Translation of the original instruction manual

Heat Recovery Unit
FOCUS (F) 200

Legal regulations

Trademarks

Contents

1 Introduction

1.1 General

This translation of the original instruction manual contains instructions and information on the safe operation, correct installation, operation and maintenance of the Focus (F) 200 ventilation unit.

This documentation has been compiled with the utmost care. However, no rights can be derived from this regarding the publisher's liability for damages due to missing or incorrect information in this documentation. As a result, it is possible that the unit may deviate slightly from this description. In the event of disputes, the German version of the documentation shall be binding.

- Read the instructions in full before installing and commissioning the ventilation unit. This will help you avoid hazards and errors.
- Be sure to observe all safety notes, warnings and information on precautionary measures.
- The instruction manual constitutes a part of the product. Keep the manual for future reference.

!? Questions

You can address all questions and request the most recent manuals and new filters from your Zehnder representative. The contact information is found on the back cover of this manual.

1.2 Validity

This document applies to:

- FOCUS 200 series (Zehnder Focus 200 series)
- FOCUS F 200 series (Zehnder Focus 200 enthalpy series)

All the units in the FOCUS 200 series and FOCUS F 200 series are referred to below using the generic product name FOCUS, except where it is necessary to distinguish between specific types.
This instruction manual deals with the various design variants of the FOCUS ventilation unit. Possible accessories are only described to the extent necessary for appropriate operation of the unit. Please refer to the respective instructions for further information on accessory parts.

1.3 Target groups

This instruction manual is for users and qualified personnel. The activities are only allowed to be carried out by appropriately trained personnel who are sufficiently qualified for the respective work involved.

1.3.1 Qualification of target group

1.3.1.1 Users

Users must be instructed by qualified personnel as follows:

- Instruction in hazards when handling electrical devices.
- Instruction in the operation of the FOCUS unit.
- Instruction in the maintenance of the FOCUS unit.
- Knowledge of and compliance with this manual, including all safety instructions.

1.3.1.2 Qualified personnel

Qualified personnel must have the following qualifications:

- Training in dealing with hazards and risks when installing and operating electrical devices.
- Training for the installation and commissioning of electrical devices.
- Knowledge of and compliance with the locally applicable building, safety and installation regulations of the relevant local authorities or municipalities, the regulations of the water and electric utilities and other official regulations and guidelines.
- Knowledge of and compliance with this document, including all safety instructions.

1.4 Conformity

The Focus (F) 200 series ventilation units from the manufacturer

CE

Zehnder Group Zwolle B.V.
Lingenstraat 2 ● 8028 ● PM Zwolle-NL ● Tel.: +31 (0)38-4296911
Zwolle commercial register 05022293

comply with the directives and standards of the EU and EAC Declaration of Conformity.

2 Proper use

2.1 Operation of the unit

- The unit may only be operated if it has been installed correctly and according to the specifications and directives of the installation manual of the unit.
- The unit may be operated by the following groups of people: children from age 8, persons with limited physical, sensory or mental abilities, or persons with insufficient experience and specialised knowledge, provided they are supervised or instructed in the safe handling of the unit and understand the associated hazards.
- Children must not play with the unit.
- Children must not carry out cleaning and maintenance without supervision.

2.2 Intended use

- The FOCUS unit can be used for controlled ventilation in homes and offices (and in industrial buildings subject to certain restrictions). Any other use or any use beyond this is considered improper use.
- The ventilation unit is not suitable for smoke extraction or drying buildings, for ventilation of rooms with aggressive and corrosive gases or for rooms with extreme dust levels.
- The unit must not be used for extracting combustible or explosive gases.
- Intended use also includes observing all instructions in the instruction manual.

In the event of improper use, the Zehnder Group accepts no liability for any damage that may occur and no warranty for the proper and functional operation of the ventilation unit.

2.3 Provisions for operation with fireplaces

Local requirements must be taken into account through appropriate standards, laws and guidelines. The FOCUS unit may only be installed in rooms, apartments or utilisation units of comparable size in which open flue fireplaces are installed if:

- safety features prevent simultaneous operation of open flue fireplaces and the air extracting system or
- the flue gas discharge of the open flue fireplace is monitored by special safety features. In case of open flue fireplaces for liquid or gaseous fuels, the fireplace or the ventilation system must be switched off if the safety feature is triggered. In case of open flue fireplaces for solid fuels, the ventilation system must be switched off if the safety feature is triggered.
- The FOCUS is prepared for the simultaneous operation with fireplaces.

The ventilation units for controlled ventilation of an apartment or comparable utilisation unit must not be installed if open flue fireplaces are connected to multiple-occupancy flue systems in the utilisation unit.
For proper operation, it must be possible to shut off any combustion ventilation lines and flue gas systems of open flue fireplaces. In case of flue gas systems of fireplaces for solid fuels, it must only be possible to operate the cut-off device manually. The position of the cut-off device must be recognisable from the setting of the operating handle. This is considered to be fulfilled if a cut-off device against soot (soot blocker) is used. Fire protection requirements with regard to the fire protection installation regulations for the construction of the ventilation system, and federal state regulations, in particular the building authority guideline on the fire protection requirements for ventilation systems in the currently valid version, must be observed.

2.4 Guarantee conditions, warranty and liability

2.4.1 Guarantee conditions

The manufacturer gives a warranty of 24 months starting from the installation date, or a maximum 30 months starting from the date of manufacture, for the unit. Warranty claims may only be asserted for material defects and/or design faults that have occurred during the warranty period.
In the event of a warranty claim, the unit must not be disassembled without the written consent of the manufacturer. Spare parts are only covered by the warranty if they have been supplied by the manufacturer and fitted by an approved technician.

2.4.2 Warranty

In the event of a warranty claim, the unit must not be disassembled without the written consent of the manufacturer. Spare parts are only covered by the warranty if they have been supplied by the manufacturer and fitted by an approved technician.

The warranty shall be null and void if:

- The warranty period has elapsed.
- The installation has not been carried out in accordance with the applicable regulations.
- The unit is operated without a filter.
- Original parts have been replaced by non-original parts.
- Unauthorised changes or modifications to the unit have been made.
- The defects are due to improper installation, improper use or neglected maintenance of the system.

2.4.3 Liability

The FOCUS unit is intended for use in the mechanical ventilation of apartments, offices and rooms with a similar purpose. Every other use other than that described in chapter 2 is considered “improper use” and may result in personal injury or damage to the balanced ventilation unit for which the manufacturer cannot be held liable.

The liability of the manufacturer becomes null and void in the following cases:

- Failure to observe the instructions specified in this manual pertaining to safety, operation and maintenance.
- Modifications to the ventilation unit or the use of components that have not been approved or recommended by the manufacturer.
- Incorrect installation, improper use or contamination of the system.
- Original parts have been replaced by non-original parts.
- The unit is operated without a filter.

3 Safety

Carefully read all safety instructions prior to commissioning the unit to make sure that you use the unit in a safe and intended way.

3.1.1 Symbols used

You will find the following symbols in this document:

Symbol	Meaning
	**Important note!**
	**Caution: Risk of affecting the operation of the ventilation system or damaging the unit!**
	**Caution: Risk of personal injury!**

3.1.2 Safety regulations

3.1.2.1 Safety instructions – general

- Always observe the safety regulations, warning, comments and instructions stated in this manual. Non-observance results in hazard of injury and hazard of material damage to the FOCUS unit.
- The installation, commissioning and maintenance (except for filter replacement) must be carried out by an approved technician unless stated otherwise in the instructions. Implementation of this work by a non-approved technician can result in personal damage or reduced performance capacity of the ventilation system.
- Do not disconnect the unit from the power supply unless instructions to the contrary are listed in the manual. This can result in the formation of moisture and mould.
- Do not make any changes to the unit or to the specifications listed in this document. Such changes can cause personal injury or lead to reduced performance of the ventilation system.
- To prevent accidents, a damaged mains cable must be replaced by an original cable by the manufacturer, a person commissioned to carry out maintenance by the manufacturer or a similarly qualified person.
- After installation, have your system engineer/installer instruct you on the unit and the control panel. The ventilation unit may only be used in accordance with chapter 2 "Intended Use".
- Only operate the unit with a closed housing.

3.1.2.2 Safety instructions – Installation

- Comply with the general locally applicable building, fire, safety and installation regulations of the relevant local authorities, the regulations of the water and electric utilities and all other official regulations.
- Pull the unit's plug from the mains socket to separate the unit from the power supply. If the unit does not have a plug, use a switch according to EN 60335-1 (with separation of all three poles and 3 mm clearance, over-voltage category III).
- Always disconnect the unit from the power supply prior to commencing maintenance or repair activities. If the FOCUS unit is operated while open, there is hazard of injury.
- Make sure that the FOCUS unit cannot switch on unintentionally.
- To eliminate the risk of coming into contact with the running fans, the air ducts must be fastened to the unit before the power supply is connected, observing a minimum length of 900 mm.
- Therefore, always apply measures to prevent electrostatic discharges when working on the electronics. Wear an antistatic wrist band, for example. Static energy can cause damage to electronic components.
- The entire installation must comply with the applicable (safety) regulations from the following sources:
  - local EU standard for safety features for low voltage systems;
  - Mounting/installation manual of the manufacturer (see the back cover of the instruction manual for the contact data of Zehnder).
- A socket with grounding at a distance of 1 meter or no more than the length of the included mains cable must be present.
- Always use the included mains cable.
- For safety reasons do not use an extension cable.

3.1.3 Installation conditions

The following conditions must be considered when deciding whether a unit should be installed in a specific area to ensure the correct installation of the unit.

- Ensure that the temperatures in the installation area are in the permissible range year-round. The information regarding the permissible temperature can be found in the "Technical specification" table.
- When choosing an installation location, it is recommended that you avoid areas with a high average level of humidity (ambient conditions for indoor climate control system must not continuously exceed 70% RH at 22 °C).
- The unit must not be installed in rooms subject to explosion hazards.
- Inside wet rooms, the unit may only be installed outside of protection zones 1 and 2 in accordance with DIN 57100/VDE 100 Part 701.
- Connect the unit to a power source with 230 V/50 Hz.
- Check whether the electrical installation is suitable for the maximum output of the unit. The values for the electrical input power can be found in the "Technical specification" chapter.
- Check that the installation area of the unit meets the requirements in the "Installation requirements" chapter.

4 Instructions for the user and qualified personnel

4.1 Product description

The FOCUS unit is a ventilation unit with heat recovery for healthy, well-balanced and energy-saving comfort ventilation. A comfort ventilation system extracts foul-smelling waste air from areas such as kitchens, bathrooms and toilets and conveys an identical quantity of fresh air into living rooms, bedrooms and children's rooms.
For heat recovery, the unit types in the FOCUS 200 series feature highly efficient cross-counterflow heat exchangers made from plastic. The unit types in the FOCUS F 200 series rely on membrane moisture heat exchangers (enthalpy exchangers), which are capable of transferring moisture as well as heat because of their physical properties. An optional summer box module can be used instead of the heat exchanger for thermal separation of the two airflows. The housing is made from sheet metal with an anthracite powder coating. The high-quality polypropylene inner lining ensures the necessary thermal insulation and unit soundproofing.
The FOCUS unit has two maintenance-free 230 VAC centrifugal fans with an integrated power supply unit and electronic commutation. The fans run at a steady volume flow to keep the air volume constant at any selected fan speed. The air volume is not affected even if the filters become soiled.
The unit contains filters according to EN ISO 16890 of the filter class ISO Coarse for the outdoor air and the extract air. These consist of a synthetic non-woven filter medium with a polypropylene frame. As an option, filters of filter class ISO ePM1 can be used for the outdoor air. The filters are accessed via the front panel.

4.1.1 Control panels

With the TFT control panel or LED control panel you can configure and operate the system from a central point. Both control panels are only suitable for use in indoor areas.

4.1.2 Main components

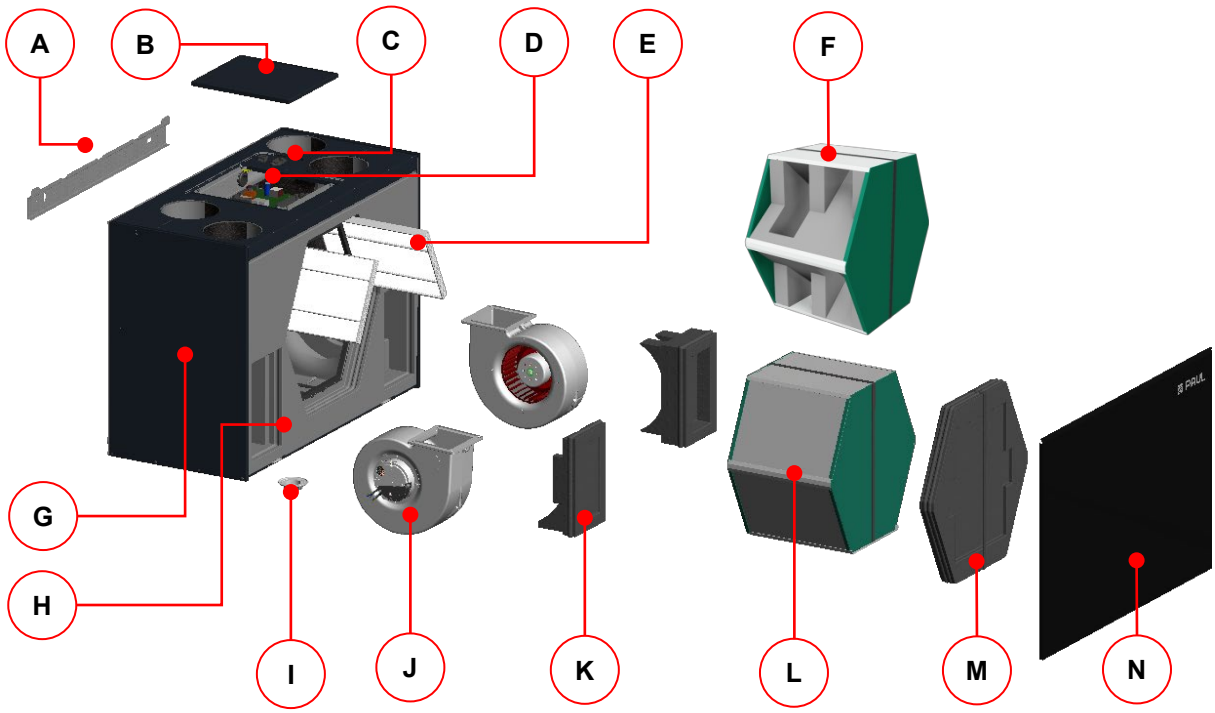


Fig. 1: Main components of the FOCUS unit

Item	Description
A	Fastening sheet
B	Control cover plate
C	Interface sheet with JEC unit plug and RJ-45 fitted coupling
D	Control boards
E	Filter (2x)
F	Summer box – Module that keeps the airflows thermally separate
G	Housing made from coated sheet steel
H	EPP moulded parts
I	Condensate drain screw connection
J	Fans (2x)
K	EPP foam cover for fan (2x)
L	Heat exchanger with strap and condensate tray
M	EPP foam cover with strap for filter and heat exchanger
N	Front panel made from coated sheet steel

Table 1: FOCUS main components

4.1.3 Type label

The type label identifies the product unequivocally. You will need the details on the type label for the safe use of the product and in case of questions for service. The type label is located on the same side of the unit as the air connections and must remain permanently attached to the product.

4.1.4 Frost protection

The FOCUS unit is equipped with automatic frost protection, which prevents the heat exchanger from freezing should the outdoor air temperature drop to a very low level. Depending on the set frost protection mode, if the outdoor air temperature drops below a certain limit, the fans are temporarily shut off.
The automatic frost protection for screening the supply air temperature protects an optional downstream hydraulic heat register from freezing and temporarily switches off the fans if the supply air of the fans drops below a certain limit.

4.2 Available control modules

The FOCUS unit can be operated with the following control modules:

- Control unit LED control panel with the *PEHA* switch programme design (W x H x D in mm: 80 x 80 x 12)
- Control unit TFT control panel (W x H x D in mm: 102 x 78 x 14)
- External boost ventilation key(s) (as many as required, potential-free)
- External sensors with sensor signal 0–10 V or 4–20 mA

4.2.1 LED control panel

The LED control panel is equipped with 7 symbolised short-stroke keys. Pushing a key or a key combination triggers the associated control functions. The active operating mode is indicated in each operating field via a green or red LED. The LED control panel with the *PEHA* switch programme design can be installed on the surface or in the wall. In case of surface-mounted installation a *PEHA* surface-mounted plug socket is needed.

