external warm water re-heating battery

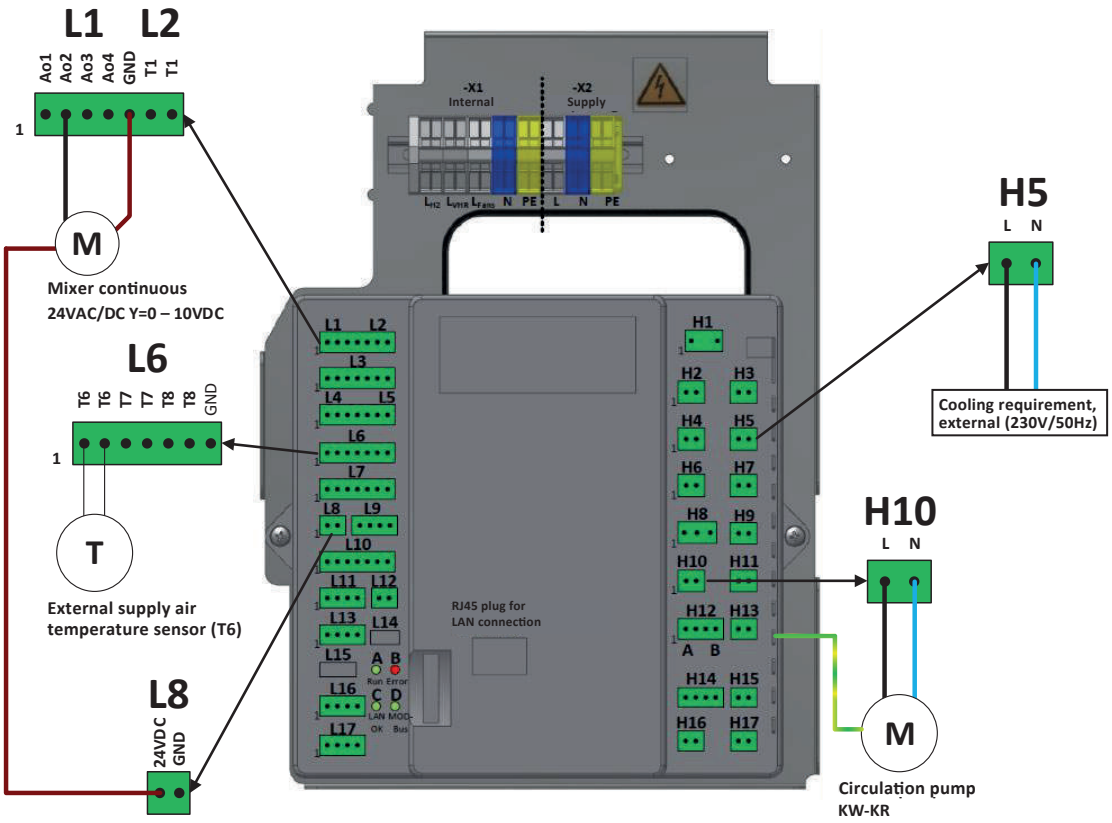
External cold water cooling battery

Via an external cold water cooling battery which is connected downstream in the supply air of the ventilation unit, the supply air temperature can be cooled.

Mixing operation of the 3-way water valve is continuously controlled via a 0-10 V signal. The external supply air temperature sensor must be installed downstream to the cold water battery and connected to the closed-loop control (T6). If no temperature sensor is connected, an error message is output.

The "Cooling" operating mode is only active in the summer mode and is activated when the temperature is 2 Kelvin above the setpoint of normal operation!

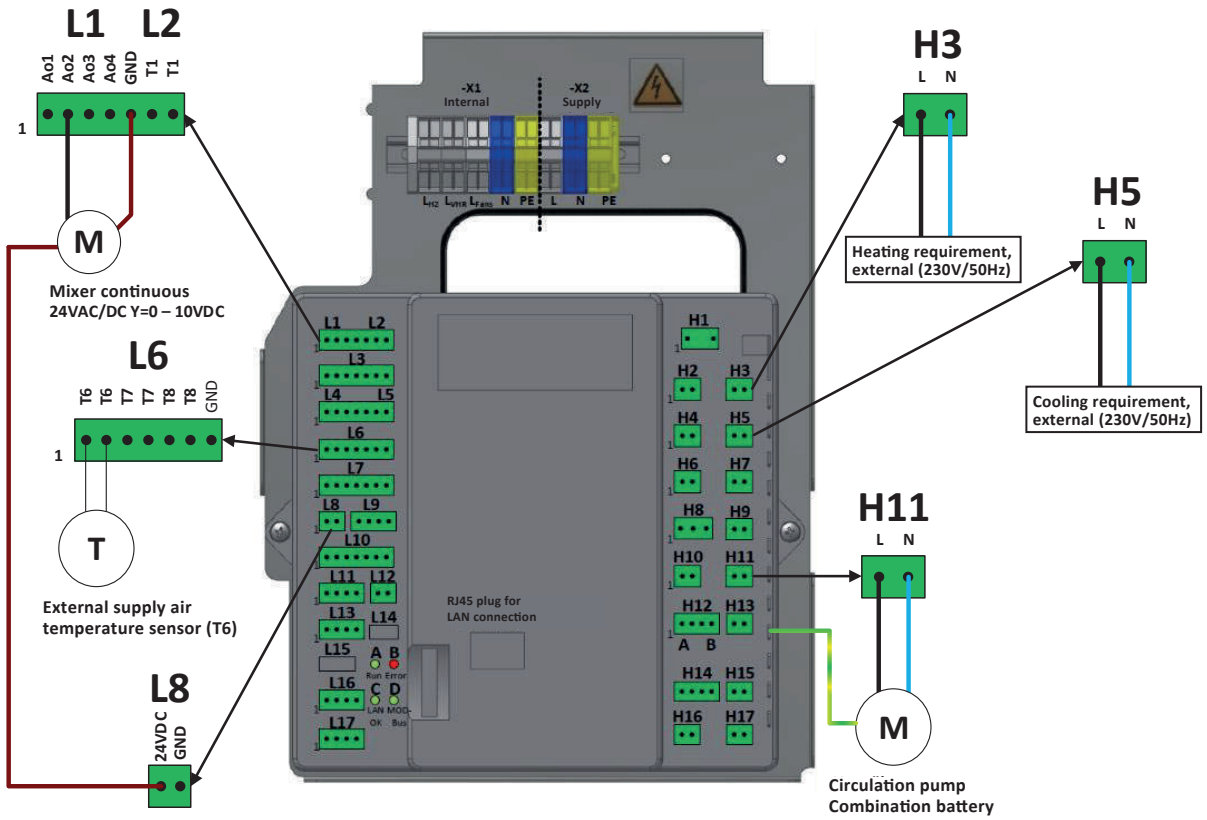
In cooling operation, a large amount of condensate may accumulate, which must be drained via a condensate drain to be installed on site.



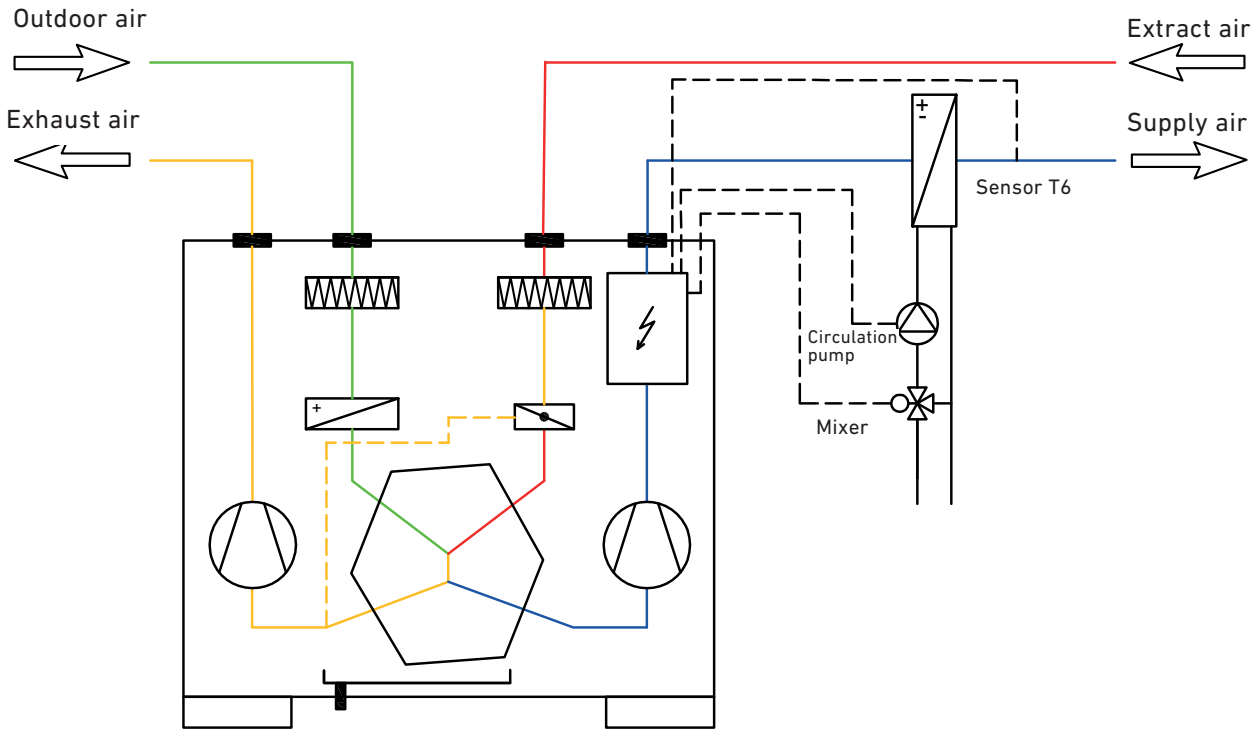
Terminal assignment for an external cold water cooling battery

External combination battery (warm or cold water)

The external combination battery combines the functions of a warm water re-heating battery and a cold water cooling battery in one component. For the external warm or cold water requirement, the 230 V switching outputs H3 and H4 can be used.