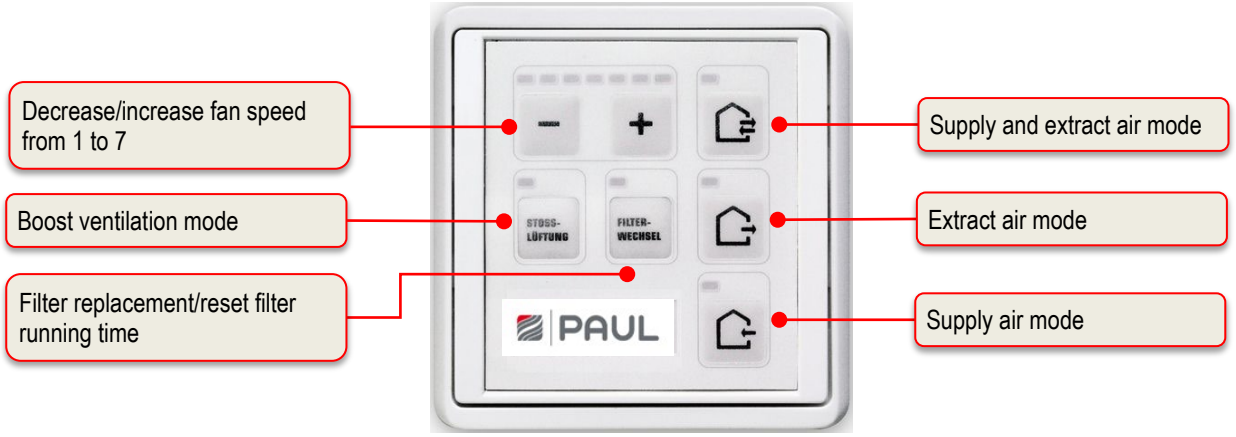


Fig. 2: Operation and information fields LED control panel

4.2.1.1 LED control panel control functions

Symbol	Description	Explanation
	Key Supply and extract air mode	Pushing this key sets the supply and extract air mode.
	Key Extract air mode	Pushing this key sets the extract air mode only. The supply air mode is switched off. ⚠ This key must be permanently deactivated when operating the ventilation unit with a fireplace! Simultaneous operation of a ventilation system and fireplace imposes more stringent safety requirements with regard to low pressure screening and a switch-off function is required for the ventilation unit.
	Key Supply air mode	Pushing this key sets the supply air mode only. The extract air mode is switched off.
	Key Decreasing the fan speed	Pushing this key decreases the fan speed in increments.
	Key Increase fan speed	Pushing this key increases the fan speed in increments.
	Key Boost ventilation mode	Pushing this key activates the boost ventilation during the supply and extract air mode on fan speed 7 for 15 minutes. At the end of the boost ventilation time the previously active operating mode resumes. You can cancel the boost ventilation mode at any time by pressing another function key.
	Key Reset filter running time	To ensure cyclic filter inspection, the control has an integrated operating hours counter. The reset filter running time key allows you to reset the filter running time.
	Key combination activate/deactivate standby mode	The standby function sets the ventilation unit to an energy saving mode. Repeated pushing of the **–** key until LED L1 is also turned off activates the standby mode. This status is indicated by the periodic flashing of LED L8. Pushing the **+** key ends the standby mode and sets fan speed 1. LED L1 is lit up.

FILTER-WECHSEL …	Key combination configuration mode for operation together with a fireplace	Pushing the key combination for at least 3 seconds deactivates the extract air mode permanently. This status is signalled by LEDs L8+L11+L12, where L8 and L12 are lit up, L11 blinks 2 times and then remains switched off. This signal is only visible when holding the key combination. Activating the extract air mode key in the deactivated state results in a short 3 time blinking of LED L11 to signal the deactivated state. Pushing the key combination again for at least 3 s cancels the key lock. This change is again signalled by the LEDs L8+L11+L12, where L8 and L12 are lit up, L11 blinks 2 times and then remains switched on. This signal is only visible when holding the key combination. This enables the extract air mode again. **Always press the reset filter replacement key first!**
FILTER-WECHSEL …	Key combination for the summer ventilation temperature limit configuration mode	**The summer ventilation can only be implemented with an LED control panel if it has been released in the factory setting.** Pushing the key combination for at least 3 seconds activates the setting for the temperature limit. This status is signalled by the blinking of LEDs L8 and L10. With the setting keys the upper temperature limit for summer ventilation depending on the extract air temperature can be set between 21 °C (LED L1 lights up) and 27 °C (LED L7 lights up). After pressing the key combination again for at least 3 s the setting is saved and the summer ventilation temperature limit is terminated. **Always press the reset filter replacement key first!**
+ − …	Setting keys	
FILTER-WECHSEL …	Key combination imbalance configuration mode	By pushing the key combination for at least 3s, the imbalance configuration mode is activated and the LEDs L10 and L12 blink. The keys for setting the balance can now be used to set the balance of the fan speeds active upon activation of the imbalance configuration mode in 5% increments. The balance is not set for each fan speed individually, but jointly for a group of fan speeds. The adjustable range is between -15% (L1) and +15% (L7). In the central position (L4) the supply air and extract air run with the same rotational speed. After pressing the key combination again, the setting is saved and the imbalance configuration mode concluded. **Always press the reset filter replacement key first!**
+ − …	Keys for setting the balance 1st group fan speeds <1+2> 2nd group fan speeds < 3 +4+5> 3rd group fan speeds <6+7>	

Table 2: Control functions of the LED control panels

4.2.1.2 Signals used to indicate operating and error conditions

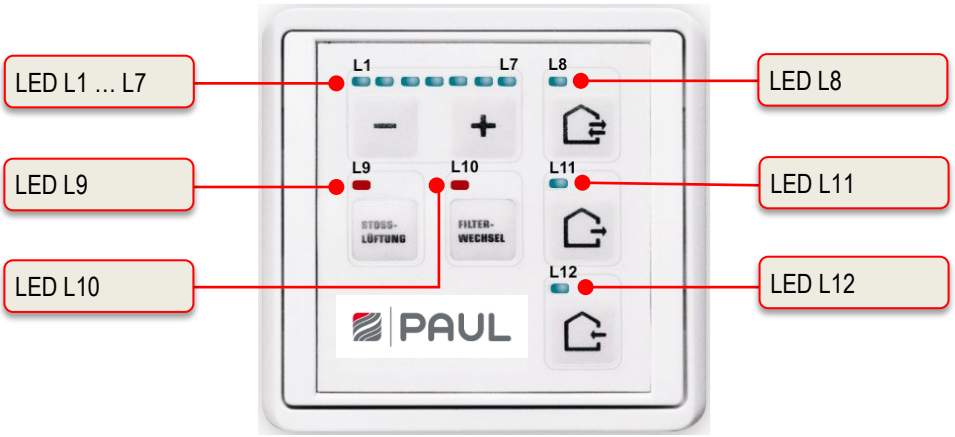


Fig. 3: LED signals LED control panel

LED signal	Function / Meaning	
LED light strip display L1 ... L7	No LED 1 LED (L1) 2 LEDs (L1 + L2) ... etc. 7 LEDs (L1+ L2+…+ L7)	≙ fan speed 0 (fan off, standby) ≙ fan speed 1 ≙ fan speed 2 ≙ fan speed 7
L1 + L7 light up	No external release: fan is off	
L8 lights up	Supply and extract air mode	
L8 blinks	Error (sensor or frost protection (outdoor air temperature too low)): Fans are switched off	
L8 flashes	Standby mode active	
L8 + L10 blink	Summer ventilation temperature limit configuration mode (Displayed only during the configuration phase)	
L8 + L11 + L12 blink	General error, the error number is displayed binary with the LEDs L1 to L7 (see Table 38 in chapter 5.8.1 error signals with LED control panel)	
L8 + L12 light up + L11 blinks 2x and then stays out	Configuration mode for operation together with a fireplace (Displayed only during the configuration phase)	
L9 lights up	Boost ventilation mode (L1 + L2 + L3 + L4 + L5 + L6 + L7 light up)	
L10 lights up	Filter running time expired	
L10 flashes	The remaining filter running time is ≤ 10 days	
L10 + L12 blink	Configuration mode balance compensation for the selected fan speed (Displayed only during the configuration phase)	
L11 lights up	Extract air mode	
L11 blinks	Error fan 1 HALL: Fans are switched off	
L11 blinks briefly 3 times	Extract air mode deactivated (extract air mode key locked, configuration for operation in conjunction with fireplace active)	
L12 lights up	Supply air mode	
L12 blinks	Error fan 2 HALL: Fans are switched off	

Table 3: Functions assigned to LED signals

4.2.2 TFT control panel

The 3.5“ TFT display of the control panel is operated by touching the button symbols with the fingers. The active operating mode and the associated button are indicated by colour signals. The control panel can be fitted into a standard flush socket.

The ventilation unit can be operated with up to three TFT control panels or without a control panel. In this case, the system operates in the last set operational mode.

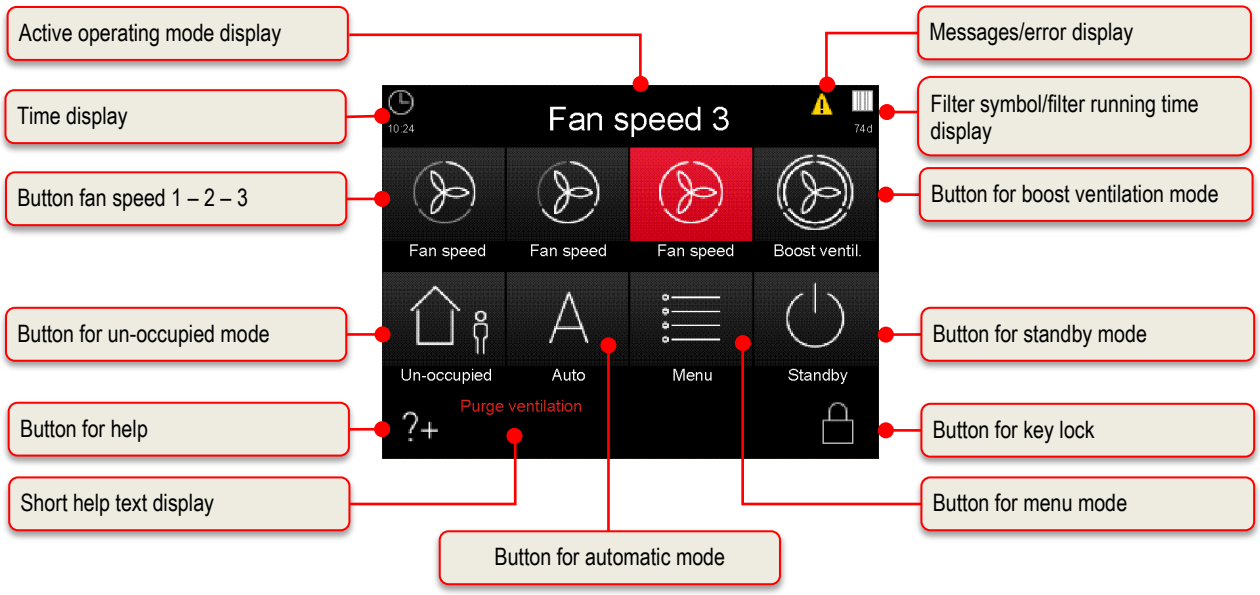
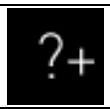
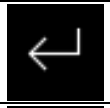


Fig. 4: Operation and information fields of the touch pad

4.2.2.1 TFT control panel operations and signals

Symbol	Description	Explanation
-	Fan speed 0 (FS0)	The fans come to a stop. This fan speed is used for the functions automatic timer mode and un-occupied mode
	Button Fan speed 1 (FS1)	By touching this button, the smallest permanent fan speed 1 (reduced ventilation) is set.
	Button Fan speed 2 (FS2)	By touching this button, the medium permanent fan speed 2 (nominal ventilation) is set. This fan speed is set by the service technician during the commissioning of the unit. A balance between supply air and extract air is adjusted.
	Button Fan speed 3 (FS3)	By touching this button, the highest permanent fan speed 3 (intensive ventilation) is set.
	Button Boost ventilation mode	Touching this button sets the boost ventilation mode. It initiates an automatic timer programme in which the fan speed 3 is active for a duration of 15 minutes (factory setting).
	Button Un-occupied mode	Pushing this button sets the un-occupied mode. For the duration of an absence, activating the un-occupied mode sets a reduced ventilation intensity for moisture protection. A different button must be activated to end this function.
	Button Automatic mode Automatic timer mode Automatic sensor mode	The automatic mode has 2 automatic functions – automatic timer and automatic sensor, in which the manual settings are deactivated upon touch. With the automatic timer mode, different fan speeds (FS0, FS1, FS2 or FS3) can be stored for every day of the week with a duration of 15 minutes. This “fan speed weekly profile” can be configured and individually adjusted in the menu settings/sub-menu automatic timer. The automatic sensor mode controls the fan according to a pre-set linear characteristic curve depending on an analogue room air quality sensor (also a combination of CO_2, air humidity and temperature).
	Button Menu mode	By touching this button, you enter the Information, Settings and Set-up menu.
	Button Standby mode	The standby function sets the ventilation unit to an energy saving mode. In the standby mode the total power consumption of the unit drops to less than 1 W. The screen display becomes dark, but the touch pad remains active for “waking” the system. Touching the touch pad is enough to end the standby mode.
	Button Help	By touching this button, you enter a context-sensitive help menu. If this key is grey, then there is no help text available.
	Button Activate key lock	By touching this button, the touch pad is deactivated except for this button. The screen is dimmed and inactive (cleaning status).
	Button Deactivate key lock	By touching and holding this button (approx. 2-3 s) you return to the start menu.
	Button Check mark	By touching this button, the desired or available parameter is selected or confirmed.
	Button Enter	By touching this button, you can navigate in the various sub-menus. Changed parameters are saved to the storage.
	Button Cancel/return	By touching this button, you move from a menu to the next higher menu level without saving and changed data.
	Signal Messages	A blinking yellow warning triangle on the top of the right side indicates an information or an error. Information is registered in the Information/Current message menu and errors in the Information/latest messages menu.

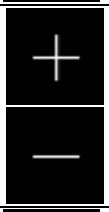
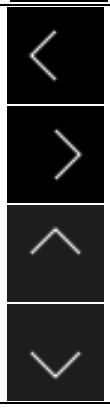
	Signal Filter symbol/filter running time	To ensure cyclic filter inspection, the control has an integrated operating hours counter. The operating time is subtracted in a count-down manner from the pre-set filter running time and indicated in days under the filter symbol. The filter symbol colour changes from white to yellow, when the filter running time ≤ 10 d and from yellow to red if the filter running time has expired. When the filter runtime is expired the message “replace filter” is created.
	Buttons + / -	By touching the button, you can change the menu values (e.g. fan speeds in 1% increments or the time in minute or hour increments). **The data is only saved when the enter button is touched!**
	Buttons Navigation	By touching the navigation buttons left/right and up/down you can navigate in the menus to select the desired parameter in the respective menu level. If several values can be adjusted in a menu (e.g. for date and time: day, month, year, hours, minutes) you can select the individual values to be adjusted and then change them via +/-.

Table 4: TFT control panel operations and signals

4.3 Menu structure of the TFT control panel

The menu structure consists of the start menu and the three main menus (Information, Settings and Setup). The start menu is shown upon activation of the TFT touch pad. The main menus are each divided into sub-menus that allow access to information or parameter changes.

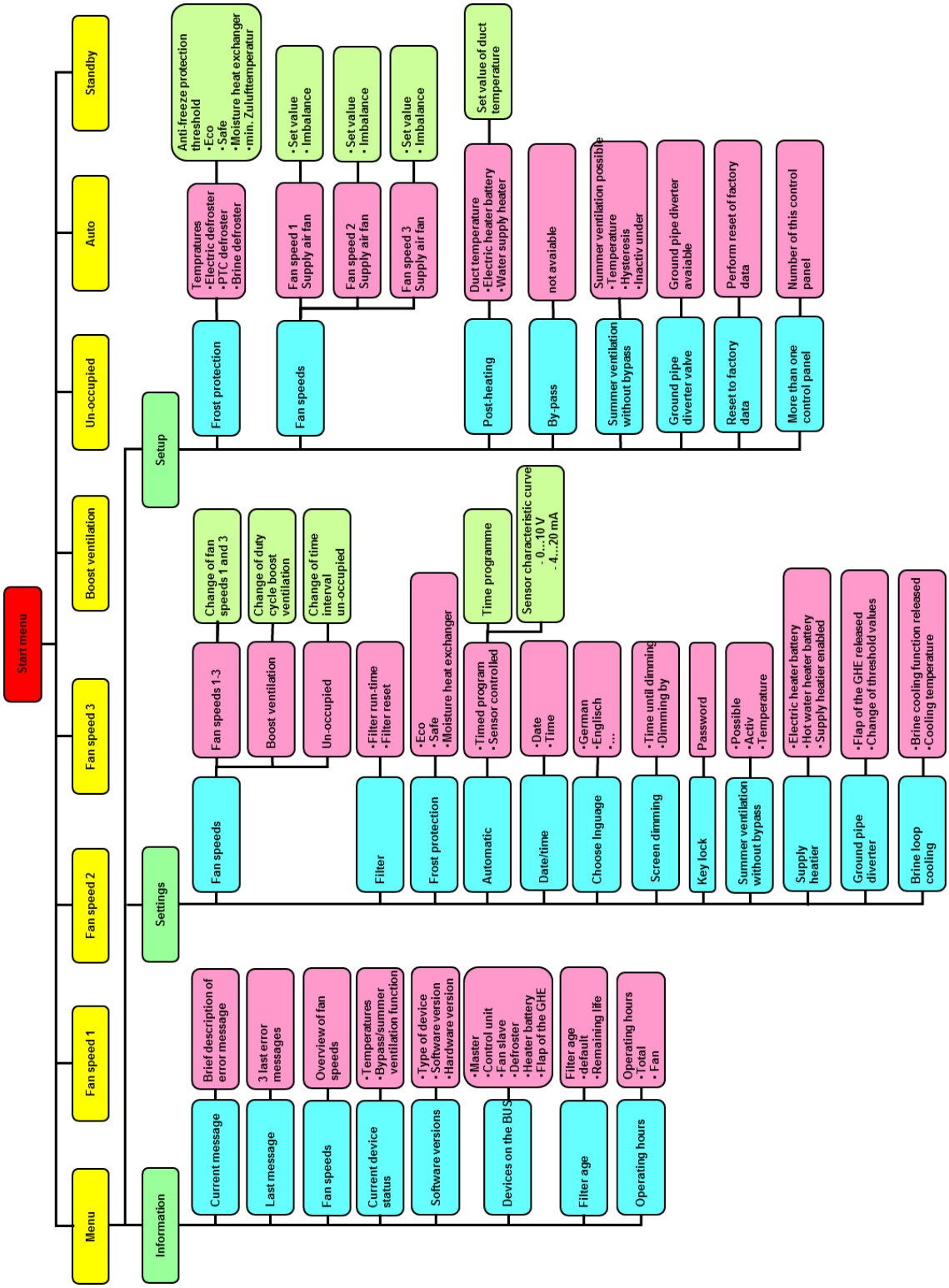


Fig. 5: Menu structure of the TFT control panel

4.3.1 Main menu Information

The main menu ***Information*** is divided into eight sub-menus. In the sub-menus information regarding the current unit status as well as selected factory settings (e.g. unit type) are displayed. The respective sub-menus are selected with the navigation buttons and opened via Enter.

4.3.1.1 Sub-menu Current message

In this sub-menu, information (e.g. replace filter) or errors (e.g. sensor disruption) are shown as current messages. In addition to this message, a yellow warning triangle blinks on the top right edge of the screen. In general, only error messages result in the shutting off of the fans.

4.3.1.2 Sub-menu Last message

This is where the last three occurred errors are registered with their date and time according to the event. In addition to this message, a yellow warning triangle blinks on the top right edge of the screen.

4.3.1.3 Sub-menu Fan speeds

In this sub-menu the percentage settings of the three fan speeds 1, 2 and 3 (FS1, FS2, and FS3) as well as the pre-set active times for the un-occupied mode and boost ventilation mode are shown.

4.3.1.4 Sub-menu Current device status

In this sub-menu, the current unit-side supply air temperature and outdoor air temperature as well as the bypass status (closed/open) for units with bypass shutter or the summer ventilation status (active/inactive) for units without bypass shutter, are shown.

4.3.1.5 Sub-menu Software versions

In this sub-menu, the unit type along with the hardware and software status of the controllers included in the control system are shown.

4.3.1.6 Sub-menu Connected units

In this sub-menu check marks indicate which units are actually connected to the internal unit BUS and recognised by it.

4.3.1.7 Sub-menu Filter running time

In this sub-menu the pre-set filter running time and the current remaining filter running time are shown. The remaining filter-running time is counted down every calendar day of operation of the ventilation unit. In addition, when the pre-set filter running time is exceeded by more than 0 days, the message “Filter running time exceeded by xxx day”, is shown.

4.3.1.8 Sub-menu Operating hours

The sub-menu shows:

- Total operating hours (time during which the unit is connected to the mains voltage)
- Fan operating hours (time in which the fans are operating)

4.3.2 Main menu Settings

In the main menu ***Settings*** users can make changes that primarily serve the individual adjustments that primarily serve adjustment to their individual comfort. The respective sub-menus are selected with the navigation buttons and opened via Enter. Only sub-menus with text shaded in red can be parametrised.

The settings in the sub-menus are only saved when the enter button is touched!

4.3.2.1 Sub-menu Fan speeds

The following can be selected and adjusted with the navigation buttons:

- Fan speed 1 and fan speed 3 (in 1% increments)
- Duration of the boost ventilation (in 5 -minute increments)
- Fan intensity for un-occupied times (FS1 in min/h increments)

Symbol	Description	Explanation/Actions
	Button Fan speed 1 (FS1)	Activate FS1 with the button fan speed 1 and parametrise it with the navigation buttons. Setting range: 17% < FS1 < FS2
	Button Fan speed 3 (FS3)	Activate FS3 with the navigation button fan speed 3 and parametrise it with the navigation buttons. Setting range: FS2 < FS3 < 100%
	Permanent boost ventilation	Settings: 15 min …120 min, the air volume flow of the boost ventilation is equal to fan speed 3.
	Fan intensity for the duration of the un-occupied time for moisture protection	Settings: 15 min/h, 30 min/h, 45 min/h, the ventilation intensity of the active time of the interval is equivalent to fan speed 1.

Table 5: Parametrisation sub-menu fan speeds

4.3.2.2 Sub-menu Filter

The following can be adjusted/read here:

- Filter running time in 10-day increments
- Current remaining filter running time
- Reset of the filter running time and the counter due to exceeding the filter running time

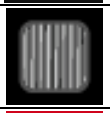
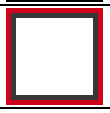
Symbol	Description	Explanation/Actions
	Duration of the filter running time	Settings: 30 d … 180 d, with the navigation button a maximum filter running time of 90 days is recommended.
	Remaining filter running time	Display of the currently remaining filter running time
	Display area Resetting the filter running time	With the check mark and Enter buttons, the filter running time can be reset to the pre-set value.

Table 6: Parametrisation sub-menu filter

4.3.2.3 Sub-menu Frost protection

In this sub-menu the frost protection mode can be set with the navigation buttons:

- ECO
- Safe
- Moisture HE (enthalpy exchanger) with its own frost protection limit

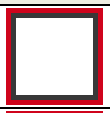
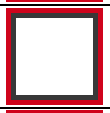
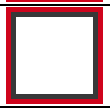
Symbol	Description	Explanation/Actions
	Display area Frost protection mode ECO	In the “ECO” mode, the standard heat exchanger can freeze under extreme conditions. The energy cost for frost protection is lower.
	Display area Frost protection mode Safe	In the “Safe” mode, freezing of the standard heat exchanger is generally prevented. The energy cost for frost protection is higher.
	Display area Frost protection mode moisture heat exchanger	In the moisture HE mode, freezing of the enthalpy exchanger (membrane moisture heat exchanger) is generally prevented.

Table 7: Parametrisation sub-menu Frost Protection

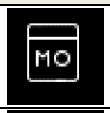
4.3.2.4 Sub-menu Automatic

Two operating modes are available in the automatic mode:

- Automatic timer
- Automatic sensor

The desired operating mode of the automatic mode is selected with the navigation buttons (red text background) and setting a check mark and confirmed via Enter.

4.3.2.4.1 Automatic timer

Symbol	Description	Explanation/Actions
	Button Calendar	By touching, a weekday (Mon-Sun) or a group of weekdays (Mon-Fri, Sat-Sun) can be selected to allocate fan speeds to specific times.
	Button FS0	The fans come to a stop.
	Button FS1	Reduced ventilation
	Button FS2	Nominal ventilation
	Button FS3	Intensive ventilation

	Cursor	The cursor marks the time in the ¼-hourly range. With the navigation buttons the cursor is navigated over the time frame in which the selected fan speed should be active.

Table 8: Automatic timer parametrisation

By selecting a group of days (e.g. Mon-Fri), the changed data are applied to each day of the group. The settings for the group “Mon-Fri” are then identical for the days “Mon”, “Tue”, ... Fr (or for the group “Sat-Sun” identical for the days “Sat”, “Sun”). To operate the system with different fan speeds and time profiles on different days, the profile of the respective day (“Mon” ... “Sun”) must be changed. Any subsequent changes in the groups “Mon-Fri” or “Sat-Sun” will overwrite the previous settings of the individual days!

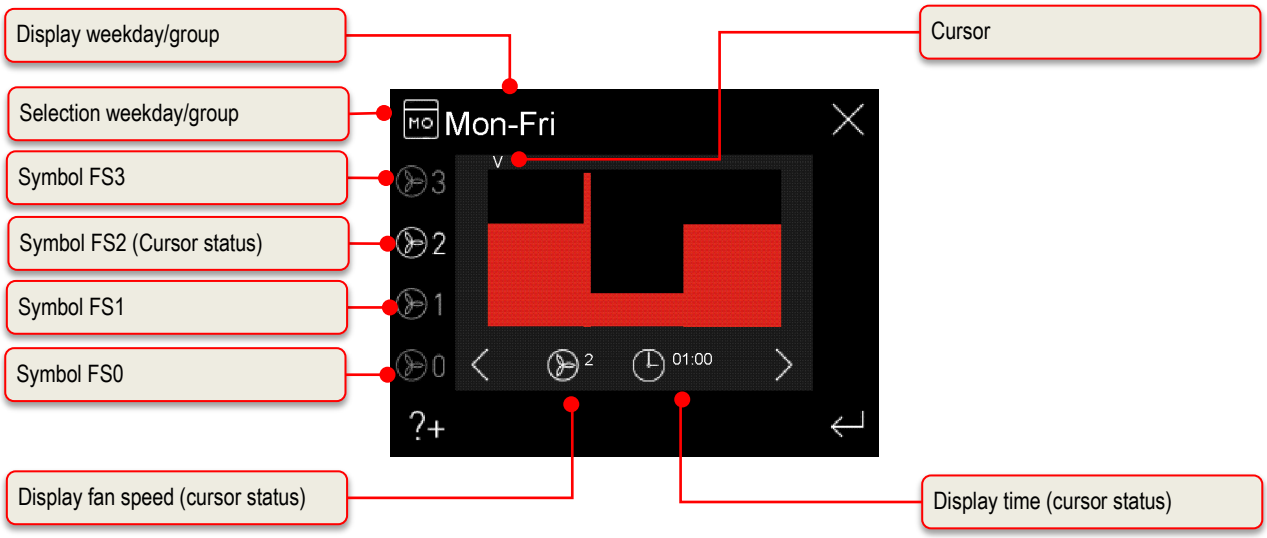


Fig. 6: Automatic timer factory setting, groups weekdays Mon-Fri

Fan speed	Time frame (Time 0^{00} - 24^{00})
FS1	8^{30} - 16^{00}
FS2	0^{00} - 8^{00} and 16^{00} - 24^{00}
FS3	8^{00} – 8^{30}

Table 9: Time frame factory setting, groups weekdays Mon-Fri

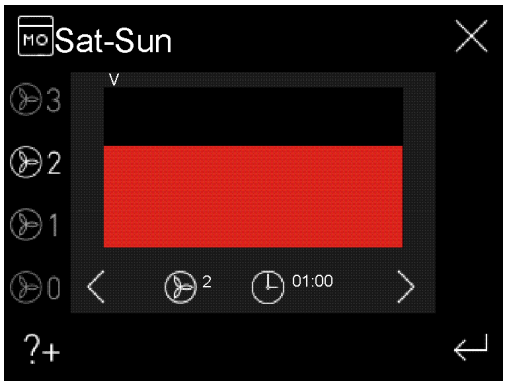


Fig. 7: Automatic timer factory setting, groups weekdays Mon-Fri

Fan speed	Time frame (Time 0^{00} - 24^{00})
FS2	0^{00} - 24^{00}

Table 10: Time frame factory setting, groups weekdays Sat-Sun

The automatic timer factory setting can only be restored via the main menu Setup.

If the operating mode “Automatic timer” is active in the automatic mode, then the active fan speed (only FS 1-3) is displayed in grey according to the time frame in addition to the automatic mode icon.

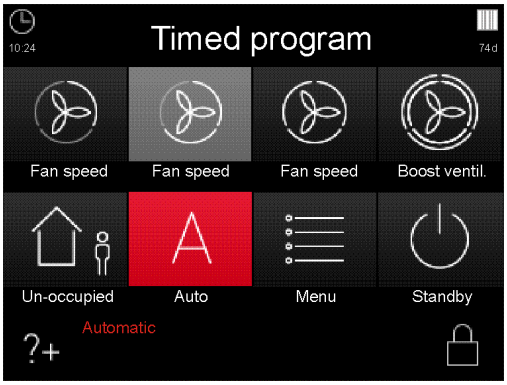


Fig. 8: Automatic mode automatic timer with active fan speed FS2

4.3.2.4.2 Automatic sensor

The operating mode **Automatic sensor** of the automatic mode requires the connection of an outdoor air quality / CO_2 or moisture sensor to the control of the ventilation unit. The analogue signal of the sensor is interpreted as a control signal for the rotational fan speed of the ventilation unit. When applying several sensors in a ventilation system, the output signal of a maximum value module will be used to control the ventilation unit.
First, the navigation buttons (red text background) and check marks are used to select whether the sensor is equipped with a power or voltage output (Electrical power: 4...20 mA, voltage: 0...10 V) and confirmed via Enter. Then the lowest point (characteristic curve start value p1) and the highest point (characteristic curve end value p2) of a characteristic curve assumed to be linear between these two points for the fan speed are parametrised between 17% and 100%. The nominal values (red text background) to be parametrised can be selected with the navigation buttons and the values adjusted with the +/- buttons.

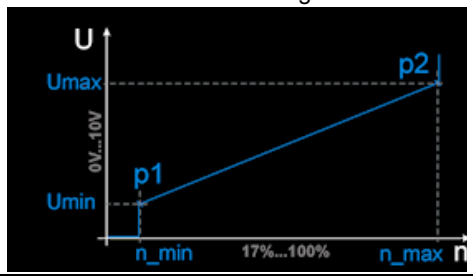
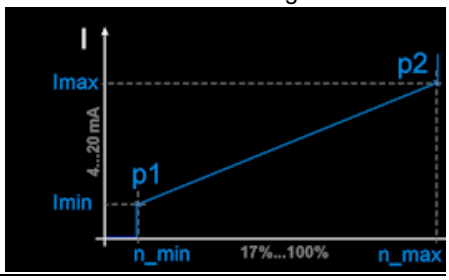
Symbol	Description	Sensor output signal	
		0…10 V characteristic curve	**4…20 mA characteristic curve**
p1	Characteristic curve start value	Umin (V) ≙ n_min (%)	Imin (mA) ≙ n_min (%)
p2	Characteristic curve end value	Umax (V) ≙ n_max (%)	Imax (mA) ≙ n_max (%)
		U-n characteristic curve diagram	I-n characteristic curve diagram
			

Table 11: Automatic sensor parametrisation

Plausibility check for sensors with power output:

- Concerns: Input A1 on the master controller (configured as 4...20 mA input)
- Error message if at the input a value of 0...3 mA is present for more than 1 s
- Reset of the error if I > 3.5 mA for at least 1 s

4.3.2.5 Sub-menu Date/time

In this menu the date and time are set. The nominal values (red text background) to be parametrised can be selected with the navigation buttons and the values adjusted with the +/- buttons.

4.3.2.6 Sub-menu Language selection

In this menu, the local language for the TFT control panel can be selected via the navigation buttons.

4.3.2.7 Sub-menu Screen dimming

In this menu, individual screen brightness and the duration until the dimming takes effect after non-operation can be adjusted using the navigation buttons.

- Duration until dimming in 1 min increments
- Dimming in 5% increments

Symbol	Description	Explanation/Actions
	Duration until dimming	Settings: 1 min...10 min until the dimming is activated after the TFT control panel was last used
	Degree of dimming	Settings: 5%...95% in relation to the basic brightness of the active screen
	Button Light bulb	With this button the set dimming can be tested. The screen is dimmed for 5 seconds according to the setting.

Table 12: Automatic sensor parametrisation

4.3.2.8 Sub-menu Key lock

The user interface of the TFT control panel can be deactivated by a password-protected key lock.

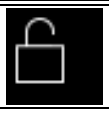
Symbol	Description	Explanation/Actions
	Password query	Enter the password <11111> and confirm with Enter. The current status “key lock” will be displayed on the touch pad.
	Button Deactivate key lock	After touching the button, the password is requested to deactivate the key lock. Enter the password <11111> and confirm with Enter.

Table 13: Activating /deactivating the key lock

4.3.2.9 Sub-menu Summer ventilation without bypass

The summer ventilation without bypass serves free cooling in ventilation systems without bypass shutter. When it is activated, the exhaust air fan is switched off and thus heat transfer from the extract air to the supply air prevented. To check the plausibility of the temperature conditions, the exhaust air fan is switched on additionally for 2 minute per hour to the currently active fan speed.
This menu indicates whether summer ventilation without bypass is possible. The operating mode summer ventilation without bypass can be released or not. The release of the summer ventilation function is selected with the navigation buttons (red text background) and setting a check mark and confirmed via Enter. In addition, the temperature limit for the summer ventilation function can be selected with the navigation buttons (red text background) and adjusted with the +/- buttons. If the boost ventilation mode is activated during the active phase, the summer ventilation is interrupted for the duration of the boost ventilation.

Abbreviation	Description	Explanation/Actions
t_som	Temperature limit summer ventilation	Temperature limit setting range: 20 °C…30 °C The summer ventilation is active when the extract air exceeds the set temperature limit and the outdoor air at the location of the unit is lower than the extract air at the location of the unit. In addition, the outdoor air at the location of the unit must be higher than the set limit for the outdoor air.

Table 14: Temperature limit summer ventilation without bypass parametrisation

To prevents draughts due to supply air temperature that is too cold, summer ventilation remains inactive below an outdoor air limit temperature. The limit value of the minimum outdoor air temperature can be adjusted in the main menu Setup between 12 °C ... 20 °C (factory setting: 13 °C).

4.3.2.10 Sub-menu Supply heater

In this menu, a potentially existing supply heat module (electric heating register or hot water heating register) is displayed. The supply heater function can be activated or deactivated. The release of the supply heater function is selected with the navigation buttons (red text background) and setting a check mark and confirmed via Enter.

4.3.2.11 Sub-menu Ground heat exchanger shutter

In this menu, a potentially used GHE shutter (ground heat exchanger shutter) is shown. The GHE shutter function can be activated or deactivated. The release of the GHE shutter is selected with the navigation buttons (red text background) and setting a check mark and confirmed via Enter. In addition, the temperature limits for switching the GHE shutter can be selected with the navigation buttons (red background) and adjusted with the +/- buttons.

Abbreviation	Description	Explanation/Actions
t_aut_max	Maximum external temperature	Adjustment range upper limit: 15 °C…30 °C If the external temperature is above the set limit value, the GHE shutter opens the outdoor air pipe to cool the outdoor air. → Cooling function
t_aut_min	Minimum external temperature	Adjustment range lower limit: -10 °C…14.5 °C If the external temperature is below the set limit value, the GHE shutter opens the outdoor air pipe to heat the outdoor air. → Frost protection function

Table 15: Temperature limit GHE shutter parametrisation

4.3.2.12 Sub-menu Brine defroster cooling

In this menu a potentially present Brine defroster is shown. The cooling function of the brine defroster can be activated and deactivated. The release of the brine defroster is selected with the navigation buttons (red text background) and setting a check mark and confirmed via Enter. In addition, the temperature limit for the cooling function can be selected with the navigation buttons (red background) and adjusted with the +/- buttons.