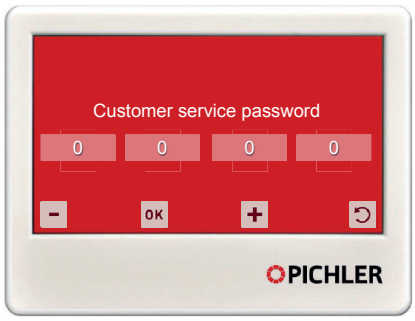
Terminal assignment for an external combination battery (warm or cold water)



Schematic diagram of a ventilation unit with an optional warm water re-heating, cold water cooling or combination battery

15. TOUCH control unit service level

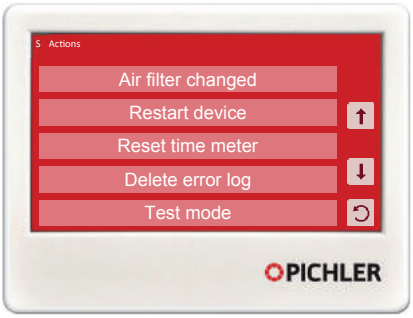
The service menu is activated by pressing the [Menu] button for an extended period (min. 5 seconds) and entering the password.



The service menu is shown by an "S" in the top left corner of the screen. When the service menu has been activated, the technician can change system parameters.

Information/Current operating values
All of the unit's parameters can be checked in the Main menu > [Information] > [Current operating values].

Actions

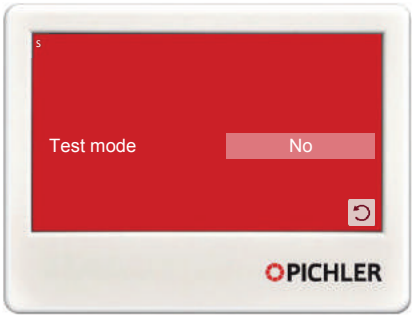


[Menu] > [Actions] is extended by the following menu items:

- Reset time meter
- Delete message overview
- Test mode: To test the basic functions of the unit
- Update the unit's firmware

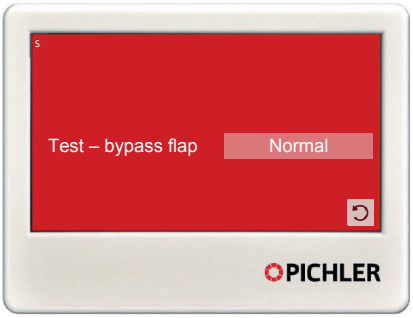
TOUCH CONTROL UNIT TEST MODE

Activate test mode



Here, the test mode can be activated with [Yes] and deactivated with [No]. Relays H2, H3, H5, H67, H9, H10, H11, H12A and H12B are used to control the individual outputs

Test – bypass flap

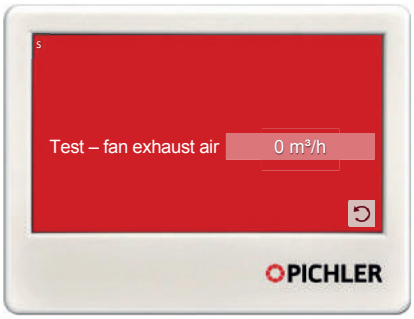


With the "Test – bypass flap" function, the bypass flap can be manually traversed to the heat recovery or bypass position. With [Normal], the flap position is controlled automatically.

Test – fan supply air

In order to manually test the supply air fan, the test mode must be activated with [Yes] first. Then the volume flow can be manually defined under "Test – supply air fan". In order to exit the test mode, the test mode must be deactivated with [No].

Test – fan exhaust air



In order to manually test the supply air fan, the test mode must be activated with [Yes] first. Then the volume flow can be manually defined under "Test – exhaust air fan". In order to exit the test mode, the test mode must be deactivated with [No].

16. Mounting

PREREQUISITES FOR INSTALLATION OF THE UNIT

The LG 350 and LG 450 ventilation units must be installed in accordance with the general and locally applicable safety and installation regulations and to the specifications in this manual. Mounting and installation work may be performed by authorised specialist personnel only.

The ventilation unit may only be installed in a frost-free room, e.g. in a cellar or loft, with ambient temperatures ranging between +5 °C and +35 °C. Accumulating condensate must be discharged, frost-free and safely, via a gradient and using effective siphoning to block odours.
The unit's installation position must allow sufficient space for air ducts, electrical connections, condensate drain connection and maintenance and inspection.

Leave at least 1 m free space in front of the unit to allow for operation and servicing.

The ventilation unit must be set up on an even and sufficiently firm installation surface. The ventilation unit can also be mounted to a solid wall using the wall mounting bracket included in the scope of supply. In doing this, adequately suitable dimensioning (statics) of the load-bearing components must be observed.

The following connection facilities must be available in the installation area:

- Air duct connections for supply, extract, outdoor and exhaust air
- Electrical mains connection 230 V/ 50 Hz, 16 A fuse
- Condensate drain pipe with an effective odour blocking trap (siphon)

All on-site work (drainage, floor structure etc.) must be completed before installing the ventilation unit. The ventilation unit will be firmly in position once the air ducts have been connected and cannot be moved.

The outdoor air and exhaust air ducts, e.g. between the ventilation unit and the roof feed-through, must be sufficiently heat-insulated for energy reasons and to prevent condensate formation. Condensate must not be allowed to form on the air ducts and roofing. Any lines running outside the thermally insulated building shell must be adequately insulated in cold areas.

To ensure proper and functional operation of the unit, suitable thermal and sound insulation and installation materials must be provided as per the planning documentation and technical data, such as sound absorbers of adequate size, supply air and extract air valves, overflow openings etc.

All equipment connectors should in principle be fitted with sound absorbers to ensure appropriate acoustic damping in the room.

Air duct feed-throughs through walls or ceilings must be isolated against structural vibrations.

To protect the unit from coarse soling such as foliage, leaves or insects, a fine wire mesh grating must be provided as a pre-filter directly at the central inlet point for outdoor air. The protective grating must be checked and cleaned at regular intervals, if necessary, especially in spring and autumn.

If necessary, inspection openings should be provided in the air duct system to facilitate cleaning and maintenance of the unit.

OPENING THE UNIT

To open the unit, proceed as follows:

1. Remove the filter cover by pressing the two latches positioned on the outside towards the inside.

2. Lift the device front until the top securing brackets are fully extracted from the device cover and then pull the device front towards the front again.

3. Set the device front aside carefully and make sure that it is standing securely.

Before opening the unit and when carrying out work on the unit, e.g. maintenance work and repairs, etc., the unit must be deenergised (disconnection of the voltage supply for all poles) and must be protected against restart for the duration of the work performed.

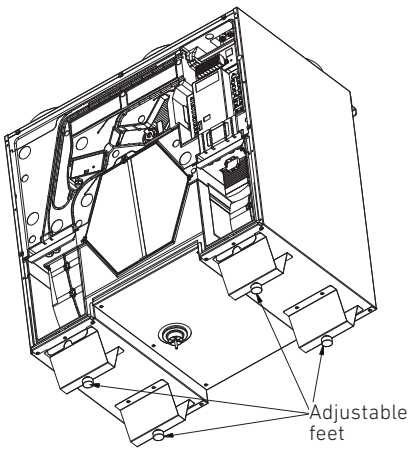
4. Loosen the five screw fittings of the seal front using a Philipps screwdriver and remove it.

5. In order to close the unit, proceed in reverse order and make sure that the seat of the seal front is tight.

UNIT INSTALLATION

For all work steps, the safety instructions specified in Section 5 “Safety” must be observed!

Free standing



After placing the unit in its position, it must be aligned.

In order to do this, the four height-adjustable feet supplied must first be mounted to the bottom side of the unit.
For mounting the feet, the unit must be slightly tilted.

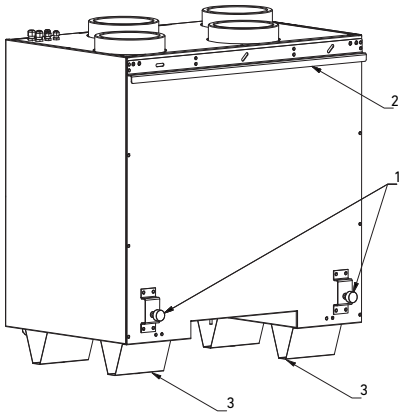
Screw on the feet tightly first. The unit is horizontally aligned by unscrewing the feet step by step. For this purpose, use a level.

The ventilation unit must be installed horizontal and secure. Optimum condensate drainage is only ensured when the unit is aligned exactly. The unit can be easily aligned via the adjustable feet.

The unit design allows for the connection of a standard ball siphon at the condensate drain.

Wall mounting

If the ventilation unit is mounted on the wall, two of the feet included in the scope of supply must be mounted to the rear side of the unit. Fully screw the feet in first.

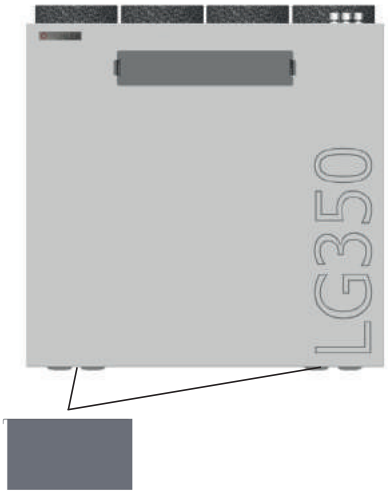


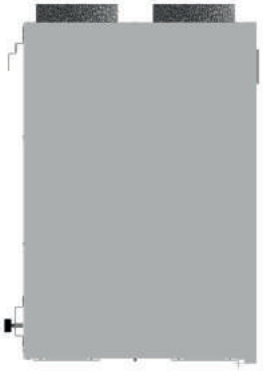
1 Adjustable feet
2 Mounting rail
3 Removable adjustable foot brackets

The wall mounting bracket included in the scope of supply is mounted horizontally to a suitable, solid and load-bearing wall. For this purpose, use a level.