Abbreviation	Description	Explanation/Actions
t_sol	Brine cooling function temperature limit	Adjustment range: 15 °C…30 °C If the entering outdoor air temperature at the brine defroster is above the set limit value, the brine defroster is activated for cooling the outdoor air. → Cooling function

Table 16: Temperature limit brine defroster parametrisation

4.3.3 Boost ventilation mode with external boost ventilation key

Boost ventilation keys are usually installed in rooms from which air is extracted, such as bathrooms, toilets or kitchens. In this way, maximum ventilation can be activated locally within these rooms for a specific period to enable rapid extraction of high humidity and odours. When this control module is activated, the functional features and displays described for the boost ventilation mode with LED control panel or TFT control panel apply. The boost ventilation mode is restarted each time it is activated and interrupts the current operating mode for the set duration. Afterwards, the unit reverts to the previously active operating mode. A manual change of the operating mode via connected control panels stops the boost ventilation function.

4.4 Maintenance by the user

For the user, maintenance of the ventilation unit and system is limited to replacing the filters periodically and cleaning the supply and extract air valves. The filters should be inspected every three months. Filter replacement should be carried out as necessary, but no later than once every six months.
As part of this process, please inspect the other filters in the ventilation system and replace them if necessary. The filter mats on the extract air valves (e.g. bathroom, kitchen, WC) should be replaced or cleaned every 2–3 months or when checking the degree of contamination at one's own discretion.

If the maintenance work is not carried out regularly, this will affect the functionality of the comfort ventilation system in the long run!

4.4.1 Replacing the unit filters

The system must not be operated without filters. During filter replacement and maintenance work, the ventilation unit must remain switched off!

Two high-quality original filters from the manufacturer are installed in the FOCUS unit. The filters in the FOCUS unit must be inspected following the respective message of the control panel or after display of a programmed digital output signal. In doing so, proceed as follows:

1. Set the unit to the standby mode or disconnect it from the mains.
2. Press the two snap fasteners **A** on the bottom of the unit.

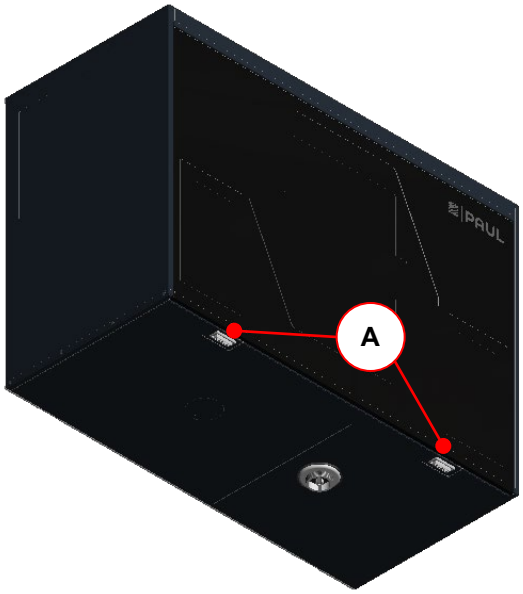


Fig. 9: Pressing the snap fasteners

3. Remove the front panel **B** gradually as indicated by the arrows. To do this, open the front panel in the snap fastener area at an angle of no more than 15° and unhook it from the lock seam of the housing.

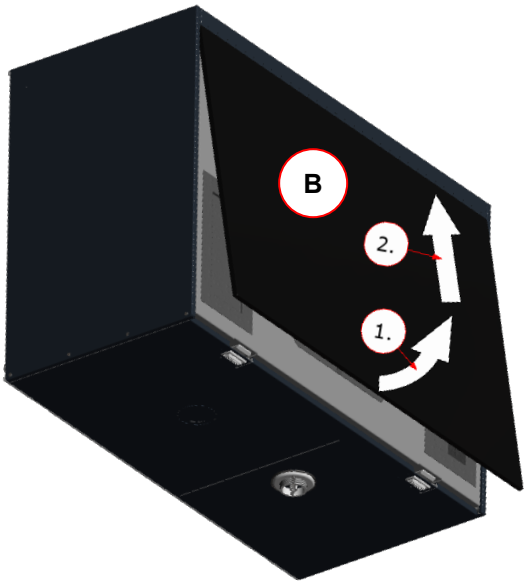


Fig. 10: Opening the front panel

4. Use strap **C** to pull the EPP foam cover **D** for the filters and heat exchanger out of the EPP housing. To do this, grip the strap at one end and pull while using your other hand to support the unit.

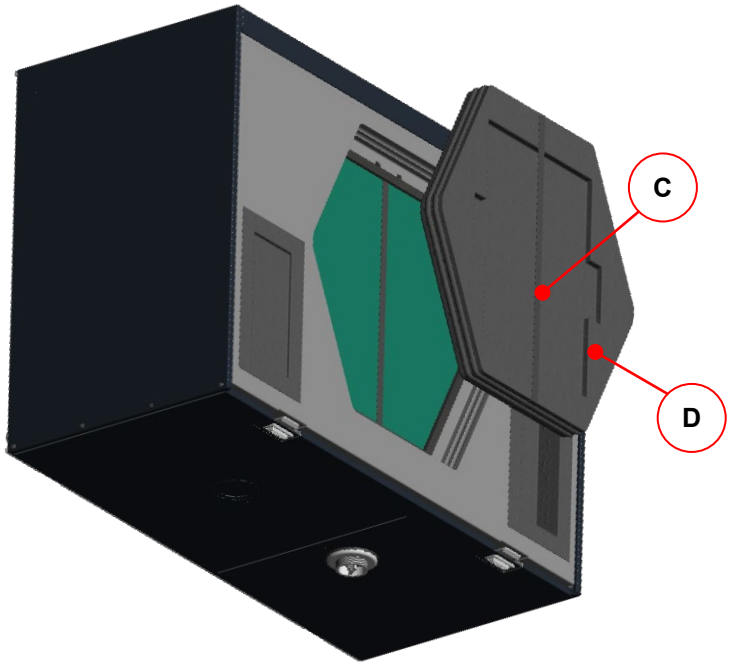


Fig. 11: Pulling out the EPP foam cover of the filters and heat exchanger

5. Holding them by the strap, pull the filters **E** out of the filter compartments.

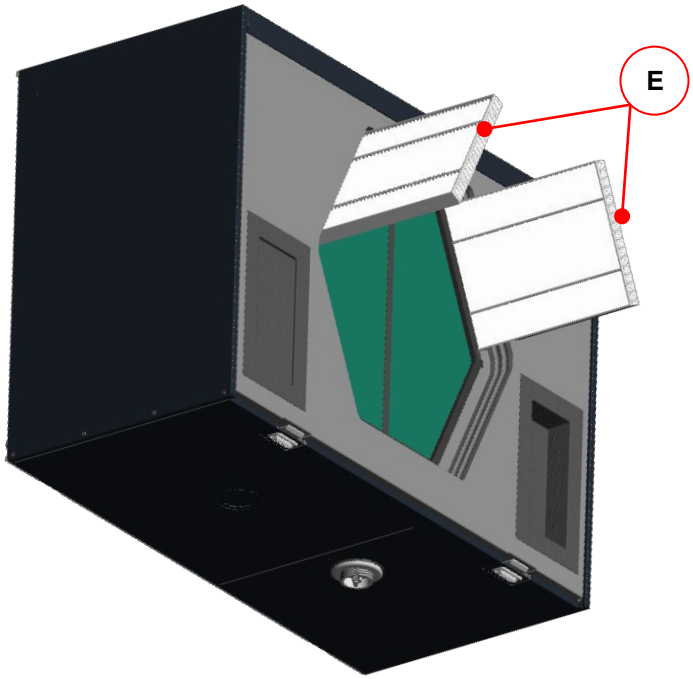


Fig. 12: Pulling out the filters

6. On the filter frame of each filter, there is an arrow to indicate the prescribed direction of flow. Insert the new filters according to their designated direction of flow **F**.

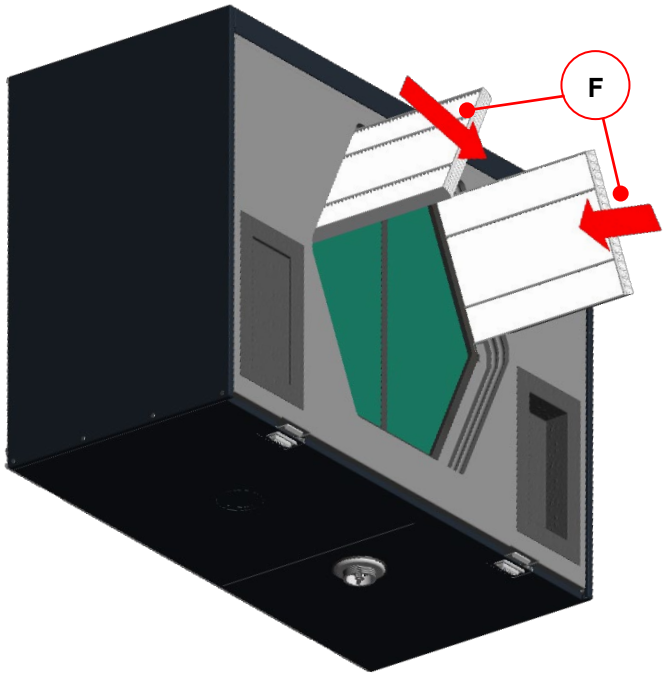


Fig. 13: Inserting the new filters according to the direction of flow

Depending on the unit type, filters with filter class ISO ePM1 must be inserted into the filter compartment of the outdoor air connector in accordance with the type label! The outdoor air connector is indicated by the symbol

on the air connections sticker.

7. Attach the EPP foam cover to enclose the slide-in filter compartments and heat exchanger.
8. Hook the front panel into the lock seam of the housing. Then press it down onto the housing in the snap fastener area until it engages in the snap fasteners.
9. Reconnect the unit to the mains.

4.4.2 Resetting the filter running time

After completing the filter replacement, the counter for the filter running time must be reset. The filter running time can be reset with a programmed digital input signal or with each connected control unit.

4.4.2.1 Reset filter running time with LED control panel

Symbol	Description	Explanation/Actions
	LED 10 Filter running time signal	If LED 10 lights up, then the filter running time has expired and a filter inspection must be carried out.
	Key Reset filter running time	To reset the filter running time, press and hold this key for > 3 s. LED 10 goes out. The counter starts the set filter running time.

Table 17: Reset filter running time with LED control panel

4.4.2.2 Reset filter running time with TFT control panel

Symbol	Description	Explanation/Actions
	Filter running time expired signal	If the symbol appears then the filter running time has expired and a filter inspection must be carried out.
	Button Menu mode	By touching the menu mode button, you access the main menu.

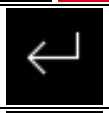
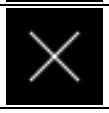
	Buttons Navigation	Touch the navigation buttons to select the main menu Settings and confirm with the Enter button.
	Buttons Navigation	Touch the navigation buttons to select the sub-menu Filter and confirm with the Enter button.
	Button Check mark	By touching the check mark button, the filter running time reset is selected
	Button Enter	Confirm by touching the Enter button
	Button Cancel/return	Exit the menu levels by touching the cancel/return button until the start menu appears.

Table 18: Sequence of steps to reset filter running time with TFT control panel

Use check list A to document the maintenance work completed.

4.4.3 What should I do in case of a fault?

Contact the installation technician in case of a fault. Note the error display or malfunction code of the used control panel. Note down the type of your FOCUS unit; see the type label on the side of the unit where the air connections are located.
The mains connection must always be established, unless the FOCUS unit has to be shut down due to a serious fault, for maintenance work or for some other urgent reason.

As soon as the unit is disconnected from the mains, the apartment will no longer be mechanically ventilated. This may result in moisture and mould problems in the apartment. Therefore, you should avoid switching off the FOCUS unit for long periods.

4.5 Disposal

The unit must be disposed of in an environmentally-friendly manner. Do not dispose the unit with your domestic waste.

Packaging materials, consumables and waste equipment must be disposed of at the end of their useful life in accordance with the applicable regulations in your country.

5 Chapter for qualified personnel

5.1 General system configuration

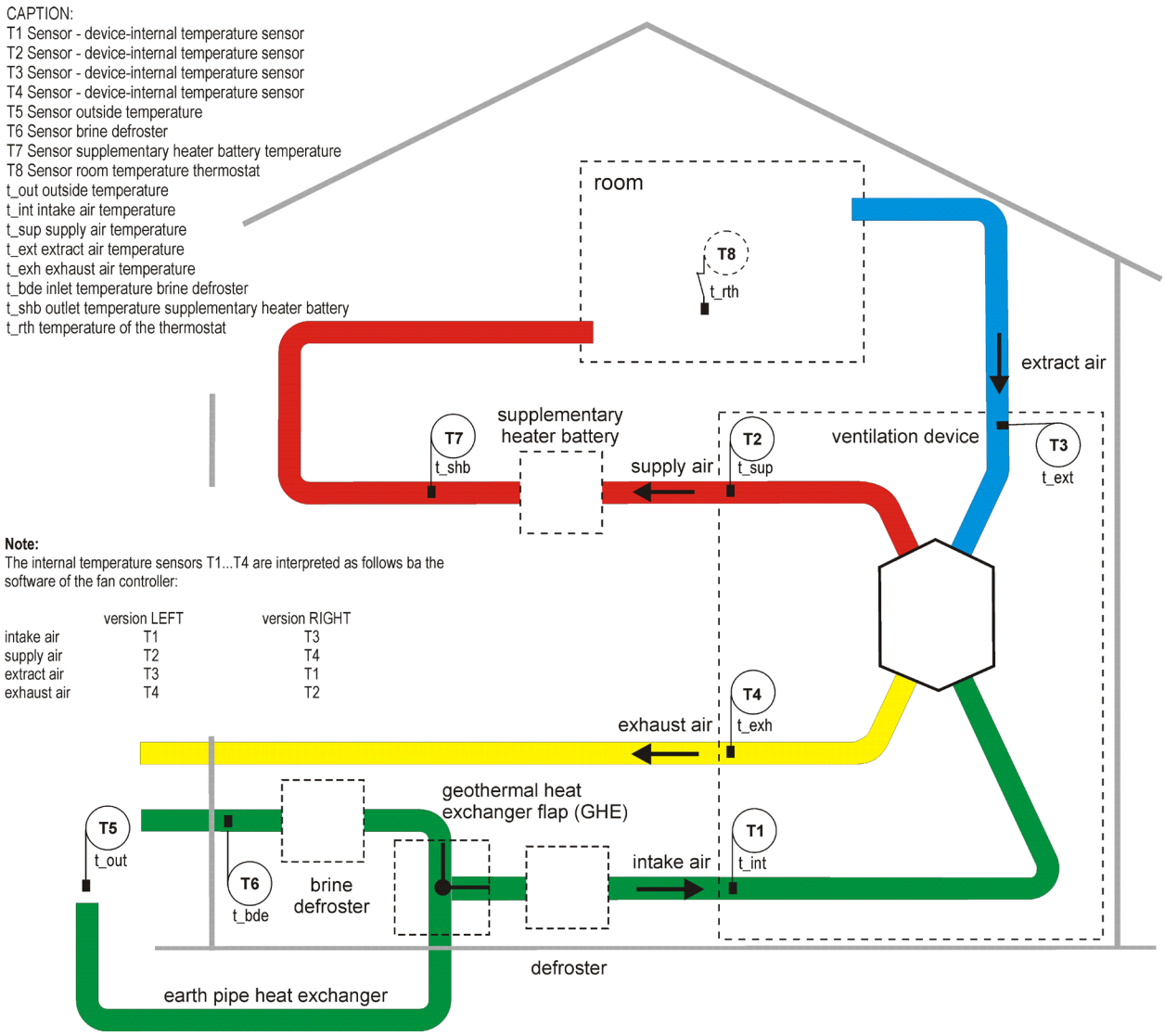


Fig. 14: General system configuration with FOCUS, version LEFT

The principal system configuration is general and does not reflect the system configuration of the project-specific ventilation system! It presents the technical system arrangement of sensors and ventilation components.

5.2 Installation requirements

The following requirements must be assured for the correct installation:

- Installation in accordance with the general and locally applicable safety and installation regulations, such as the electric and water utilities etc. and in accordance with the regulations stipulated in this instruction manual
- Frost-free indoor area
- Power supply 230 VAC, 50–60 Hz
- Sufficient space for connecting the ventilation tubes and for maintenance work

5.2.1 Transport and packaging

Proceed with care when transporting and unpacking the FOCUS unit.

Do not remove the unit packaging until right before installation! Before and during interruptions to the installation, the ventilation tube connections must be closed with the air connector sealing caps to prevent construction site dust and moisture from entering.

5.2.2 Checking the scope of delivery

If the delivered product is found to be damaged or incomplete, please contact the supplier immediately. Included in the scope of delivery are:

- FOCUS ventilation unit, check the type label to make sure that the unit is the right one (type, version as per type label)
- Fastening sheet with two self-adhesive spacers (rubber buffers)
- 230 V mains cable with non-heating device plug connection, 2 m long
- CAT5 network cable, 1.5 m long
- Adapter board
- Adapter board housing made of transparent plastic
- Control panel(s), type and number depending on the order
- Instruction manual
- Product labels showing energy efficiency

5.3 Mounting

The FOCUS unit must be installed horizontally. Before mounting the unit on a wall, check that the wall construction has the necessary load-bearing capacity (net weight of the FOCUS unit is 25 kg) and that the fastening sheet can be mounted securely. In case of unsuitable walls, we recommend using the floor stand for fitting to the floor (optionally available). This prevents potential transfer of structure-borne noise as much as possible.
The distances from adjacent surfaces shown in Fig. 15 must be observed. Please note that these are not shown to scale. The surfaces are allowed to be made from flammable materials.

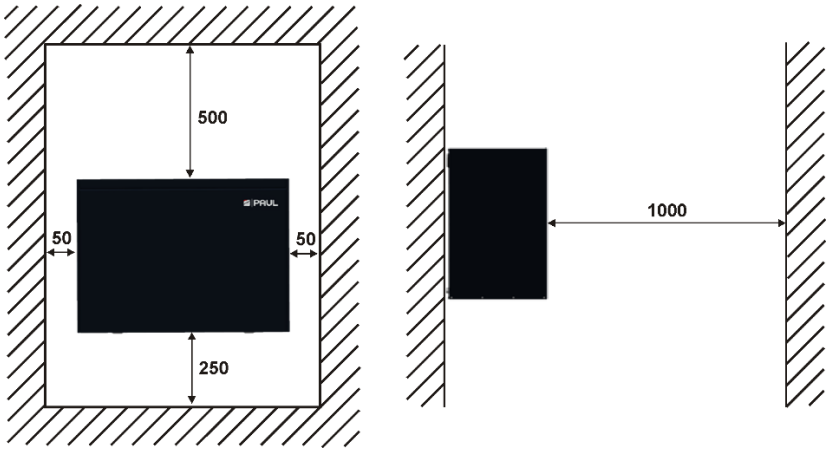


Fig. 15: Distances from adjacent surfaces in mm

Make sure you leave at least 1 m clear in front of the FOCUS unit for subsequent maintenance work.

5.3.1 Wall mounting

Proceed as follows for wall mounting:

1. Mount the supplied fastening sheet **A** horizontally on the wall with the lugs **B** pointing upwards. Use the slotted holes **C** to fix it in place with suitable fixing materials.

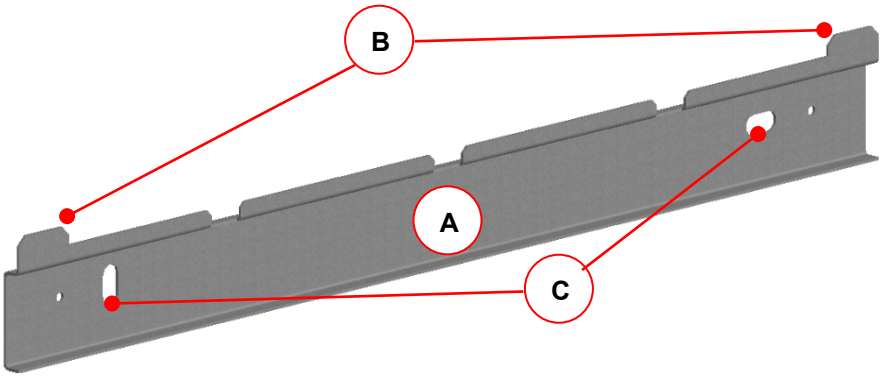


Fig. 16: Fastening sheet for wall mounting

Observe the minimum distance required in relation to the finished floor!

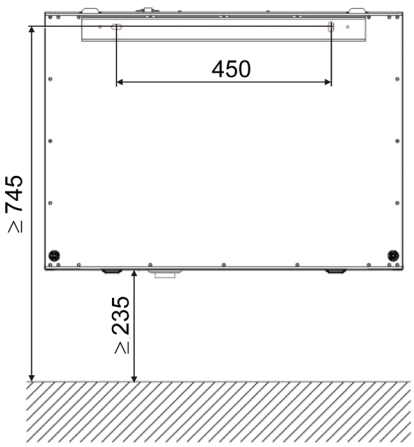


Fig. 17: Wall mounting (version LEFT)

2. Stick one of the supplied self-adhesive spacers **D** in each corner on the rear of the unit.

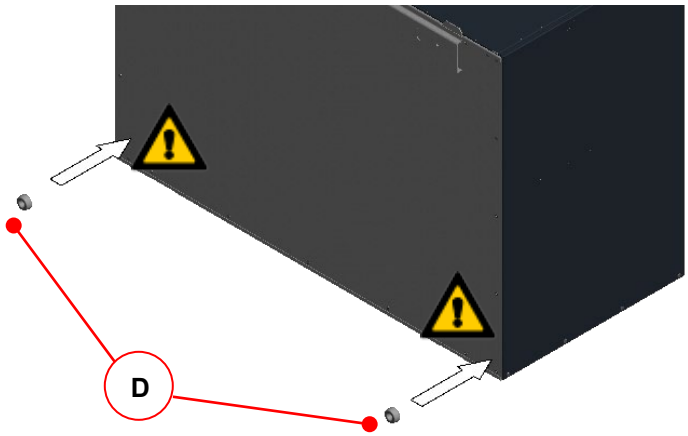


Fig. 18: Spacers mounting

3. Hook the FOCUS unit onto the fastening sheet by inserting the lugs **B** into the slots **E** in the lock seam at the top of the rear cover.

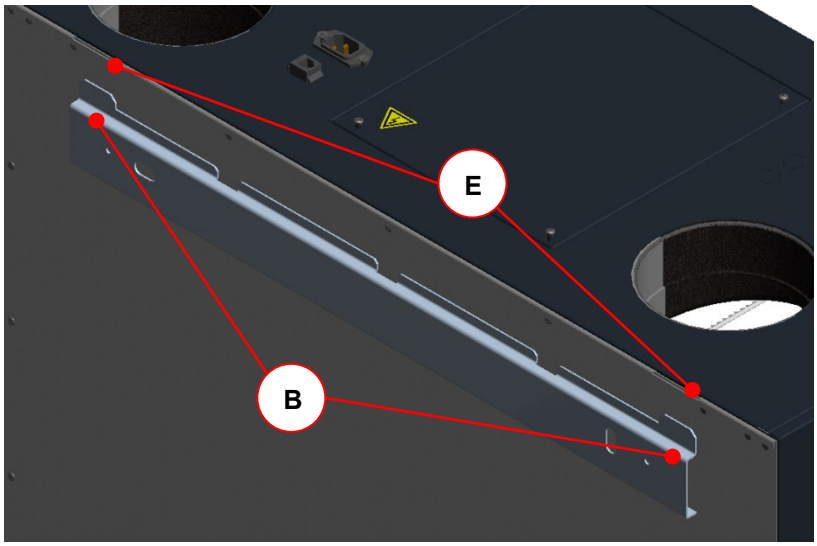


Fig. 19: Hooking the unit into the fastening sheet

5.3.2 Fitting on Floor stand (optional)

The dimensions of the floor stand are as follows: footprint = (630 x 300) mm; variable height adjustment = between 280 mm and 320 mm using adjustable feet. The floor stand consists of two long base parts (each with two adjustable feet) and two short base parts.

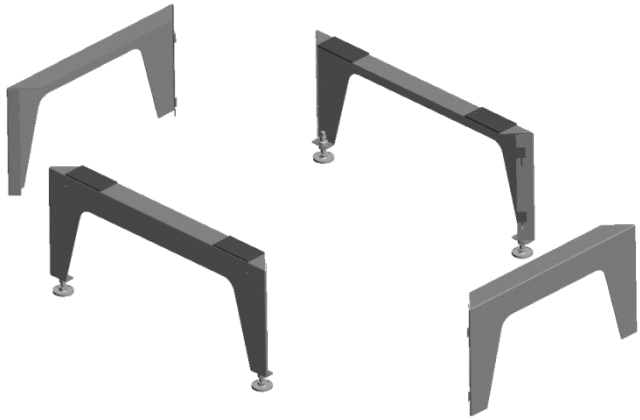


Fig. 20: Individual parts of the floor stand

Assemble the individual parts of the floor stand as shown in the illustrations. Proceed as follows.

1. Working in the direction of the arrow, place the short base part at right angles to the long base part at a staggered height.

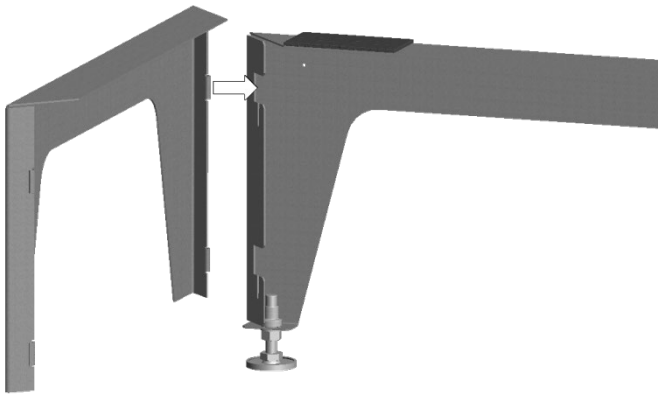


Fig. 21: Assembling the base parts

2. Working in the direction of the arrow, push the lugs **A** of the short base part into the guide slots **B** of the long base part so that they engage and fix the two base parts together.

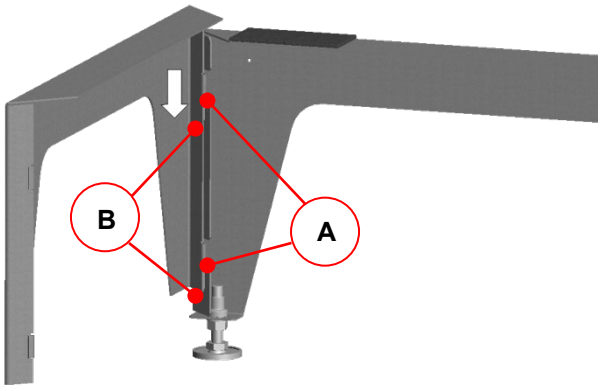


Fig. 22: Fixing the two base parts

3. Now connect the other two base parts in the same way.

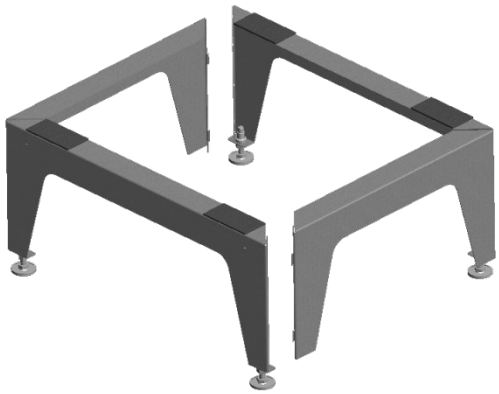


Fig. 23: Two sets of base parts fixed together

4. Mount the fastening sheet **C** on the long base part with the lugs pointing upwards. To do this, screw the two Parker screws **D** into the holes provided **E** on the base part so that they go through the fastening sheet.

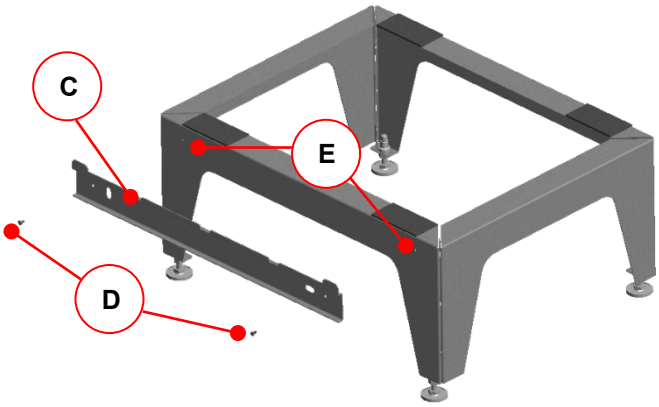


Fig. 24: Mounting the fastening sheet on the base part

5. Now use the height-adjustable feet **F** to adjust the fully assembled floor stand on the designated set-up area so that it is plumb vertical and stable. Then fix it in this height position with the lock nuts of the adjustable feet.

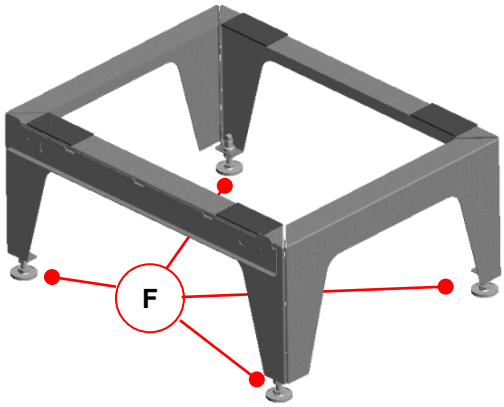


Fig. 25: Aligning the floor stand

6. Place the FOCUS unit on the floor stand so that the lugs of the fastening sheet hook into the slots in the lock seam at the bottom of the unit's rear cover. See Fig. 19.

5.3.3 Connecting the ventilation tubes

The following points must be observed when installing the ventilation tubes:

- Attach the different types of ventilation tube provided with the ventilation system to the relevant connectors according to whether the unit is the LEFT- or RIGHT-hand version (see air connections sticker on control cover plate)

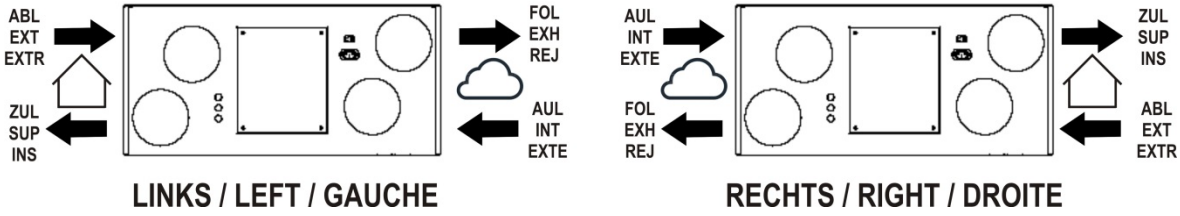


Fig. 26: Arrangement of the air connections Unit version LEFT and unit version RIGHT

- Remove the sealing caps from the air connectors
- Using ventilation tube materials with the lowest possible air resistance, connect the technical ventilation components to one another so that they are air-tight
- The unit connectors are made from EPP and have a sleeve size of DN 125
- The outdoor air and exhaust air tubes must be insulated in such a way that they are sealed against vapour diffusion. This prevents condensate from forming on the outside of the ventilation tubes
- If – when installing the exhaust air tube – it is not possible to avoid a low point between the exhaust air connector on the unit and the exhaust air outlet, a connection to the condensate drain must be provided at this point This is because the exhaust air is saturated with steam at cold outdoor temperatures and droplets may be deposited on the inner wall of the tube
- The exhaust air pipework that runs from the unit connector to the roof terminal must not be straight. Otherwise, any ice that forms could drop onto the blades of the exhaust air fan when it thaws, causing damage to the blades.

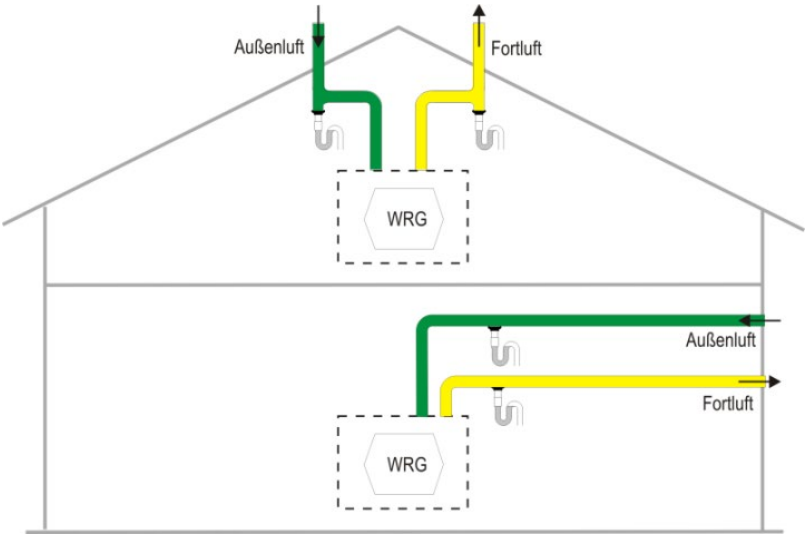


Fig. 27: Drainage arrangement for outdoor and exhaust air tubes

- If an attenuator is fitted at the exhaust air connector, it must be routed upwards with a bend to prevent it being drenched by condensate running back from the exhaust air tube
- If the exhaust air is routed above the roof, a double-walled or insulated roof passage must be installed. This prevents condensate from forming between the roof boards
- For the supply and extract air ducts, we recommend using thermal and vapour-tight insulation to prevent unnecessary temperature losses in both the summer and winter.

5.3.4 Connecting the condensate drain hose

In the heat exchanger, the warm extract air is cooled by the outdoor air. This causes the moisture in the room air to condense inside the heat exchanger. The condensate that forms in the heat exchanger is routed to the sink valve. The sink valve screw connection **A** has a 1¼" male thread for the siphon. This is located on the bottom of the FOCUS unit, with the exact position varying according to the unit version and design.

Fig. 28: Sink valve screw connection on unit version LEFT

A siphon must be attached to the screw connection so that the upper edge of the surge tank is at least 60 mm below the screw connection and the minimum liquid level is 60 mm.