After installing the wall mounting bar, the ventilation unit is mounted into the wall mounting bracket by means of the rail fixed to the rear side of the unit. By means of the feet previously screwed into the bottom side of the back panel, the unit is aligned vertically. In the case of wall mounting, the adjustable foot brackets can be easily removed

Optimum condensate drainage is only ensured when the unit is aligned exactly. The unit is aligned via the wall mounting bracket and the adjustable feet on the rear side of the unit.





Removable adjustable foot brackets (4 x)

Establishing the condensate drain connection

In order to establish the condensate drain, first the unit front must be opened (see Section 16, "Opening the unit").

The drain pipe for the condensate preferably has to be designed using rigid piping, reliable drainage of the water requiring the provision of a sufficient descent. Otherwise, the accumulating condensate cannot be drained from the unit properly, which may cause water damage.

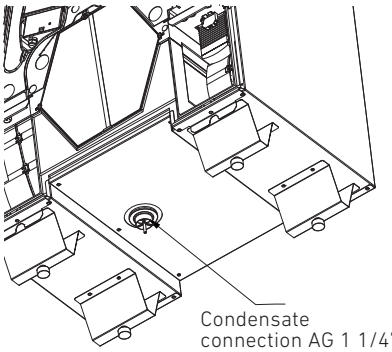
For establishing a proper connection, we recommend using a condensate siphon of the HL136.3 type for the unit.

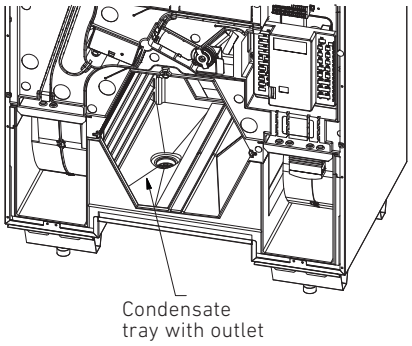
In order to prevent the potential dispersion of odour as well as leakages, the siphons must always be filled with water.

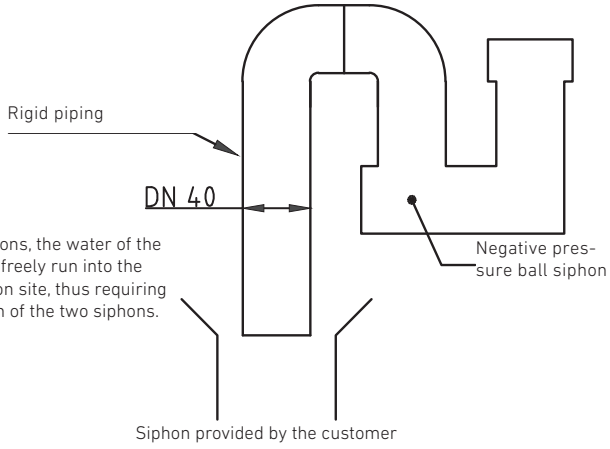
Perfect functioning of the condensate drainage must be checked and ensured before putting the compact ventilation unit into operation. For this purpose, fill the condensate tray with a sufficient amount of water and check its outlet and the tightness of all connections and joints.

To ensure that the outlet is air-tight and condensate water-tight, adequate and reliable sealing to the unit housing must be observed when the seal front is closed.

If an enthalpy exchanger is used, due to the small condensate quantity, the use of a dry siphon is recommended.







For hygienic reasons, the water of the unit siphon must freely run into the siphon provided on site, thus requiring spatial separation of the two siphons.

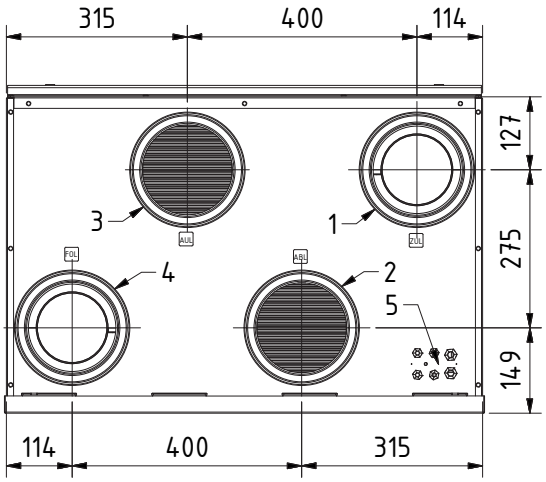
Connecting air ducts and components

The air ducts Ø 160 mm must be connected to the connecting pieces at the top. Sufficient air-tightness must be observed.

The transitions can either be designed using EPP sleeves Ø 160 mm or using nipples with a double lip seal (system safe).

Air pipes and attachments such as sound absorbers etc. may only be attached to the ventilation unit using adequately dimensioned elements for mounting to suitable solid wall or ceiling structural components. Avoid using flexible hoses for connections to the unit.

When making connections, ensure in particular that no tools or assembly material will fall into the connections to the unit or onto the unit itself. This could cause damage to components, for instance to the fans. Air duct and installation components must be suitably and adequately insulated in accordance with project specifications.



1. Supply air inlet ø 160 mm
2. Extract air outlet ø 160 mm
3. Outdoor air connector ø 160 mm
4. Exhaust air connector ø 160 mm
5. Cable feed-throughs
2 x M12 / 4 x M16

Legend for air types

The corresponding air type for each connection piece on the ventilation unit is marked by means of a symbol.

Extract air

Outdoor air

Exhaust air

Supply air

17. Electrical connection

The safety instructions specified in Section 5, "Electrical connection work", must be observed when performing any electrical work.

Electrical connection work and work on electrical components may only be carried out by authorised electricians.

The relevant national and local regulations and standards must be complied with during assembly and electrical installation.

The compact ventilation unit of the LG 350 and LG 450 series is designed for a voltage supply of 230 V / 50 Hz.

Please take into consideration that the MINI and TOUCH control units require

different voltage supplies and that therefore it is not permissible to connect them in identical manners. See the "Electrical connection diagram for the MINI or TOUCH control units" provided in this section.

- Electrics must be connected in accordance with the associated connection diagram (see "Electrical connection diagram" in this section)!
- The cable cross-sections indicated are minimum cross-sections for copper lines and do not take cable length or site conditions into account.
- Cable type, cable cross-section and laying must be determined by an authorised electrician.
- Low-voltage cables must be laid separately from mains cables; alternatively, screened cables must be used.
- The line fuse of the supply pipe must feature isolating characteristics.
- A separate cable inlet must be used for each cable.
- Unused cable inlets must be hermetically sealed.
- All cable entries must be strain-relieved.
- Potential equalisation must be put in place between the unit and the air duct system.
- All safety measures must be tested following electrical connection (earth resistance etc.).
- In order to prevent unsuitable residual current protective devices from being triggered, we strongly recommend the use of pulse and/or AC/DC sensitive residual current protective devices (type A or B) with delayed trip.

Opening the unit

See Section 16, "Opening the unit".

Control PCB

The control PCB is located in the top right half of the unit.

Before working on the control board, the unit must be isolated from the mains (all poles) and protected from being switched back on. After opening the unit front and seal front, the terminals for the control lines and the electrical input fuse are accessible.

Mains connection and replacement of the internal device fusing

The ventilation unit is supplied ready to be plugged in. The mains power cable is approx. 3 m long and provided with a safety plug.
The mains must be connected properly on site using a suitable earth contact plug and socket-outlet.

The earth contact plug and socket-outlet in the power connection ensures that all poles of the unit can be disconnected from the power supply.

The ventilation unit must only be operated with the rated voltage of 230 V / 50 Hz indicated on the nameplate. The line fuse of the supply line should have max. 16 A and feature isolating characteristics.

The supply line must be dimensioned by an authorised electrician in full compliance with the relevant guidelines.

In order to prevent unsuitable residual current protective devices from being triggered, we strongly recommend the use of pulse and/or AC/DC sensitive residual current protective devices (type A or B) with delayed trip.

Before working on the unit controller, the unit must be isolated from the mains (all poles) and protected from being switched back on. When the seal front has been unscrewed, the mains connection and the electrical fuses are accessible.

Internal fuse:
Ceramic fuses on the control board
2 items T500mA H ø 5 x 20 mm
1 item T5A H ø 5 x 20 mm

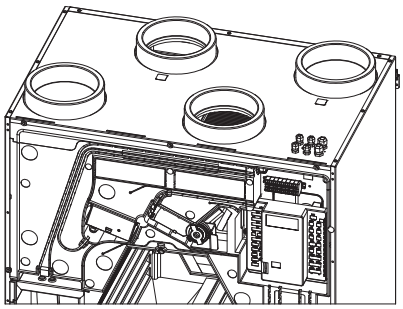
To replace the fuses, all connectors and the PE-wire must be disconnected from the earth rail first. Then the plastic housing of the controller can be removed carefully, and the fuses can be checked and replaced, if necessary.

Cable feed-throughs

Connection cables must be fed through the cable feed-throughs on the top of the ventilation unit in order to connect the cables for the relevant control unit as well as optional system components such as external reheating or external sensors.

All lines for external components such as sensors, actuators, pumps etc. must be connected in accordance with the wiring plan, see the “Electrical connection diagram” item in this section.

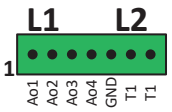
Lines must be dimensioned by an electrician. Low-voltage cables must be laid separately from mains cables; alternatively, screened cables must be used.



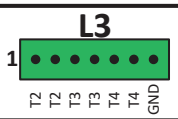
Electrical connection diagram

In general, external system components, extension components, and temperature sensors required must be connected in accordance with the electrical connection diagram. The controller automatically recognises the electrical connection of outdoor temperature sensor T7.