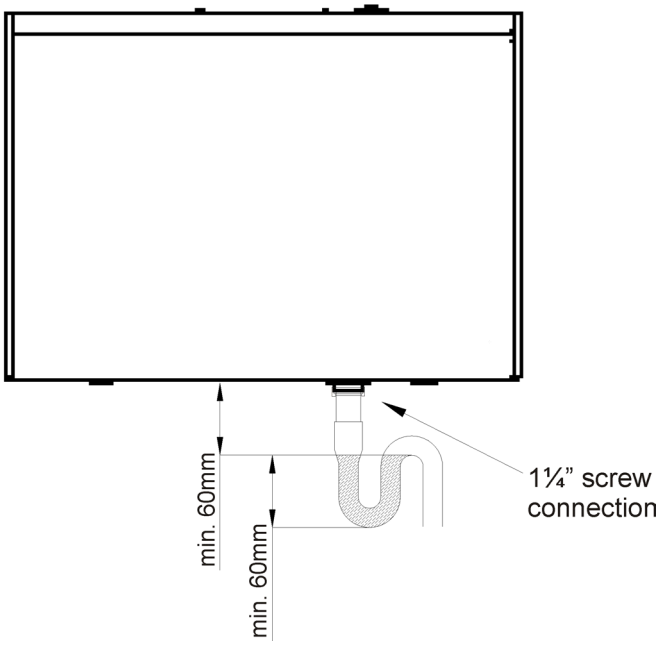


Fig. 29: Condensate drain (version LEFT)

The siphon must not be connected directly to the sewer tunnel network (e.g. whereby the condensate flows freely into a funnel with a siphon connected to the sewer tunnel)

Siphons can dry out! The siphon must always be topped up with water when:

- **The unit is commissioned**
- **The siphon starts making (slurping/gurgling) noises**

A dry siphon is generally recommended, especially when using an enthalpy exchanger! (No functional restrictions if it dries out, no need for a 2nd siphon)

5.4 Electrical connections

Electrical connections are to be implemented in accordance with the standards specific to the relevant country and by qualified personnel only!

The electrical mains power supply of the FOCUS is via the 3-core non-heating device plug connection **A** with the mains cable. The CAT5 network cable is connected to the RJ45 socket **B**. Both plug connections are found on the top of the unit next to the cover sheet of the control. The cover sheet is fixed flush with the surface with 4 screws **C**. Analogue and digital input/output signals from sensors (e.g. room air quality sensors) or actuators (e.g. boost ventilation keys) are connected to the corresponding clamping points of the Master controller **D** under the cover plate. As needed, the cable guides that are pre-punched in the casing sheet **E** must be broken out and the cables of the sensors/actuators guided through the cable glands M16.

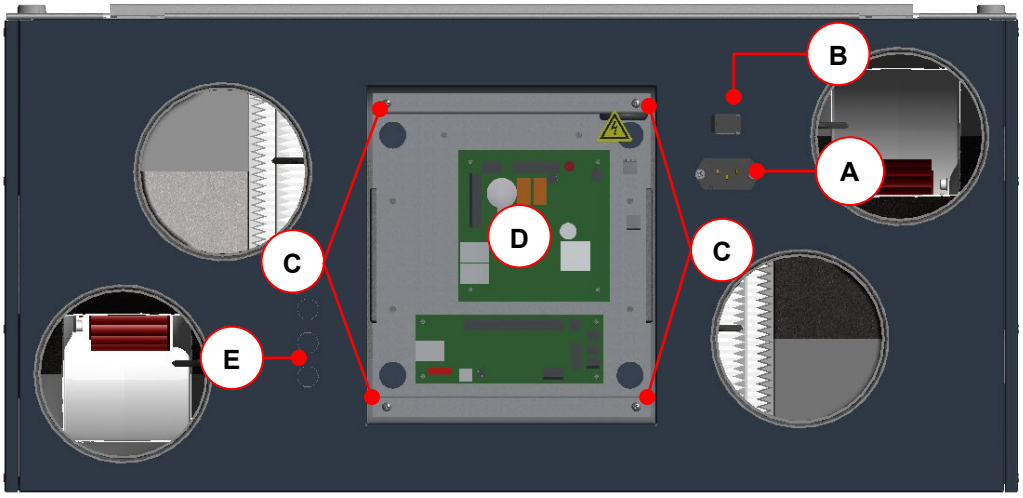


Fig. 30: Side of the casing with electrical connections

Item	Description
A	3-- pole rubber connector
B	RJ45 socket
C	Cover plate screws (4x)
D	Master Controller
E	Pre-punched cable guide (3x) for M16 cable gland
5.9.5	FOCUS circuit plan
5.9.6	Master Controller terminal assignment

Table 19: Overview of the electrical connections

The RJ45 plug connection only serve the internal system RS485-BUS! Any other use results in damage to the control and operating modules!

5.4.1 Adapter board connection

The adapter board with the double RJ45 plug connection and the 5-core screw terminal X1 serve the communication of the modules via the internal RS485-BUS. The CAT5 network cable creates the internal connection between the RJ45 socket of the NOVUS and one of the two RJ45 sockets of the adapter board.

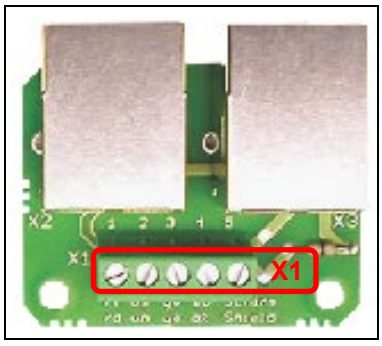


Fig. 31: Adapter circuit board

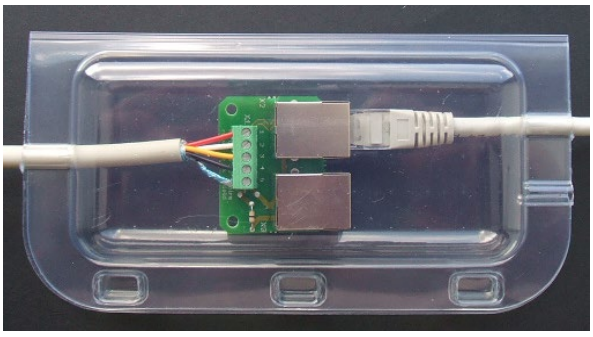


Fig. 32: Housing for adapter board

A shielded 4-core cable is connected to the 5-pin screw terminal of the adapter board, which connects the adapter board with the 5-pin screw terminal of the connection board of the control panel. To protect it from faulty voltage, short circuits and dust, the adapter board must be mounted in the clear plastic housing. The cables connected to the

adapter board must be placed in the cable ducts of the housing and fixated via the triple clip fasteners of the hinged lid. We recommend the use of a cable type J-Y(ST)Y 2x2x0.6 LG interior cable with colour coding according to VDE0815.

Terminal X1 (Adapter board / control panel)	Wire	Signal
X1.1	red	24P
X1.2	white	RX
X1.3	yellow	TX
X1.4	black	GND
X1.5	Aluminium coloured	Shield

Table 20: Terminal assignment for terminal X1 adapter board and terminal X1 control panel

5.4.2 Connecting TFT control panel

The cable type J-Y(ST)Y 2x2x0.6 must be connected to terminal X1 of the connecting board according to Table 20. The ribbon cable connects the connecting board with the board of the TFT control membrane.

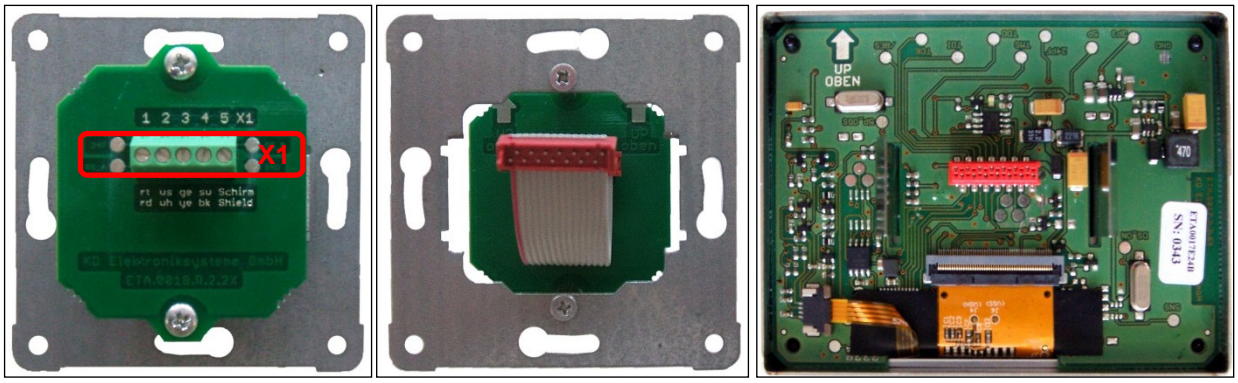


Fig. 33: Connecting board with terminal X1 on a concealed base plate; ribbon cable to the connecting board; TFT control panel board (from left to right)

The reverse current protected plugs of the ribbon cable must be carefully inserted into the sockets of the respective boards!

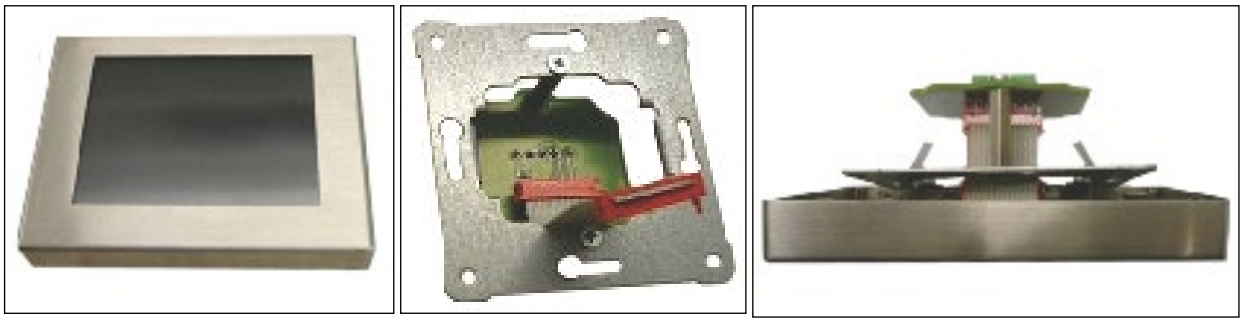


Fig. 34: Touch pad with stainless steel frame; Ribbon cable of the connecting board; touch pad with stainless steel frame latched into the concealed base plate (from left to right)

When the control panel is ready for use, the slimmer side of the stainless-steel frame must point upwards. The concealed base plate must be positioned in such a way that the ribbon cable of the connecting board is attached curved downwards to the TFT control panel. The spring steel clamps mounted to the back of the touch pad clasp into the concealed base plate and pull the stainless-steel frame securely to the wall.

5.4.3 Connecting several TFT control panels

Up to three TFT control panels can be connected as control panels for the ventilation unit. In terms of hardware, the TFT control panels must be connected in parallel to the X1 terminal of the adapter board according to the wire configuration Table 20. The TFT control panels must be commissioned in sequence and newly addressed (factory setting standard address = 1). Addressing of the TFT control panels takes place on the software level in the Setup/sub-menu More than one control panel.

Symbol	Description	Explanation/Actions
Addressing two TFT control panels		Connect the first TFT control panel
	Button Menu mode	By touching the menu mode button, you access the main menu.
	Buttons Navigation	Touch the navigation buttons to select the main menu Setup and confirm with the Enter button.
	Button Password	Password query Enter the password _ _ _ _ _ and confirm with the Enter button.
	Buttons Navigation	Touch the navigation buttons to select the sub-menu Several control panels and confirm with the Enter button.
	Buttons Navigation	Touch the navigation buttons to select the address number 2 and confirm with the Enter button.
		Connect the second TFT control panel The sequence of steps for software addressing is not needed as the address number = 1 (factory setting)
Addressing three TFT control panels		Connect the second TFT control panel Perform the sequence of steps for software addressing as before, allocate address number 3.
		Connect the third TFT control panel The sequence of steps for software addressing is not needed as the address number = 1 (factory setting)

Table 21: Sequence of steps connecting / addressing several TFT control panels

Connecting several control panels with the same address number results in a communications error!

The operating mode of the ventilation unit is based on the latest control command on one of the connected TFT control panels.

5.4.4 Connecting the LED control panel

Operating the ventilation unit is only possible with a control panel type LED control panel
The cable type J-Y(ST)Y 2x2x0.6 must be connected to terminal X1 of the connecting board according to Table 20. The ribbon cable connects the connecting board with the board of the LED control membrane.

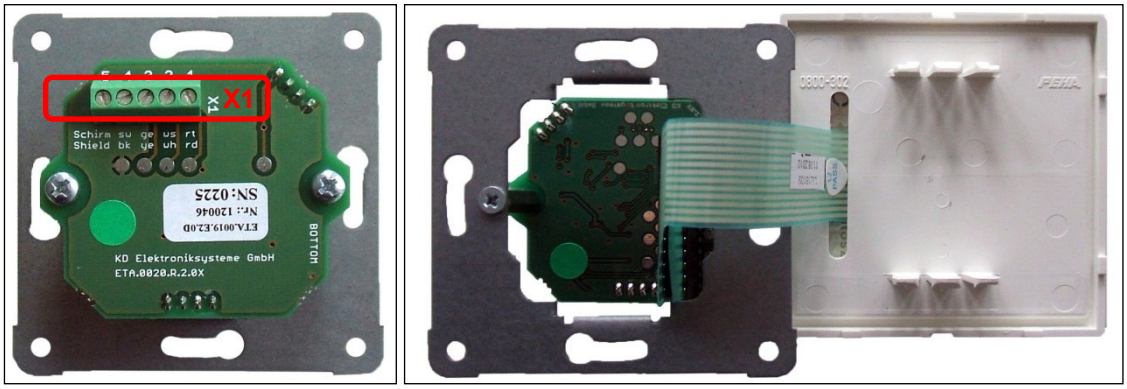


Fig. 35: Connecting board with terminal X1on concealed base plate; ribbon cable of the connecting board; rear side LED control membrane (from left to right)

During installation do not remove the ribbon cable from the connecting board, instead guide the LED control membrane diagonally through the PEHA cover frame!

5.4.5 Connecting external boost ventilation keys

Boost ventilation mode can be activated by operating one or more boost ventilation keys (connected in parallel). The keys that are usually installed as part of the switch range design are triggered when the boost ventilation mode is selected. To establish the potential-free connection between the button and the circuit terminal X1, use a 2-core cable as a minimum (recommended cable type: J-Y(ST)Y 2x2x0.6). The cable is inserted into the FOCUS through one of the pre-cut cable guides.

Master Controller X1 terminal	Wire of boost ventilation key cable
X1.12	Wire 1
X1.13	Wire 2 (GND)

Table 22: Terminal assignment of boost ventilation key connection

5.4.6 Connecting external sensors

The operating mode **Automatic sensor** of the automatic mode is controlled by an analogue sensor signal that is generated by one or several sensors. To establish the connection between the sensor module and Master Controller terminal X2, use the type of cable stipulated for transmitting the sensor signal. The cable is inserted into the FOCUS through one of the pre-cut cable guides.

Master Controller X2 terminal	Sensor module cable wire
X2.7 (analogue input1)	Wire 1(sensor signal 0–10 V or 4–20 mA)
X2.8 (GND)	Wire 2 (GND)

Table 23: Terminal assignment of analogue sensor signal connection

5.4.7 Connecting the status relay

A status relay on the Master Controller signals the operating status of the fans (factory setting).
Fan off: contacts open
Fan on: contacts closed

Master Controller X1 terminal	Contact designation
X1.9	Status relay make contact (max. 24 V switching voltage)
X1.10	Status relay two-way contact (max. 24 V switching voltage)

Table 24: Terminal assignment of status relay connection

5.4.8 Connecting external release

The operation of the system can be activated or deactivated by an external release signal. The potential-free release contacts are located next to the terminal X1 and are bridged ex-factory.

Master Controller X1 terminal	Contact designation
X1.14	External release
X1.15	External release (GND)

Table 25: Terminal assignment of external release connection

When the bridge is removed and there is no external release, the following displays are generated:

TFT control panel	LED control panel
	L1 and L7 light up

Table 26. Display of no external release

5.4.9 Connecting digital inputs and outputs

The digital inputs and outputs DIO1 and DIO2 can only be programmed with the configuration software. At the factory, the following parameters are specified:

DIO1: Activate automatic (as a digital input signal)

DIO2: General message (as a digital output signal)

Master Controller X2 terminal	Contact designation
X2.1	Digital input or output 1 (can be parametrised)
X2.2	Digital input or output 1 (GND)

X2.3	Digital input or output 2 (can be parametrised)
X2.4	Digital input or output 2 (GND)

Table 27: Terminal assignment connection DIO1 and DIO2

5.4.10 Operation without connected control panel

To operate the ventilation unit without control unit, the control runs according to the last set operating mode.

The control unit may only be disconnected from the BUS when it has zero potential. Disconnecting during operation results in a communication error!

5.5 Commissioning the FOCUS unit

5.5.1 Readiness for operation

The unit is ready for operation once all the requirements of the safety regulations and installation conditions have been met. In particular, this means ensuring that the ventilation tube material is clean and that all the ventilation technology components required to operate the system are present, properly installed and ready for operation.

Check all the safety-related components and carry out a function test.

5.5.2 Adjusting the air volume flow

Once you have checked that the FOCUS unit is ready for operation, you can commission it as described below. The ventilation unit is set to nominal ventilation according to the system design for the entire outdoor air volume flow. This nominal air volume flow is parametrised according to the characteristic curve diagram 1 Fig. 36 (with control unit TFT control panel) under Setup / sub-menu fan speeds or according to Table 29, (with control unit LED control panel).

5.5.2.1 Adjusting the nominal air volume flow with TFT control panel

To adjust the ventilation system, fan speed 2 (FS2) is parametrised for the nominal air volume flow. The following settings must be made with the TFT control panel:

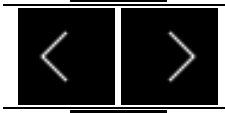
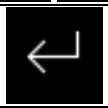
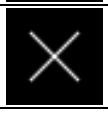
Symbol	Description	Explanation/Actions
	Button Menu mode	By touching the menu mode button, you access the main menu.
	Buttons Navigation	Touch the navigation buttons to select the main menu Setup and confirm with the Enter button.
	Button Password	Password query Enter the password _ _ _ _ _ and confirm with the Enter button.
	Buttons Navigation	Touch the navigation buttons to select the sub-menu Fan speeds and confirm with the Enter button.
	Button Fan speed 2 (FS2)	Touch the fan speed 2 button (FS2) to activate this fan speed
	Buttons Navigation	Parametrise fan speed 2 (FS2) according to the characteristic curve diagram 1 for the nominal air volume flow
	Button Enter	Confirm by touching the Enter button
	Button Cancel/return	Exit the menu levels by touching the cancel/return button until the start menu appears.