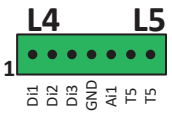
Ao1: Heating mixer
Ao2: Cooling mixer
Ao3: Combination register mixer
GND:
T1: Outdoor air temperature sensor



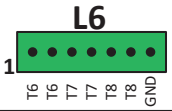
T3: Extract air temperature sensor



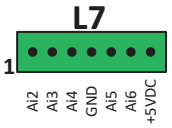
Di1: External Off / central fire alarm system
Di2: : External fan level 3
Di3: Frost protection thermostat
T5: Pre-heater battery temperature sensor



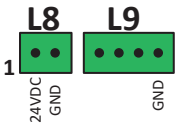
T6: External supply air temperature sensor
T7: External outdoor air temperature sensor
T8: External room temperature sensor



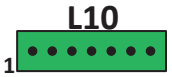
Ai2: CO2 sensor 1
Ai3: CO2 sensor 2
Ai4: relative humidity sensor 1
GND:
Ai5: relative humidity sensor 2
Ai6: VOC sensor



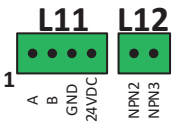
L8: 24VDC, GND
L9: Not in use!



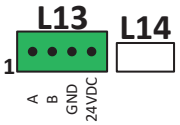
L10:Not in use!



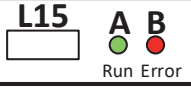
L11: External Modbus for central building control system
L12-NPN2: Pre-heater battery control



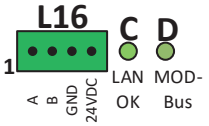
L13: Modbus connection Control units
L14: Micro USB for service



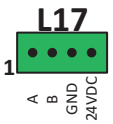
L15:Not in use!

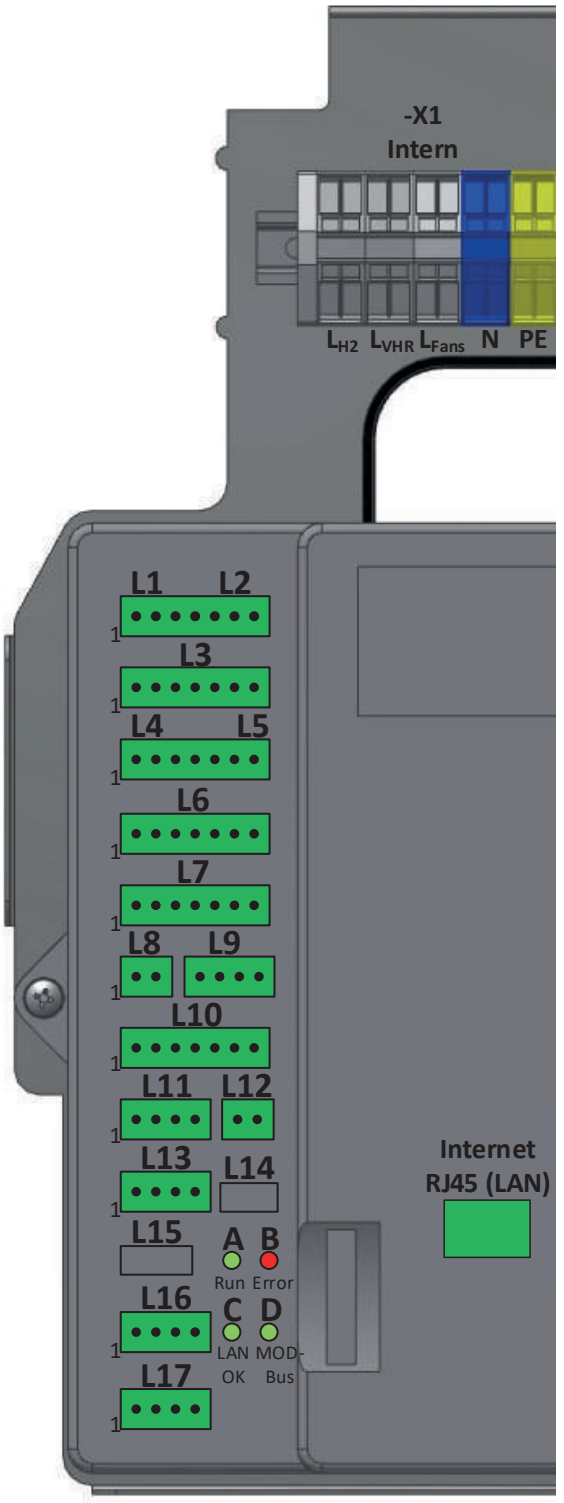


L16: Modbus connection fans

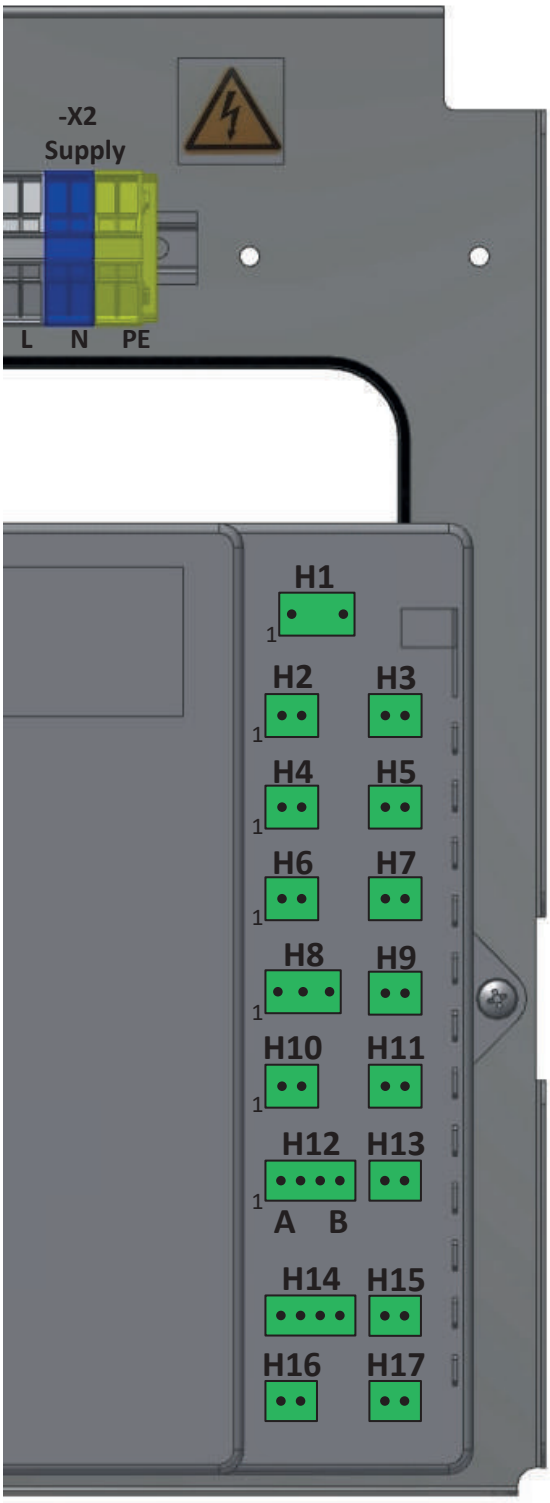


L17: Modbus connection external sensor system (CO2 / r.h.)





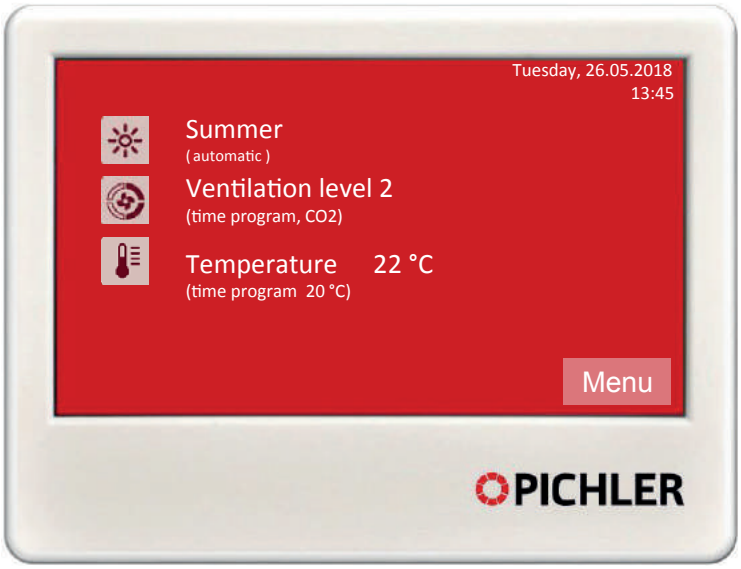
230V / 50 Hz



H1 1 L N	H1: Supply Max. on-site line fuse = 16 A
H2 1 L N H3 1 L N	H2: Pre-heater battery / brine pump / geothermal heat exchanger damper H3: Heating requirement combination battery
H4 1 H5 1 L N	H4: Bridged contact! H5: Cooling requirement combination battery
H6 1 L N H7 1 L N	H6: Not in use! H7: Fans
H8 1 L M N H9 1 L N	H8: Bypass flap H9: Extract air and exhaust air flap
H10 1 L N H11 1 L N	H10: Pump re-heating battery H11: Pump combination or cooling battery
H12 1 A B H13	H12A: Fault message (potential-free) H12B: Filter message (potential-free) H13: Not in use!
H14 1 H15	Not in use!
H16 1 H17 1	Not in use!

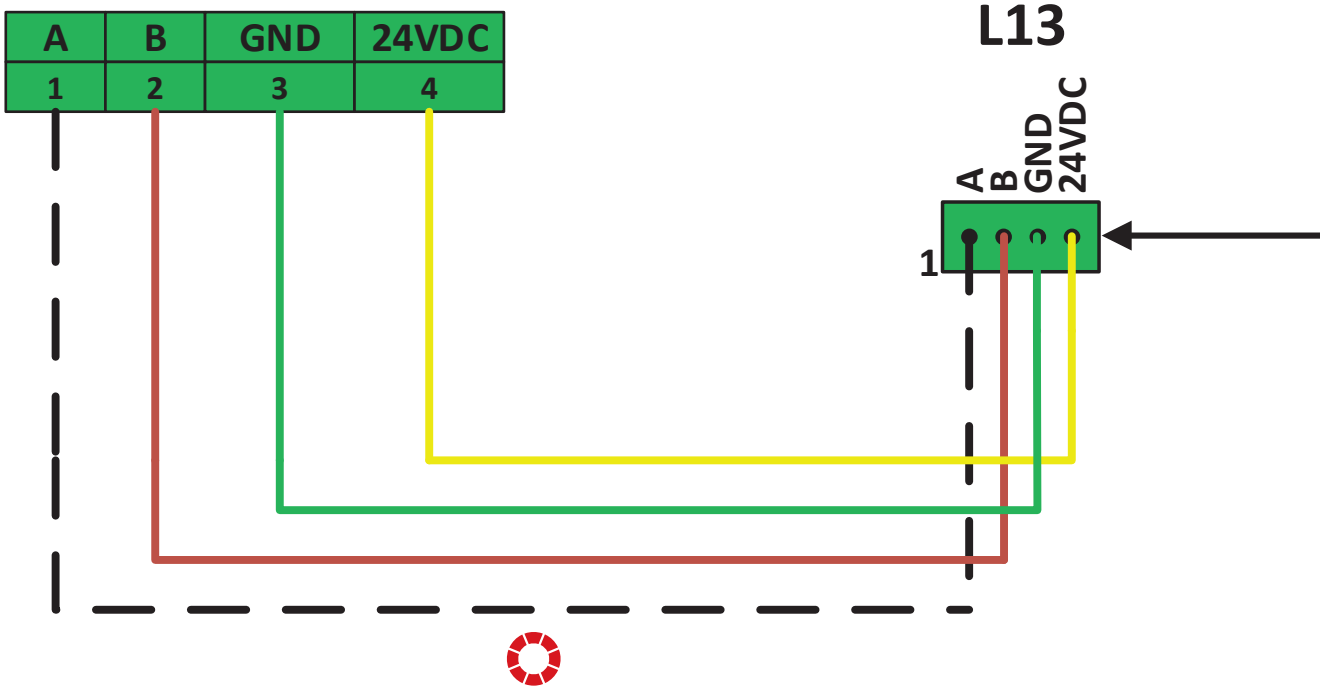
Electrical connection diagram for the MINI or TOUCH control unit

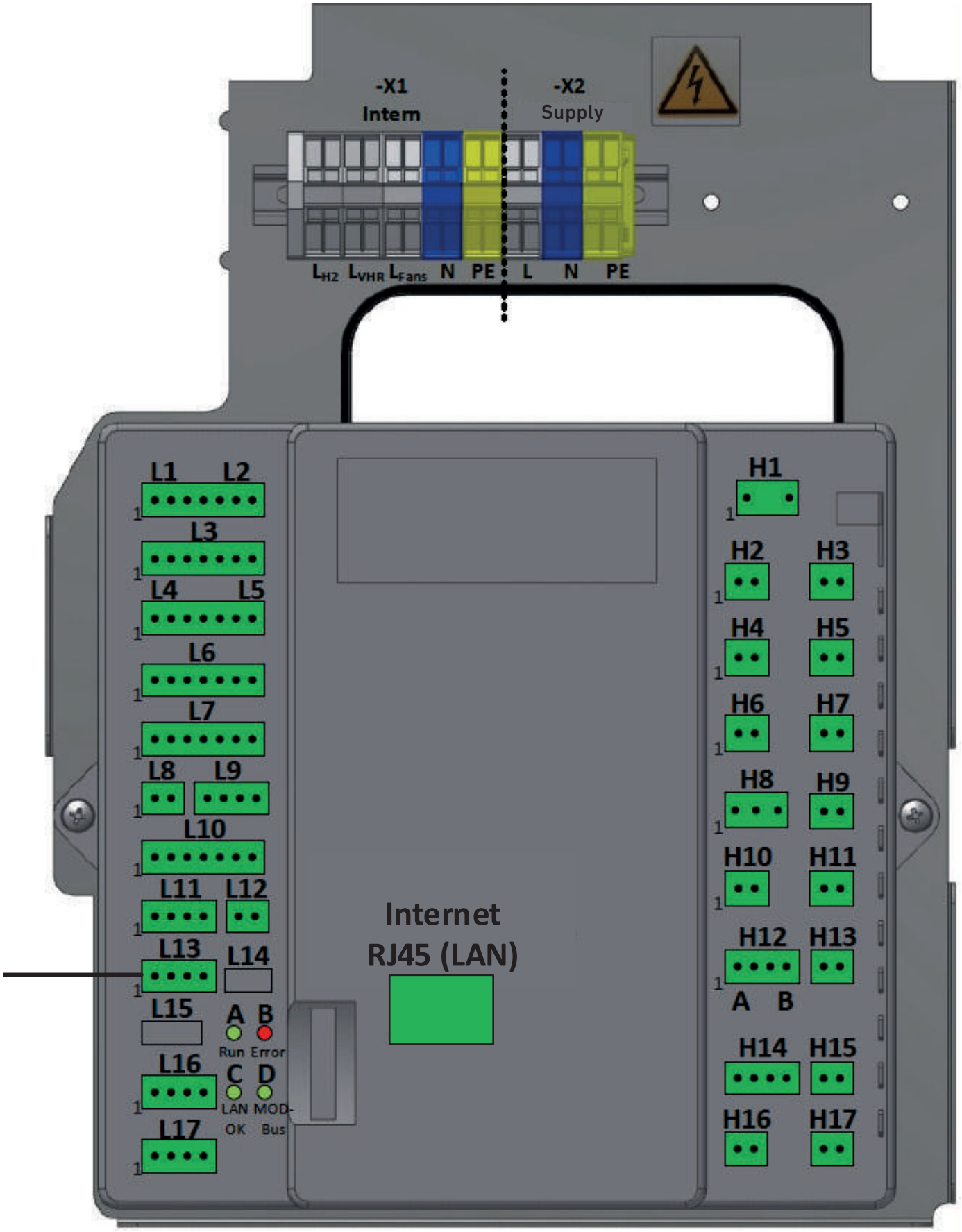
Mini



Touch Display

Rear control unit



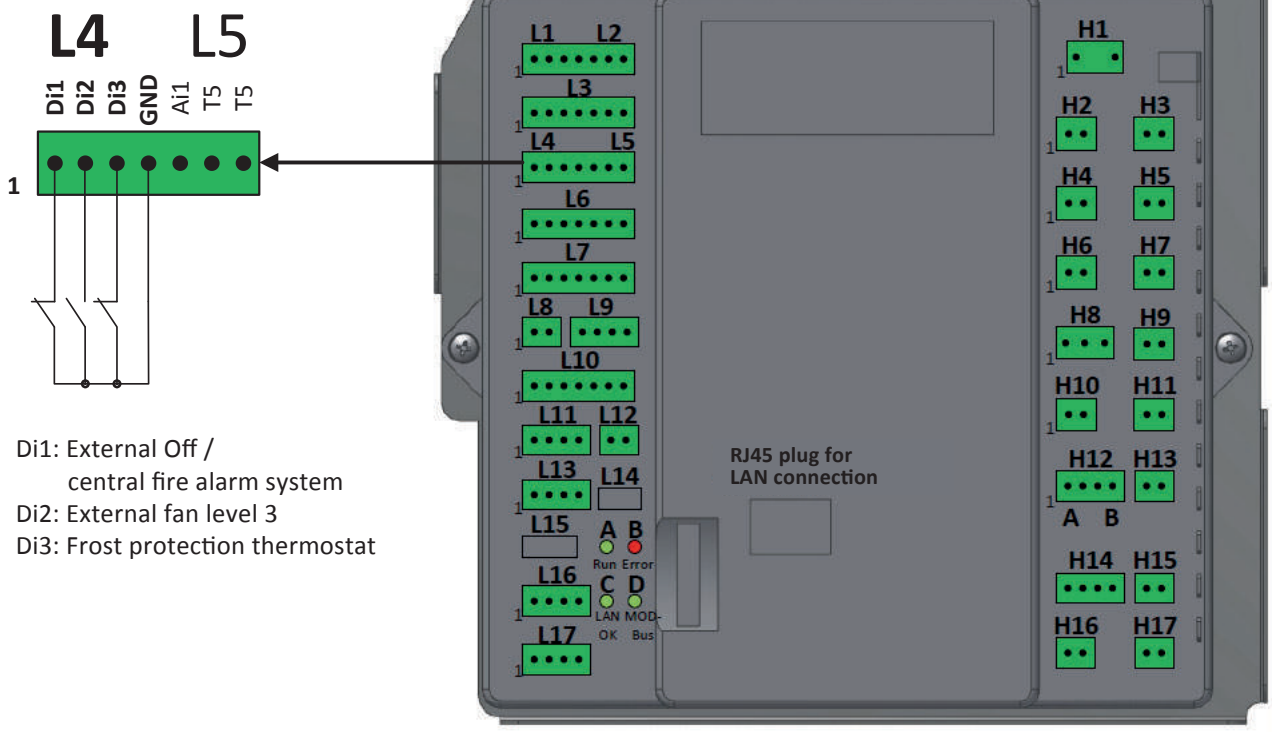

-X1
Intern
-X2
Supply
L_{H2} L_{VHR} L_{Fans} N PE L N PE
L1 L2
L3
L4 L5
L6
L7
L8 L9
L10
L11 L12
L13 L14
L15
A B
Run Error
L16
C D
LAN MOD-
OK Bus
L17
Internet
RJ45 (LAN)
H1
H2 H3
H4 H5
H6 H7
H8 H9
H10 H11
H12 H13
A B
H14 H15
H16 H17

Electrical connection diagram – external inputs

Digital input 1 (Di1)
Serves to externally switch off (external Off), e.g. by a central fire alarm system. The contact is designed as NC contact and is bridged in the delivery state.

Digital input 2 (Di2)
Serves to externally request intermittent ventilation. If this contact (NO contact) is closed, the ventilation unit switches to ventilation level 3. As a standard, a shut-off delay of 30 minutes is set for the intermittent ventilation function.