Table 28: Sequence of steps for adjusting the nominal air volume with a TFT control panel

The values for the balance compensation are pre-set at the factory and should only be changed if required.

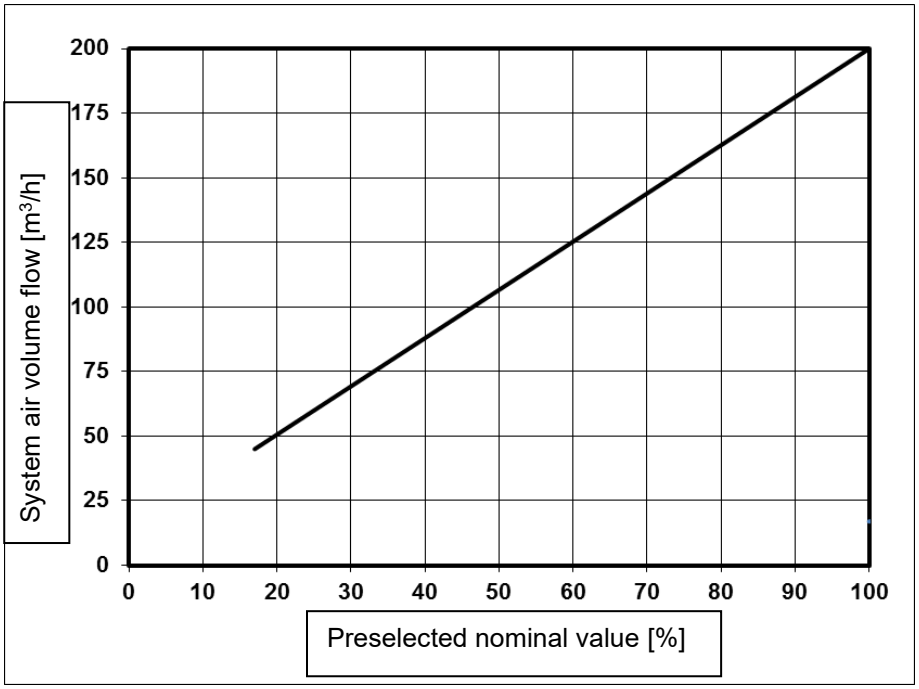


Fig. 36: Diagram 1, values to be set for the nominal air volume flow FOCUS unit with fan speed 2 (FS2)

5.5.2.2 Adjusting the nominal air volume flow with LED control panel

To adjust the ventilation system, the speed corresponding to the nominal air volume flow is set on the LED control panel. The 7 speeds of the LED control panel are allocated nominal values for the fans at the factory according to Table 29. The speed to be set for the nominal air volume flow must correspond to the nearest nominal value from diagram 1 Fig. 36.

LED control panel speed	Preselected nominal value [%]
1	17
2	25
3	40
4	53
5	68
6	83
7	100

Table 29Values to be set for the nominal air volume flow FOCUS with Led control panel

5.5.3 Adjusting the valves

At the start of volume flow measurement, make sure that the supply air and extract air valves are open as wide as possible.

- Set the fans to the nominal air volume flow
- Adjust the valve orifices, throttle valves or throttle foam inserts
- Measure the volume flows at the outlets using a volume flow hood and flow meter (see air volume protocol)
- Readjust the valves
- Lock the valves, shutters and throttles in their adjusted positions
- Record the set air volumes and all other settings in the documentation intended for this purpose

5.6 Menu settings by qualified persons/service staff

Changes to the password-protected parameters may only be carried out by qualified persons or service staff!

5.6.1 Main menu Setup

The main menu ***Setup*** is divided into eight sub-menus, access to which is password protected.

Symbol	Description	Explanation/Actions
	Button Menu mode	By touching the menu mode button, you access the main menu.
	Buttons Navigation	Touch the navigation buttons to select the main menu Setup and confirm with the Enter button.
	Button Password	Password query Enter the password _ _ _ _ _ and confirm with the Enter button.
	Buttons Navigation	Touch the navigation buttons to select the respective sub-menu and confirm with the Enter button.

Table 30: Sequence of steps access to the main menu Setup

The settings in the sub-menus are only saved when the enter button is touched!

5.6.1.1 Sub-menu Frost protection

In the sub-menu frost protection, the following settings are carried out:

- Parametrisation of the temperatures, () values factory setting:
  - Frost protection limit outdoor air Eco (-2.0 °C)
  - Frost protection limit outdoor air Safe (0.0 °C)
  - Frost protection limit outdoor air moisture heat exchanger (-8.0 °C)
  - Frost protection limit minimum supply air temperature (5.0 °C)
- Selecting the defroster heating type:
  - Electric defroster
  - PTC defroster
  - Brine defroster

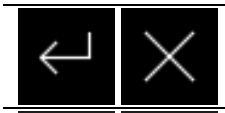
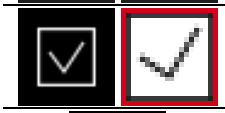
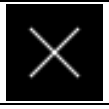
Symbol	Description	Explanation/Actions
	Buttons Navigation	Temperatures Touch the navigation buttons to select (red text background) and confirm with the Enter button.
	Buttons Navigation	Frost protection limits The nominal values (red text background) to be parametrised can be selected with the navigation buttons and the values adjusted with the +/- buttons.
	Buttons Enter Cancel/return	Confirm by touching the Enter button and exit the menu level via the Cancel/return button.
	Buttons Navigation	Selecting the defroster heating type Select the respective type by touching the navigation buttons (red text background).
	Button Check mark	By touching the check mark button, the type of defroster heating is specified.
	Button Cancel/return	Exit the menu levels by touching the cancel/return button until the start menu appears.

Table 31: Parametrisation sub-menu Frost Protection

When temperatures drop below a frost protection limit, a potentially present frost protection component is activated. If the temperature remains beneath the frost protection limit, it results in shutting off the fans and an error message.

5.6.1.2 Sub-menu Fan speeds

In the sub-menu Fan speeds, settings can be made for the fan performance and balance compensation for all three fan speeds. The supply air fans are parametrised separately in 1% increments between 17% and 100% per fan speed. If required, balance compensation for each fan speed is implemented by adjusting the extract air fan in the

range of -50% … +50%. Varying fan performance (imbalance) is calibrated by the service technician, depending on the system configuration, and fixed by the balance controller.

A change of the fan performance in the main menu Settings/Fan speed can result in a change of the balance behaviour, especially in the upper and lower limits of the fan characteristic curve.

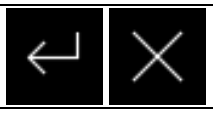
Symbol	Description	Explanation/Actions
	Button Fan speed 1 (FS1)	Activate FS1 with the button fan speed 1 and parametrise it with the navigation buttons. Setting range: 17% < FS1 < FS2 An imbalance can be set with the +/- buttons.
	Button Fan speed 2 (FS2)	Activate FS2 with the navigation button fan speed 2 and parametrise it with the navigation buttons. Setting: FS2 = nominal air volume flow An imbalance can be set with the +/- buttons.
	Button Fan speed 3 (FS3)	Activate FS3 with the navigation button fan speed 3 and parametrise it with the navigation buttons. Setting range: FS2 < FS3 < 100% An imbalance can be set with the +/- buttons.
	Buttons Enter Cancel/return	Confirm by touching the Enter button and exit the menu level via the Cancel/return button.

Table 32: Parametrisation sub-menu fan speeds

5.6.1.3 Sub-menu Supply heater

In the sub-menu Supply heater, the following settings are carried out:

- Parametrisation of the channel temperature (50 °C factory setting)
- Selecting the supply heater register type:
  - Electric heating register
  - Hot water heating register

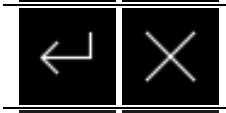
Symbol	Description	Explanation/Actions
	Buttons Navigation	Channel temperature Touch the navigation buttons to select (red text background) and confirm with the Enter button.
	Buttons + / -	Set the channel temperature with the +/- buttons.
	Buttons Enter Cancel/return	Confirm by touching the Enter button and exit the menu level via the Cancel/return button.
	Buttons Navigation	Selecting the supply heater register type Select the respective type by touching the navigation buttons (red text background).
	Button Check mark	By touching the check mark button, the type of Supply heater register is specified.
	Button Cancel/return	Exit the menu levels by touching the cancel/return button until the start menu appears.

Table 33: Parametrisation sub-menu Supply heater

5.6.1.4 Sub-menu Summer ventilation without bypass

This menu indicates whether summer ventilation without bypass is possible. The menu can only be implemented if there is no bypass.
The following adjustments are made, () factory setting values.

- Temperature for activating the function (25.0 °C)
- Hysteresis (0.5 K)
- Inactive under (13.0 °C)

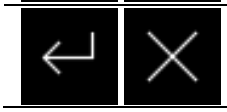
Symbol	Description	Explanation/Actions
	Status symbol Check mark	The status symbol check mark indicates the feasibility of the menu.
	Buttons Navigation	Temperature/hysteresis/inactive under Touch the navigation buttons to select (red text background) and confirm with the Enter button.
	Buttons + / -	Set the selected parameter with the +/- buttons.
	Buttons Enter Cancel/return	Confirm by touching the Enter button and exit the menu level via the Cancel/return button.

Table 34: Sub-menu Summer ventilation without bypass

The following switching conditions are available for the bypass **(example related to the unit version LEFT)**:

Parameters	Description of the parameters
T1:	Temperature of the outdoor air (t_aul) at the temperature sensor T1 of the unit
T3:	Temperature of the extract air (t_abl) at the temperature sensor T3 of the unit
t_som	Temperature limit for activation of the summer ventilation
t_aul_min:	limit value for the minimum outdoor temperature
H_som:	Hysteresis of the temperature limit for activation of the summer ventilation
Function	**Switching conditions**
ACTIVE, **if:**	T1 < T3 **&** T1 > t_aul_min **&** T3 > t_som + H_som

Table 35: Switching conditions for the summer ventilation function

5.6.1.5 Sub-menu Ground heat exchanger shutter

This menu shows whether a GHE shutter (ground heat exchanger shutter) is present.

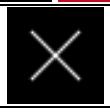
Symbol	Description	Explanation/Actions
	Button Check mark	By touching the check mark button, an existing GHE shutter is released.
	Button Cancel/return	Exit the menu levels by touching the cancel/return button until the start menu appears.

Table 36Parametrisation ground heat exchanger shutter

5.6.1.6 Sub-menu Reset to factory data

In the sub-menu Reset to factory data, the unit can be reset to the factory data.

Symbol	Description	Explanation/Actions
	Button Check mark	By touching the check mark button, the system is reset to the factory data.
	Button Cancel/return	Exit the menu levels by touching the cancel/return button until the start menu appears.

Table 37: Reset factory data

5.7 Maintenance and repair by the qualified personnel

If regular maintenance work is not carried out on the FOCUS unit, this will affect the functionality of the comfort ventilation.

Maintenance and repair by qualified personnel should be carried out by a maintenance service team on the basis of a maintenance contract. Maintenance and repair measures of the FOCUS unit includes inspecting and cleaning the fans and heat exchanger. The heat exchanger should be cleaned based on how dirty it gets but the maintenance interval must not exceed two years.

Use checklist B to document the maintenance work completed.

5.7.1 Inspection and cleaning of the heat exchanger

In doing so, proceed as follows:

1. Disconnect the FOCUS unit from the mains power supply.
2. Press the two snap fasteners **A** on the bottom of the unit.

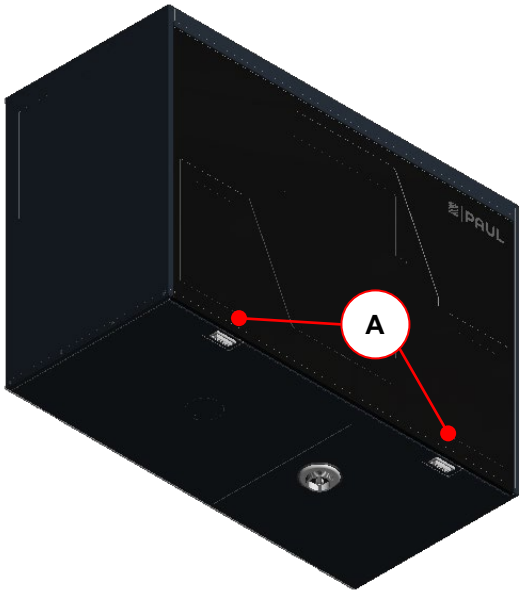


Fig. 37: Pressing the snap fasteners

3. Remove the front panel **B** gradually as indicated by the arrows. To do this, open the front panel at an angle of no more than 15° and unhook it from the lock seam of the housing.

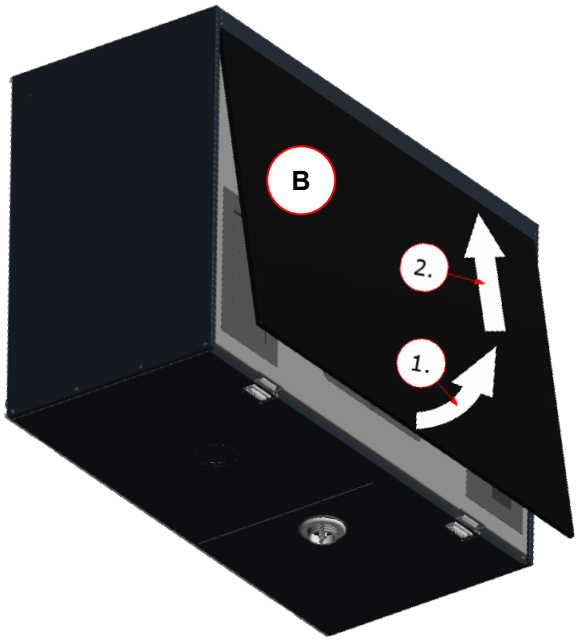


Fig. 38: Opening the front panel

4. Use strap **C** to pull the EPP foam cover **D** for the filters and heat exchanger out of the EPP housing. To do this, grip the strap at one end and pull while using your other hand to support the unit.

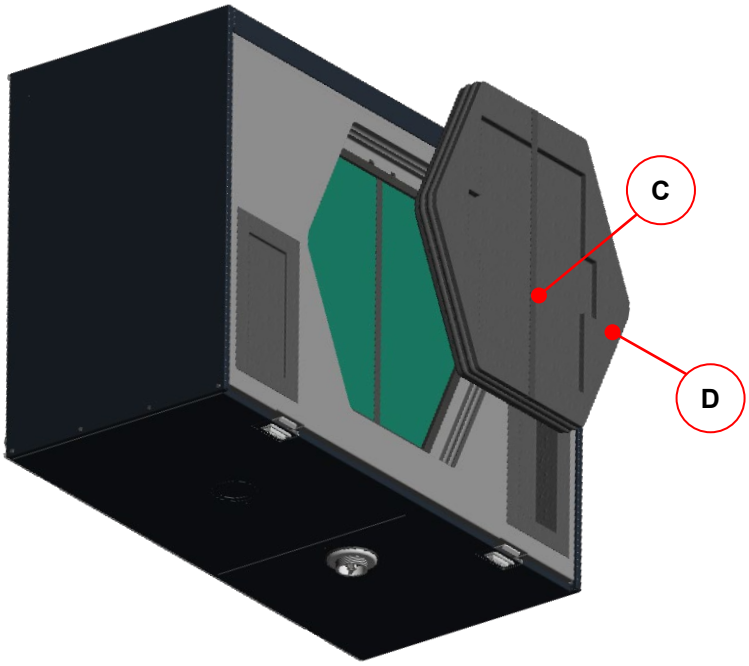


Fig. 39: Pulling out the EPP foam cover

5. Holding them by the strap, pull the filters **E** out of the filter compartments.

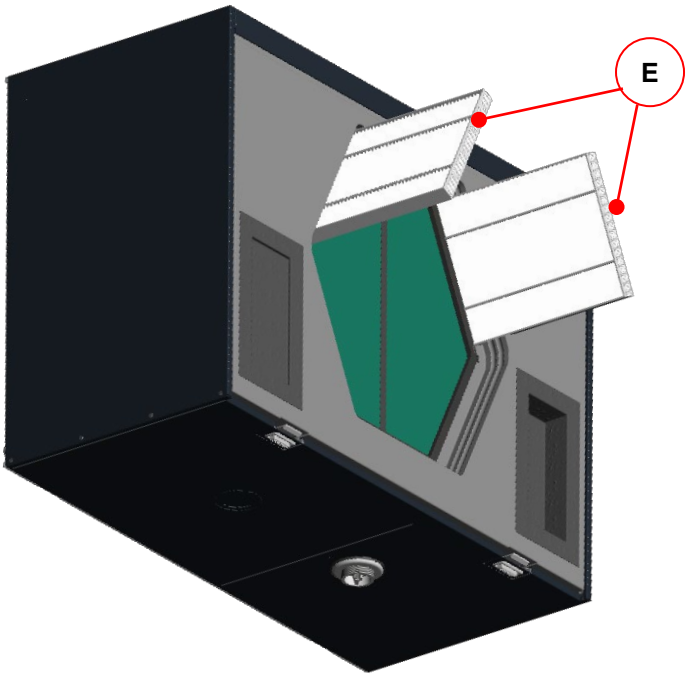


Fig. 40: Pulling out the filters

6. Holding it by the strap **F**, pull the heat exchanger **G** out of the EPP housing.

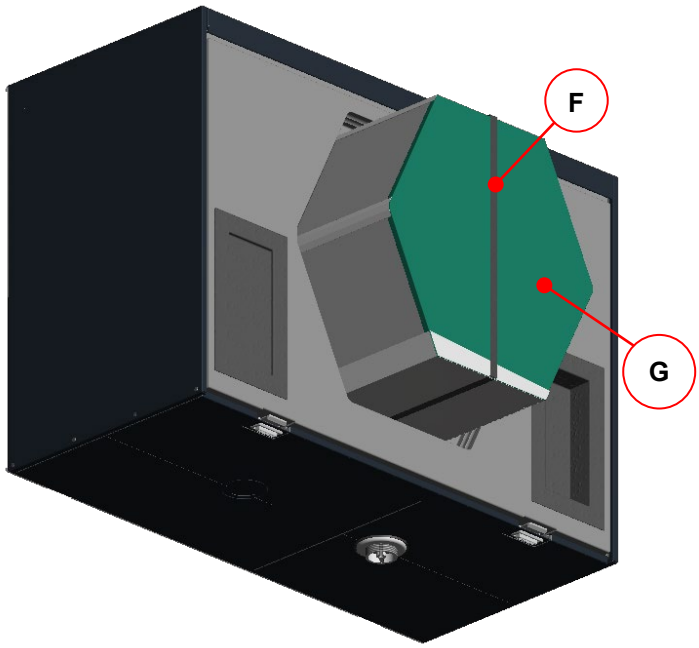


Fig. 41: Removing the heat exchanger

7. Clean the heat exchanger. In doing so, proceed as follows:
   - Dip the heat exchanger several times in warm water (max. 40 °C).
   - Then rinse off the heat exchanger thoroughly with warm tap water (max. 40 °C).