Digital input 3 (Di3)
Serves to connect an external frost protection thermostat. If this contact (NC contact) is closed, the ventilation unit shuts down with a fault message. The "Frost protection (Di3)" error message is shown on the TOUCH display.



Di1: External Off /
central fire alarm system
Di2: External fan level 3
Di3: Frost protection thermostat

Connecting the control unit to the control PCB

The controller consists of a control PCB and a control unit. The control PCB is to be connected to the control unit by means of a bus connection. The control PCB can communicate internal statuses as well as operating and fault messages to the control unit via this line connection.

A screened cable J-Y(ST)Y2x2x0.8 is required to establish the connection.

Cable length must not exceed 100 m. The screening must be connected to the ventilation unit's PE protective earthing. The connecting cable is included in the scope of supply.

The plug is connected to the control PCB and to the MINI or TOUCH control unit with a box header.

Mounting the MINI control unit

The MINI control unit does not have an integrated temperature sensor. This must be installed externally if required and connected to the control system.

The MINI control unit is installed by screwing the mounting bracket supplied into an ordinary electrical installation wall socket.

The control unit and cover frame are attached to the mounting bracket after plugging in the connection cable.

The mounting plate must be mounted on a flat surface using flat countersunk screws in order to ensure an optimum seat of all components.

Mounting the TOUCH control unit

Figure: TOUCH control unit wall mounting

The temperature sensor is located on the bottom side of the control unit. To ensure accurate and conclusive temperature measurement it is important to place the control unit vertically in a location that:

- is not exposed to direct sunlight.
- is not located directly above or close to a direct source of heat (e.g. room heater).

The TOUCH control unit is installed by screwing the mounting bracket supplied into an ordinary electrical installation wall socket. The control unit and cover frame are attached to the mounting bracket after plugging in the connection cable.

Swiveling console: the TOUCH operating control unit can be attached directly to the ventilation unit on a swiveling console.

Figure: Swiveling console

Circulating pumps

Pumps connected to the control system must be intrinsically safe and stall-proof. Electrical connection with
U = 230 VAC and I_{max} = 2 A.

18. Maintenance and cleaning

SAFETY INSTRUCTIONS

For all cleaning or servicing work on the ventilation unit, always pull the mains plug or fully (all poles) isolate from mains!

Other unit parts and components e.g. geothermal heat exchanger, pre- and re-heater battery, sound absorbers etc. must be serviced and cleaned in accordance with the regulations and instructions.
Be acutely aware of hazards and safety when opening the front hood or covers. If possible, use a vacuum cleaner to remove dirt and dust. Applying force or using compressed air for cleaning may damage components and surfaces.

Never use aggressive or solvent-containing cleaning agents.

The electrical components must not be exposed to moisture or wet conditions.

The safety information provided in the "Safety instructions" in Section 4 and in particular the "Electrical connection work" item must be observed.

MAINTENANCE INSTRUCTIONS

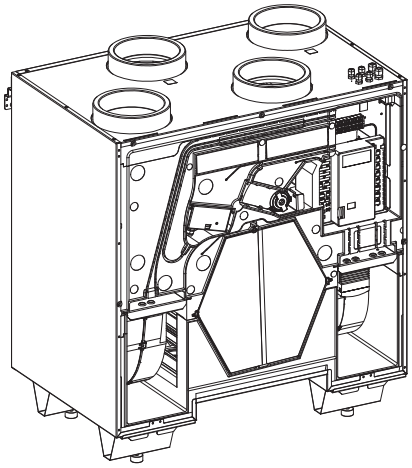
Only specialists are allowed to carry out the work specified below on the ventilation unit. Any defects detected during servicing must be remedied immediately to ensure safe operation of the unit.
Only original spare parts may be used for repairs and replacements.

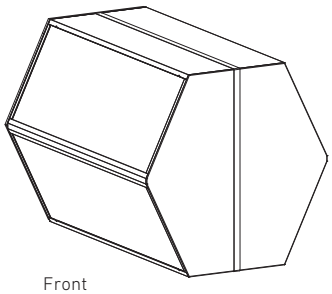
Heat exchanger

Annual cleaning is recommended at the least, depending on the degree of soiling of the heat exchanger.

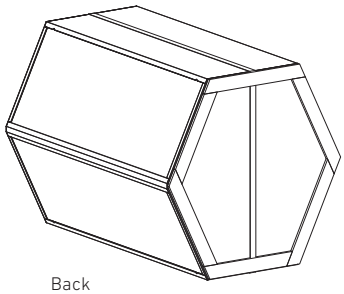
In order to carry out the maintenance work, the heat exchanger must be removed carefully from the unit.

The heat exchanger is cleaned by rinsing with hot water (maximum 50 °C). Never blow through the exchanger with compressed air. This may damage the exchanger.





Front



Back

Fans

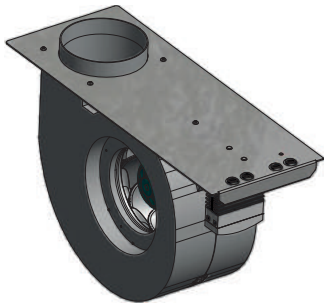
The motor housing must only be opened and work on the electrical components of the motor must only be performed by the fan manufacturer. If the fan is defective in any way, it must be replaced with a new, original fan.

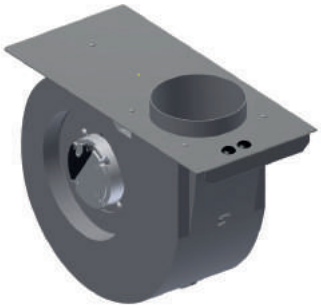
Cleaning of the housing may be required depending on the degree of soiling of the fans.

Maintenance and cleaning work on the fan is exclusively restricted to the fan housing.

The fan unit must be carefully removed from the housing. Pay attention to the electrical connecting cable to the motor. It must not be damaged.

Avoid causing damage to the fan blades. Do not remove or damage wheel balance weights as this may cause an imbalance of the rotor which, in turn, may increase noise and vibration levels.





Electrical pre-heater battery (optional)

Annual cleaning is recommended at the least, depending on the degree of soiling of the pre-heater battery.

Before commencing any work on the electrical heater batteries, the ventilation unit must be disconnected completely from the power supply (all poles) and secured against being switched back on!

For cleaning purposes, the pre-heater battery must be carefully removed from the ventilation unit. Pay attention to the electrical connection. It must not be damaged.

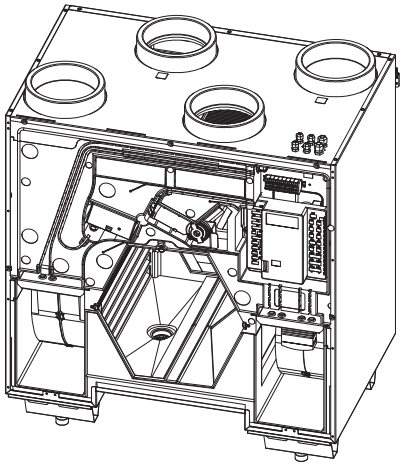
Use compressed air, a vacuum cleaner or a soft brush to remove dust.

When cleaning external electrical pre-heater batteries, it is essential that the prefilter is also checked (if present) and that it is replaced if soiled.

When the cleaning work has been completed, it must be ensured that the safety temperature limiter has not been activated.

Cleaning the inside of the unit housing

We recommend cleaning at least once a year, depending on the level of soiling. Handle the housing surfaces with care during cleaning. Using excessive force during cleaning, e.g. wiping or scrubbing, can cause damage to insulating surfaces. Preferably use a damp cloth or a vacuum cleaner to remove dust.



Electrical components may not be exposed to moisture or wet conditions. Be particularly careful not to damage the temperature sensors and the electrical wiring.

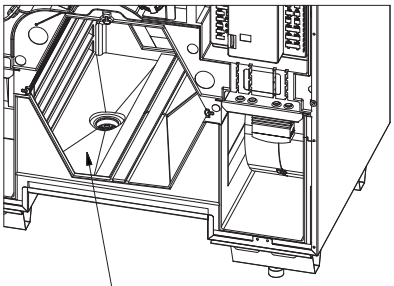
Condensate drainage

Depending on the level of soiling and on temperatures, cleaning the condensate drain, drainage pipe and siphon at least once a year is recommended.

The condensate drainage pipe and its components must operate perfectly to ensure proper operation of the unit. Remove any deposits or blockages in the discharge pipe and siphon. Clean the condensate cup with a damp cleaning cloth. It is essential that a functional test of the condensate drainage system is conducted after completion of cleaning.

For this purpose, fill the condensate tray with a sufficient amount of water. Make sure that all of the water in the tray flows safely into the drain via the condensate drainage pipe. Ensure that the system is watertight.

Fill the odour trap (siphon) with water before switching the unit back on to prevent unpleasant smells and leaks effectively.



Service table

In order to document maintenance works, this table must be completed after performance of works on the unit:

Unit commissioned by:			Date
No.	**Maintenance work (e.g. filter change)**	**Performed by, signature**	**Date**
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			

COMMISSIONING

The ventilation system must be complete, connected and ready for operation before it is put into operation for the first time. The unit can be put into operation and system settings can be configured only when all work on the system is complete.

The factory settings on the control unit may only be changed by a specialised company. Incorrect settings may cause the unit to malfunction.

Ventilation level	Operating mode	Designation	Volume flow LG 350	Recommendation for air change
Standby / basic ventilation		Depending on the configuration of the ventilation unit, the unit is in standby or basic ventilation mode with minimum ventilation of the building.	50 m^3/h	-
1	Reduced ventilation	Reduced ventilation with minimum ventilation of the building	125 m^3/h	Approx. 0.3 1/h
2	Standard ventilation	Ventilation level active if no other ventilation level has been selected manually or automatically	200 m^3/h	Approx. 0.5 1/h
3	Intensive ventilation	Operation with increased volume flow, boost ventilation for short, intensive building ventilation	300 m^3/h	Approx. 0.8 1/h

Ventilation level	Operating mode	Designation	Volume flow LG 450	Recommendation for air change
Standby / basic ventilation		Depending on the configuration of the ventilation unit, the unit is in standby or basic ventilation mode with minimum ventilation of the building.	50 m^3/h	-
1	Reduced ventilation	Reduced ventilation with minimum ventilation of the building	180 m^3/h	Approx. 0.3 1/h
2	Standard ventilation	Ventilation level active if no other ventilation level has been selected manually or automatically	290 m^3/h	Approx. 0.5 1/h
3	Intensive ventilation	Operation with increased volume flow, boost ventilation for short, intensive building ventilation	400 m^3/h	Approx. 0.8 1/h

Ventilation level factory settings

Basic steps of the commissioning procedure

- Are all air ducts and components fully installed and airtight?
- Are all system components fitted and electrically connected?
- Is the electric wiring complete and the control unit fitted?
- Has the control unit been connected correctly electrically?
- Is the condensate drainage system complete?
- Are the air vents, inlet and outlet valves properly installed and open?
- Has the unit been aligned horizontally, in order to ensure reliable condensate drainage?
- Have the air filters in the ventilation unit been installed correctly and are they clean?
- Have the air filters in the geothermal heat exchanger, etc., been installed correctly and are they clean?
- Are the fire dampers used open (if applicable)?
- Have the extract air and exhaust air pipes been properly and sufficiently insulated?
- Has the safety temperature limiter of the pre-heater battery been reset?

Setting system parameters

- Check system components and correct settings where necessary.
- Set system parameters, e.g. adjust volume flow/ventilation level.
- Set time.
- Set time of day programs as required by the customer.
- System extensions correctly configured.

COMMISSIONING – SERVICE

19. Error description

TOUCH CONTROL UNIT

Active errors on the TOUCH control unit are output as plain text. Additionally, the errors are documented in an error log.

See Section 9, "Current errors" and "Error log".

MINI CONTROL UNIT

Error descriptions are provided for the corresponding light patterns in the following table.

Errors can be located precisely using the service software (available to specialist personnel only).

Pattern	Error
Error LED flashes once	Z05 (supply air valve error)
Error LED flashes twice	Z04 (extract air valve error)
Error LED flashes three times	Z06, Z07, Z08, Z09, Z10, Z11, Z12, Z13 (sensor error)
Error LED flashes 4 times	Z01, Z03 (frost hazard)
Error LED flashes 5 times	Z02, Z14 (data transmission fault)
Error LED flashes 6 times	Z17, Z15 (pre-heater battery alarm + min. supply air temp.)
Filter LED lights up	Z16

Error	Description
Z01	Geothermal heat exchanger error supply air - extract air temperature difference exceeded
Z02	Control unit communication error
Z03	Frost protection, warm water re-heating battery pump (Din3)
Z04	Error in extract air fan
Z05	Error in supply air fan
Z06	Error T1 - outdoor air
Z07	Error T2 - exhaust air
Z08	Error T3 - extract air
Z09	Error T4 - supply air
Z10	Error T5 - downstream of pre-heater battery
Z11	Error T6 - supply air downstream of batteries
Z12	Error T7 - external outdoor air temperature sensor
Z13	Error T8 - external room temperature sensor
Z14	Fan communication error
Z15	Min. supply air temperature not reached
Z16	Filter message
Z17	Pre-heater battery setpoint temperature not reached

20. Installation/operation of the service software and firmware updates

The control unit must be connected to a laptop via the micro USB cable in order to perform troubleshooting.

Further information on installation/operation of service software and firmware updates is available from certified partners on request.

Service hotline: +43 (0)463 32769-290
Email: service@pichlerluft.at

21. Spare parts and accessories

Only original spare parts may be installed or used for replacements and repairs. Reliable operation is ensured only if original spare parts are used!

CONTROL ELEMENTS

Designation	Item number
MINI control unit	08LGMINI350450
TOUCH control unit	08LG350450T
CO_2 sensor	07RCO248330
Humidity sensor	07RHF49360
Room temperature sensor	07RTF49357
Shielded connecting cable J-Y(ST)Y 2 x 2 x 0.8	40LG040340

SYSTEM COMPONENTS LG 350

Designation	Item number
Combination battery (cold water battery) for duct installation ø 160 mm	01CWK160
Warm water heater battery for duct installation ø 160 mm	01VBC160
DN15 KVS 0.63 three-way valve with LR24ASR actuator	07R309LR24ASR
Temperature sensor with metal sleeve (NTC thermistor sensor), length 2 m	40LG041920
External electric re-heating battery, 1.200 Watt	08CV16121MTXL

SYSTEM COMPONENTS LG 450

Designation	Item number
Combination battery (cold water battery) for duct installation ø 200 mm	01CWK200
Warm water heater battery for duct installation ø 200 mm	01VBC200
DN15 KVS 1.00 three-way valve with LR24ASR actuator	07R310LR24ASR
Temperature sensor with metal sleeve (NTC thermistor sensor), length 2 m	40LG041920
External electric re-heating battery, 1.200 Watt	08CV16121MTXL

AIR FILTERS

Designation	Item number
Extract air filter ISO ePM1 70%	40LG0500000A
Outdoor air filter ISO COARSE 80%	40LG0500001A

CONDENSATE SIPHON

Designation	Item number
Condensate siphon HL 136.3 DN40 x 5/4"	40LG030620

22. Changes reserved

It is our constant endeavour to technically improve and optimise our products and we reserve the right to change the design of the units or the technical specifications without prior notice.

23. Product data sheets

PRODUCT DATA SHEET LG 350

	manual control	clock control	central demand control	local demand control	
Specific energy consumption (SEC)					
cold climate	-79,6	-80,4	-81,9	-84,6	[kWh/(m²·a)]
average climate	-40,3	-41,0	-42,3	-44,5	[kWh/(m²·a)]
warm climate	-15,2	-15,8	-17,0	-19,0	[kWh/(m²·a)]
Specific energy consumption class	A	A	A+ (most efficient)	A+ (most efficient)	

Type
"residential ventilation system", "bidirectional ventilation system"

Motor and drive			
variable speed	x-value	2	[-]
Type of heat recovery system			
recuperative			
Thermal efficiency of heat recovery	η_t	92,8%	[-]
Maximum flow rate	q_{Vd}	350	[m³/h]
Electric power input of the fan drive, including any motor control equipment, at maximum flow rate	P_E	102,4	[W]
Sound power level	L_{WA}	37,7	[dB(A)]
Reference flow rate	q_{Vn}	245	[m³/h]
Reference pressure difference	p_{tU}	50	[Pa]
Specific power input	SPI	0,19	[W/(m³/h)]

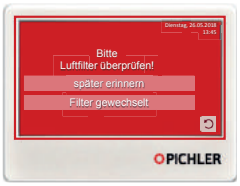
Ventilation control (CTRL)					
local demand control	1	0,95	0,85	0,65	[-]

Maximum air leakage rate			
internal	q_{vi} / q_{Vn}	0,33%	[-]
external	q_{ve} / q_{Vn}	0,75%	[-]

Filter change
The filters are to be replaced as soon as the command to replace the filters appears on the display of the operator control unit.
(marked red in the pictures alongside)

CAUTION:
If the filters are not changed regularly, the system can not work efficiently and the power consumption increases.

Operator control unit "MINI"



Operator control unit "TOUCH"

Waste disposal
Units that are no longer in working order have to be dismantled and properly disposed of by a specialized company via suitable collection centres and in compliance with the waste electrical and electronic equipment ordinance (WEEE), which provides for ratification of community law, directive 202/95/EC (RoHS) and the directive 2002/96/EC (the WEEE directive).

Annual electricity consumption (AEC)	2,8	2,6	2,2	1,5	[kWh/m²a]
Annual heating saved (AHS)					
cold climate	91,45	91,67	92,11	92,99	[kWh/m²a]
average climate	46,75	46,86	47,08	47,54	[kWh/m²a]
warm climate	21,14	21,19	21,29	21,50	[kWh/m²a]

Information based on the current state of knowledge of EU Regulations 1253/2014 and 1254/2014
Download from: www.pichlerluft.at

PRODUCT DATA SHEET LG 350F

	manual control	clock control	central demand control	local demand control	
Specific energy consumption (SEC)					
cold climate	-78,8	-79,9	-82,1	-86,0	[kWh/(m²·a)]
average climate	-37,7	-38,5	-40,1	-42,9	[kWh/(m²·a)]
warm climate	-14,1	-14,8	-16,0	-18,1	[kWh/(m²·a)]
Specific energy consumption class	A	A	A	A+ (most efficient)	

Type
"residential ventilation system", "bidirectional ventilation system"

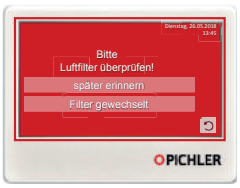
Motor and drive			
variable speed	x-value	2	[-]
Type of heat recovery system			
recuperative			
Thermal efficiency of heat recovery	η_t	81,2%	[-]
Maximum flow rate	q_{Vd}	350	[m³/h]
Electric power input of the fan drive, including any motor control equipment, at maximum flow rate	P_E	93,1	[W]
Sound power level	L_{WA}	37,7	[dB(A)]
Reference flow rate	q_{Vn}	245	[m³/h]
Reference pressure difference	p_{tU}	50	[Pa]
Specific power input	SPI	0,17	[W/(m³/h)]

Ventilation control (CTRL)					
local demand control	1	0,95	0,85	0,65	[-]
Maximum air leakage rate					
internal	q_{vi} / q_{Vn}	0,33%	[-]		
external	q_{ve} / q_{Vn}	0,76%	[-]		

Filter change
The filters are to be replaced as soon as the command to replace the filters appears on the display of the operator control unit.
(marked red in the pictures alongside)

CAUTION:
If the filters are not changed regularly, the system can not work efficiently and the power consumption increases.

Operator control unit "MINI"



Operator control unit "TOUCH"

Waste disposal
Units that are no longer in working order have to be dismantled and properly disposed of by a specialized company via suitable collection centres and in compliance with the waste electrical and electronic equipment ordinance (WEEE), which provides for ratification of community law, directive 202/95/EC (RoHS) and the directive 2002/96/EC (the WEEE directive).

Annual electricity consumption (AEC)	2,1	1,9	1,5	0,9	[kWh/m²a]
Annual heating saved (AHS)					
cold climate	83,95	84,54	85,73	88,12	[kWh/m²a]
average climate	42,91	43,22	43,83	45,04	[kWh/m²a]
warm climate	19,40	19,54	19,82	20,37	[kWh/m²a]

Information based on the current state of knowledge of EU Regulations 1253/2014 and 1254/2014
Download from: www.pichlerluft.at

PRODUCT DATA SHEET LG 450

	manual control	clock control	central demand control	local demand control	
Specific energy consumption (SEC)					
cold climate	-76,9	-77,9	-79,9	-83,2	[kWh/(m²·a)]
average climate	-38,2	-39,1	-40,7	-43,5	[kWh/(m²·a)]
warm climate	-13,4	-14,2	-15,7	-18,2	[kWh/(m²·a)]
Specific energy consumption class	A	A	A	A+ (most efficient)	

Type
"residential ventilation system", "bidirectional ventilation system"

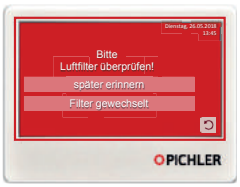
Motor and drive			
variable speed	x-value	2	[-]
Type of heat recovery system			
recuperative			
Thermal efficiency of heat recovery	η_t	90,9%	[-]
Maximum flow rate	q_{Vd}	450	[m³/h]
Electric power input of the fan drive, including any motor control equipment, at maximum flow rate	P_E	166,7	[W]
Sound power level	L_{WA}	42,9	[dB(A)]
Reference flow rate	q_{Vn}	315	[m³/h]
Reference pressure difference	p_{tU}	50	[Pa]
Specific power input	SPI	0,24	[W/(m³/h)]

Ventilation control (CTRL)					
local demand control	1	0,95	0,85	0,65	[-]
Maximum air leakage rate					
internal	q_{vi} / q_{Vn}	0,25%	[-]		
external	q_{ve} / q_{Vn}	0,59%	[-]		

Filter change
The filters are to be replaced as soon as the command to replace the filters appears on the display of the operator control unit.
(marked red in the pictures alongside)

CAUTION:
If the filters are not changed regularly, the system can not work efficiently and the power consumption increases.

Operator control unit "MINI"



Operator control unit "TOUCH"

Waste disposal
Units that are no longer in working order have to be dismantled and properly disposed of by a specialized company via suitable collection centres and in compliance with the waste electrical and electronic equipment ordinance (WEEE), which provides for ratification of community law, directive 202/95/EC (RoHS) and the directive 2002/96/EC (the WEEE directive).

Annual electricity consumption (AEC)	3,4	3,1	2,6	1,7	[kWh/m²a]
Annual heating saved (AHS)					
cold climate	90,02	90,31	90,90	92,07	[kWh/m²a]
average climate	46,02	46,17	46,47	47,06	[kWh/m²a]
warm climate	20,81	20,88	21,01	21,28	[kWh/m²a]

Information based on the current state of knowledge of EU Regulations 1253/2014 and 1254/2014
Download from: www.pichlerluft.at

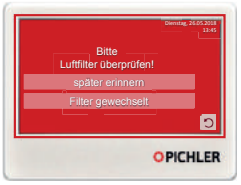
PRODUCT DATA SHEET LG 450F

	manual control	clock control	central demand control	local demand control	
Specific energy consumption (SEC)					
cold climate	-76,0	-77,3	-79,8	-84,5	[kWh/(m²·a)]
average climate	-35,6	-36,6	-38,5	-41,8	[kWh/(m²·a)]
warm climate	-12,5	-13,3	-14,8	-17,4	[kWh/(m²·a)]
Specific energy consumption class	A	A	A	A	
Type					
"residential ventilation system", "bidirectional ventilation system"					
Motor and drive					
variable speed			x-value	2	[-]
Type of heat recovery system					
recuperative					
Thermal efficiency of heat recovery			η_t	78,7%	[-]
Maximum flow rate			q_{Vd}	450	[m³/h]
Electric power input of the fan drive, including any motor control equipment, at maximum flow rate			P_E	152,7	[W]
Sound power level			L_{WA}	42,9	[dB(A)]
Reference flow rate			q_{Vn}	315	[m³/h]
Reference pressure difference			p_{tU}	50	[Pa]
Specific power input			SPI	0,21	[W/(m³/h)]
Ventilation control (CTRL)					
local demand control	1	0,95	0,85	0,65	[-]
Maximum air leakage rate					
internal			q_{vi} / q_{Vn}	0,25%	[-]
external			q_{ve} / q_{Vn}	0,59%	[-]

Filter change
The filters are to be replaced as soon as the command to replace the filters appears on the display of the operator control unit.
(marked red in the pictures alongside)

CAUTION:
If the filters are not changed regularly, the system can not work efficiently and the power consumption increases.

Operator control unit "MINI"



Operator control unit "TOUCH"

Waste disposal
Units that are no longer in working order have to be dismantled and properly disposed of by a specialized company via suitable collection centres and in compliance with the waste electrical and electronic equipment ordinance (WEEE), which provides for ratification of community law, directive 202/95/EC (RoHS) and the directive 2002/96/EC (the WEEE directive).

Annual electricity consumption (AEC)	2,6	2,4	1,9	1,1	[kWh/m²a]
Annual heating saved (AHS)					
cold climate	82,65	83,31	84,63	87,27	[kWh/m²a]
average climate	42,25	42,58	43,26	44,61	[kWh/m²a]
warm climate	19,10	19,26	19,56	20,17	[kWh/m²a]

Information based on the current state of knowledge of EU Regulations 1253/2014 and 1254/2014
Download from: www.pichlerluft.at

24. EC Declaration of Conformity

Hersteller / Manufacturer:	J. Pichler Gesellschaft m.b.H.
Anschrift / Address:	Karlweg 5 9021 Klagenfurt am Wörthersee
Bezeichnung / Product description:	Ventilation unit in compact design with an integrated control system
Ausführungen / Type:	LG 350 / LG 350 V / LG 350 F / LG 350 FV LG 450 / LG 450 V / LG 450 F / LG 450 FV with MINI or TOUCH control unit

Die bezeichneten Produkte stimmen in der von uns in Verkehr gebrachten Ausführung mit den Vorschriften folgender europäischen Richtlinien überein:
The products described above in the form as delivered are in conformity with the provisions of the following European Directives:

2014/35/EU	Zur Harmonisierung der Rechtsvorschriften der Mitgliedsstaaten über die Bereitstellung elektrischer Betriebsmittel zur Verwendung innerhalb bestimmter Spannungsgrenzen auf dem Markt *On the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits*
2014/30/EG	Zur Harmonisierung der Rechtsvorschriften der Mitgliedstaaten über die elektromagnetische Verträglichkeit *On the harmonisation of the laws of the Member States relating to electromagnetic compatibility*
2009/125/EG	Richtlinie des Europäischen Parlaments und des Rates zur Angleichung der Rechtsvorschriften der Mitgliedsstaaten zur Schaffung eines Rahmens für die Festlegung von Anforderungen an die umweltgerechte Gestaltung energieverbrauchsrelevanter Produkte *Council Directive on the approximation of the laws of the Member States establishing a framework for the setting of ecodesign requirements for energy-related products*

Die Konformität mit den Richtlinien wird nachgewiesen durch die Einhaltung folgender Normen und Verordnungen:
Conformity to the Directives is assured through the application of the following standards and regulations:

VO 1253/2014/EU Verordnung (EU) der Kommission zur Durchführung der Richtlinie 2009/125/EG des Europäischen Parlaments und des Rates hinsichtlich der Anforderungen an die umweltgerechte Gestaltung von Lüftungsanlagen
COMMISSION REGULATION (EU) implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for ventilation units

VO 1254/2014/EU zur Ergänzung der Richtlinie 2010/30/EU des Europäischen Parlaments und des Rates im Hinblick auf die Kennzeichnung von Wohnraumlüftungsgeräten in Bezug auf den Energieverbrauch
VO 1254/2014/EU supplementing Directive 2010/30/EU of the European Parliament and of the Council with regard to energy labelling of residential ventilation units

ÖVE / ÖNORM EN 60335-1
ÖVE / ÖNORM EN 60335-2-30 (analogously)
ÖVE / ÖNORM EN 60335-2-65 (analogously)
ÖVE / ÖNORM EN 60335-2-80 (analogously)
ÖVE / ÖNORM EN 50366
ÖVE / ÖNORM EN 62233
ÖVE / ÖNORM EN 55014-1
ÖVE / ÖNORM EN 55014-2
ÖVE / ÖNORM EN 61000-3-2
ÖVE / ÖNORM EN 61000-3-3

Eine vom Lieferzustand abweichende Veränderung des Gerätes führt zum Verlust der Konformität.
Product modifications after delivery may result in a loss of conformity.

Diese Erklärung bescheinigt die Übereinstimmung mit den genannten Richtlinien, ist jedoch keine Zusicherung von Eigenschaften. Die Sicherheitsinformationen der mitgelieferten Produktdokumentation sind zu beachten.
This declaration certifies the conformity to the specified directives but contains no assurance of properties. The safety documentation accompanying the product shall be considered in detail.

J. Pichler Gesellschaft m.b.H.
Geschäftsleitung / General Manager

Klagenfurt, 1 October 2018

ErP 2018

ErP 2018
Fulfils the requirements of the Ecodesign Directive in accordance with EU Regulation 1253/2014.

Responsible for content: J. Pichler Gesellschaft m.b.H.
Photos: Ferdinand Neumüller, Archiv J. Pichler Gesellschaft m.b.H. | ***Text:*** J. Pichler Gesellschaft m.b.H.

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PICHLER
Systematic ventilation.

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Gesellschaft m.b.H.

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