   Do not use aggressive or dissolving cleaning agents!

   - In order to dry it, position the heat exchanger such that residual water can run out of the openings.
   - Leave the heat exchanger to dry fully before reinstalling it.

   Instructions for proper disinfection can be found at www.core.life.

8. Install the heat exchanger.

   Take care when installing the heat exchanger!

   On the bottom side of the heat exchanger there is a condensate tray with two recesses **H**. When inserting the heat exchanger into the unit make sure that the two recesses of the condensate tray face the condensate drain **I**!

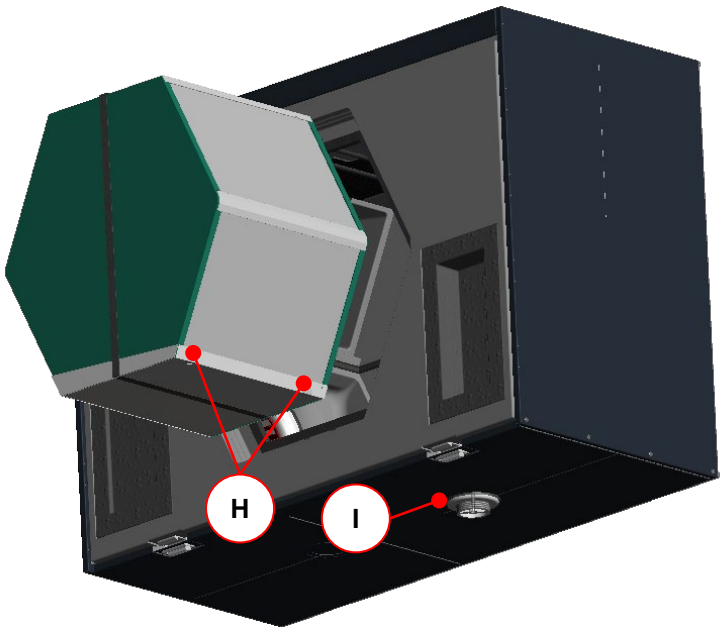


Fig. 42: Position of condensate tray when sliding in the heat exchanger

9. Following the inspection, install all parts in the reverse order.
10. Reconnect the unit to the mains.

5.7.2 Swapping the heat exchanger type

The FOCUS unit can be equipped and operated with two different types of heat exchanger:

- Cross-counterflow heat exchanger made from plastic (standard heat exchanger)
- Cross-counterflow enthalpy exchanger (membrane moisture heat exchanger)

1. Perform work steps 1 to 6 as described in 5.7.1.
2. Insert the relevant heat exchanger type while following the instructions for Fig. 42 and then perform work steps 9 to 10 as described in 5.7.1.
3. Parametrise the frost protection mode according to 4.3.2.3 in the menu Settings / sub-menu Frost protection for the concerned heat exchanger type.

For a standard heat exchanger only the frost protection modes eco or safe may be set!

5.7.3 Swapping the heat exchanger for the summer box

The summer box is not capable of transferring heat or moisture. Instead, this module can be used to replace the heat exchanger for summer ventilation while maintaining a supply air and extract air mode!

In doing so, proceed as follows:

1. Perform work steps 1 to 6 as described in 5.7.1.
2. Insert the summer box module and perform work steps 9 to 10 as described in 5.7.1.

5.8 Error display and troubleshooting

The unit control system is equipped with an internal system for recognizing faults. The error messages display and the error forecast are in line with the presentation possibilities of the connected control panel.
As a reaction to an error status, the fans are shut down.

5.8.1 Error display with LED control panel

The display of errors with the LED control panel is according to point 4.2.1.2. In addition to indicating the error states, an LED code is generated via LED L1...L7, which displays the significance of the error in a binary fashion. Suggestions for the checks / measures for the potential elimination of the error status are given in Table 39.
The following LED combinations for displaying the error codes marked with “x” apply:

LED combination							Error Message	Possible cause
L1	L2	L3	L4	L5	L6	L7		
x		x					Supply air temperature is too low	minimal supply air temperature < nominal value
x	x		x	x		x	BUS version incompatible	Software versions of the components not compatible
		x	x	x		x	Too many units connected	Too many components connected to the BUS
x		x	x	x		x	Fan slave not connected	Missing BUS communication
	x	x	x	x		x	Fan slave communication error	Missing BUS communication
x	x	x	x	x		x	Defroster communication error	Missing BUS communication
					x	x	Heating register communication error	Missing BUS communication
x					x	x	Communication error ground heat exchanger shutter	Missing BUS communication
	x				x	x	General communication error	Missing BUS communication
x	x				x	x	Heater does not go off	BUS thermostat error
	x		x	x			General GHE error	Missing BUS communication with the control panel (GHE)

Table 38: Overview binary error encoding with LED control panel

5.8.2 Error displays with TFT control panel

On the TFT control panel, errors are displayed by plain text error messages. The last three occurred errors are registered with their date and time according to the event in the main menu Information/last messages. In addition to this message, a yellow warning triangle blinks on the top right edge of the screen. The following clear text error messages are displayed:

Error Message	Possible cause	Checks/Measures
Sensor 1 sensor error	Sensor disruption or temperature sensor short circuit Version LEFT T1 Version RIGHT T3	Check detector or replace sensor
Sensor 2 sensor error	Sensor disruption or temperature sensor short circuit Version LEFT T2 Version RIGHT T4	Check detector or replace sensor
Sensor 3 sensor error	Sensor disruption or temperature sensor short circuit Version LEFT T3 Version RIGHT T1	Check detector or replace sensor
Sensor 4 sensor error	Sensor disruption or temperature sensor short circuit Version LEFT T4 Version RIGHT T2	Check detector or replace sensor
Supply air temperature is too low	minimal supply air temperature < nominal value	Supply air temperature > nominal value + 1 K
Outdoor temperature too low	Current outdoor air temperature < nominal value; longer than 30 min	Outdoor air temperature> nominal value; control after 1 h
Error fan 1 HALL	Version LEFT: Supply air fan reports no rotational speed Version RIGHT: Exhaust air fan reports no rotational speed	Manual setting of a fan speed
Error fan 2 HALL	Version LEFT: Exhaust air fan reports no rotational speed Version RIGHT: Supply air fan reports no rotational speed	Manual setting of a fan speed
BUS version incompatible	Software versions of the components not compatible	Replace software versions
Too many units connected.	Too many components connected to the BUS	Remove excessive components
Fan slave not connected	Missing BUS communication	Connect fan slave
Communication error Fan slave	Missing BUS communication	Check BUS communication
Communication error Defroster	Missing BUS communication	Check BUS communication
Communication error Heating register	Missing BUS communication	Check BUS communication
Communication error GHE shutter	Missing BUS communication	Check BUS communication
Communication error General	BUS components of the control device are not recognized	Disconnect from mains, then restart
Heater does not go off	BUS thermostat error	Replace BUS thermostat
General GHE error	Missing BUS communication with the control panel (GHE)	Check BUS communication

Table 39Overview error messages, displays and troubleshooting with TFT control panel

5.9 Technical description

5.9.1 Unit types

FOCUS 200 series

Ventilation unit with cross-counterflow heat exchanger made from plastic

FOCUS F 200 series

Ventilation unit with cross-counterflow enthalpy exchanger with polymer membrane

5.9.2 Air connection design versions

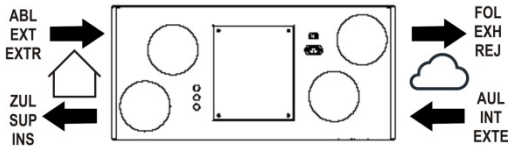
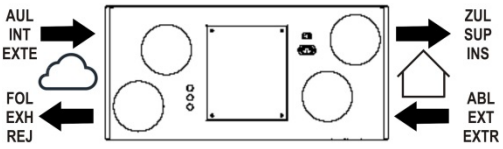
Version with air connections on LEFT	Version with air connections on RIGHT
 LINKS / LEFT / GAUCHE	 RECHTS / RIGHT / DROITE

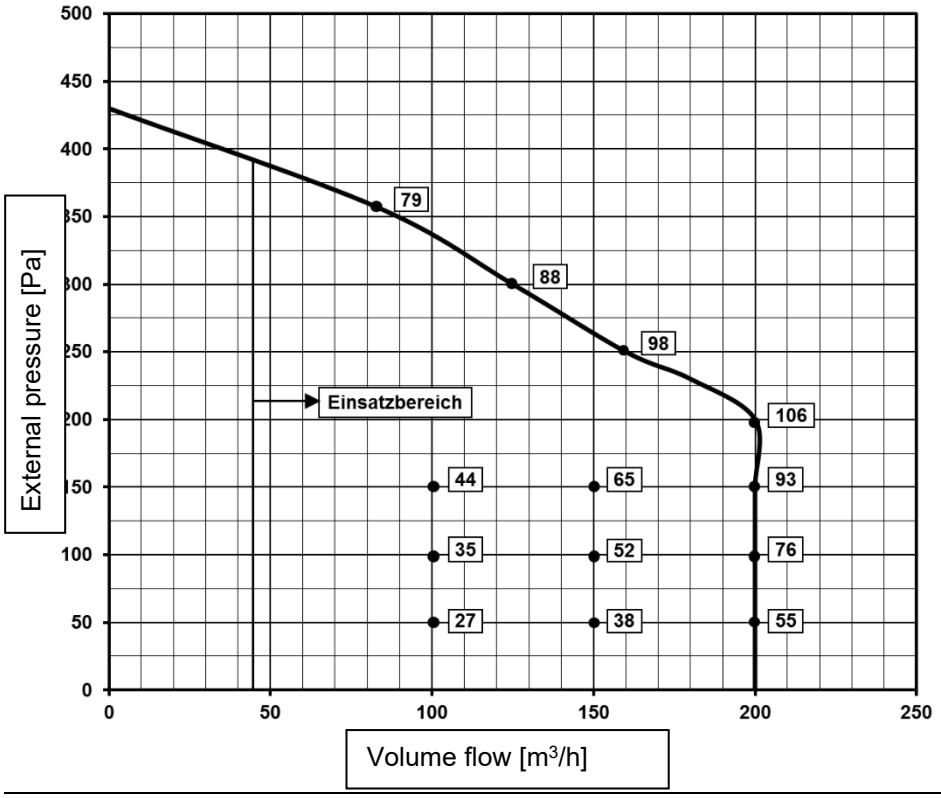
Table 40: Overview of air connection design versions

5.9.3 Technical specification

General specifications	Description / Value
Heat exchanger type	Cross-counterflow heat exchanger made from plastic (FOCUS 200 series)
	Cross-counterflow enthalpy exchanger with polymer membrane (FOCUS F 200 series)
Housing / Interior lining	Galvanised sheet steel, powder-coated, free of thermal bridges; interior lining is made of expanded polypropylene (EPP) to provide thermal and sound insulation
Pipe connections	DN 125 (sleeve size)
Weight	25 kg
Electrical connection	230 VAC, 50–60 Hz; 2 m mains cable with non-heating device plug connection
Connection power	140 W
Protection class	I
Degree of protection	IP 30
Temperature range for transport and storage	-20 to 50 °C
Temperature range for moving air	-20 to 50 °C
Temperature range at the mounting location	Permanently frost-free
Mounting position	Horizontal wall mounting or on a floor stand (optional)
Operation data	**Value**
Volume flow	45 to 200 m³/h
Efficiency criterion	0.31 Wh/m³ (at 135 m³/h / 100 Pa)
Waste heat recovery according to PHI	91% (at 135 m³/h / 100 Pa); FOCUS 200
Sound pressure level, distance of 3 m (unit emission according to DIN EN ISO 3743-1)	30 dB(A) (at 155 m³/h / 100 Pa)
	24 dB(A) (at 200 m³/h / 100 Pa)
Certificates, approvals	**FOCUS 200**
	Passivhaus certificate
	Certificate according to NBN EN 308
	DIB approval AbZ Z-51.3-272

Table 41: Technical specifications Focus (F) 200

p$\dot{V}$ characteristic curve



Note:

The numerical values shown in the p$\dot{V}$ characteristic curve diagram indicate the power consumption in [W] for the respective operating points.

Table 42: Diagram 2, p$\dot{V}$ characteristic curve FOCUS 200

5.9.4 Dimensions

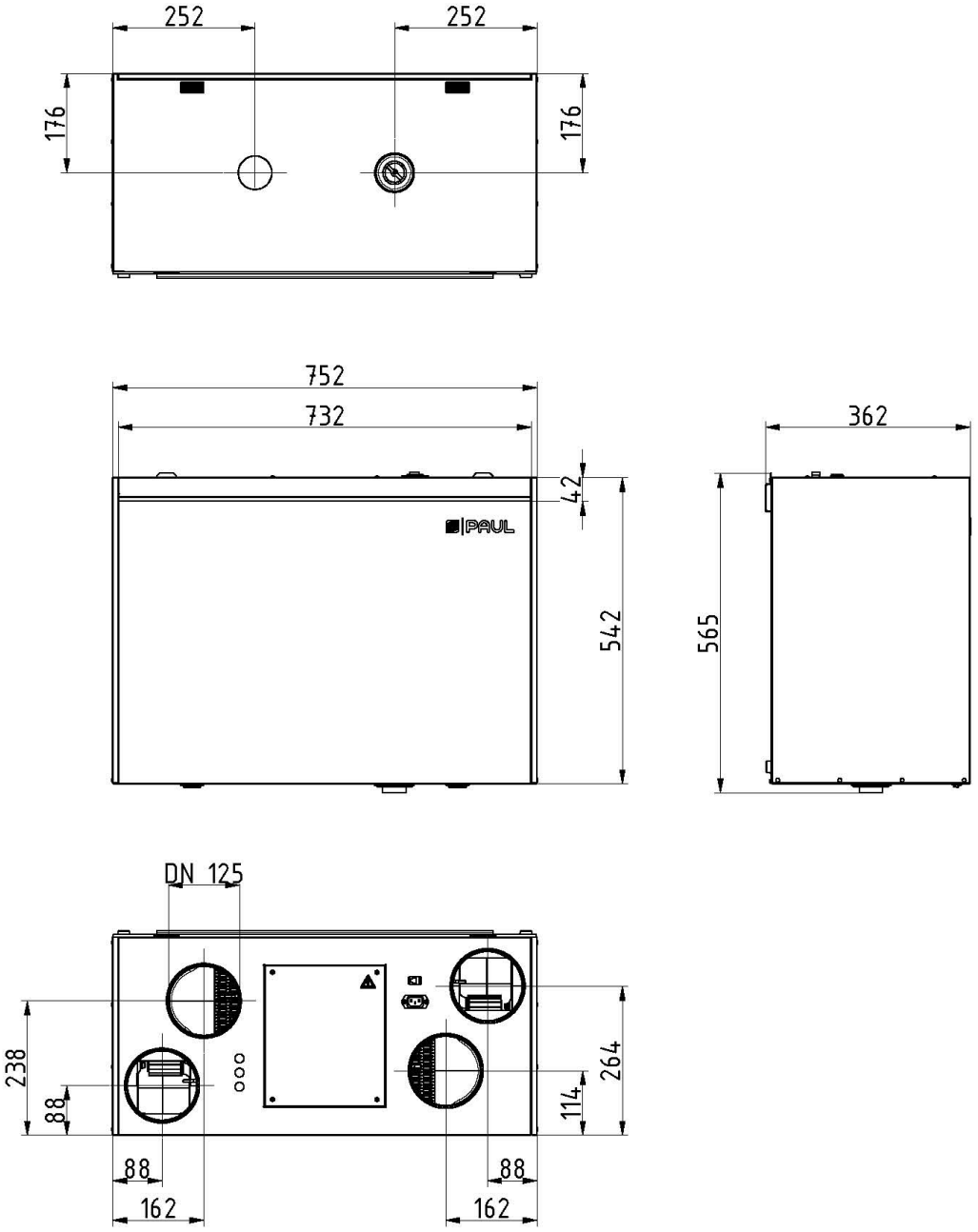


Fig. 43: Dimensional drawing FOCUS

5.9.5 FOCUS circuit plan

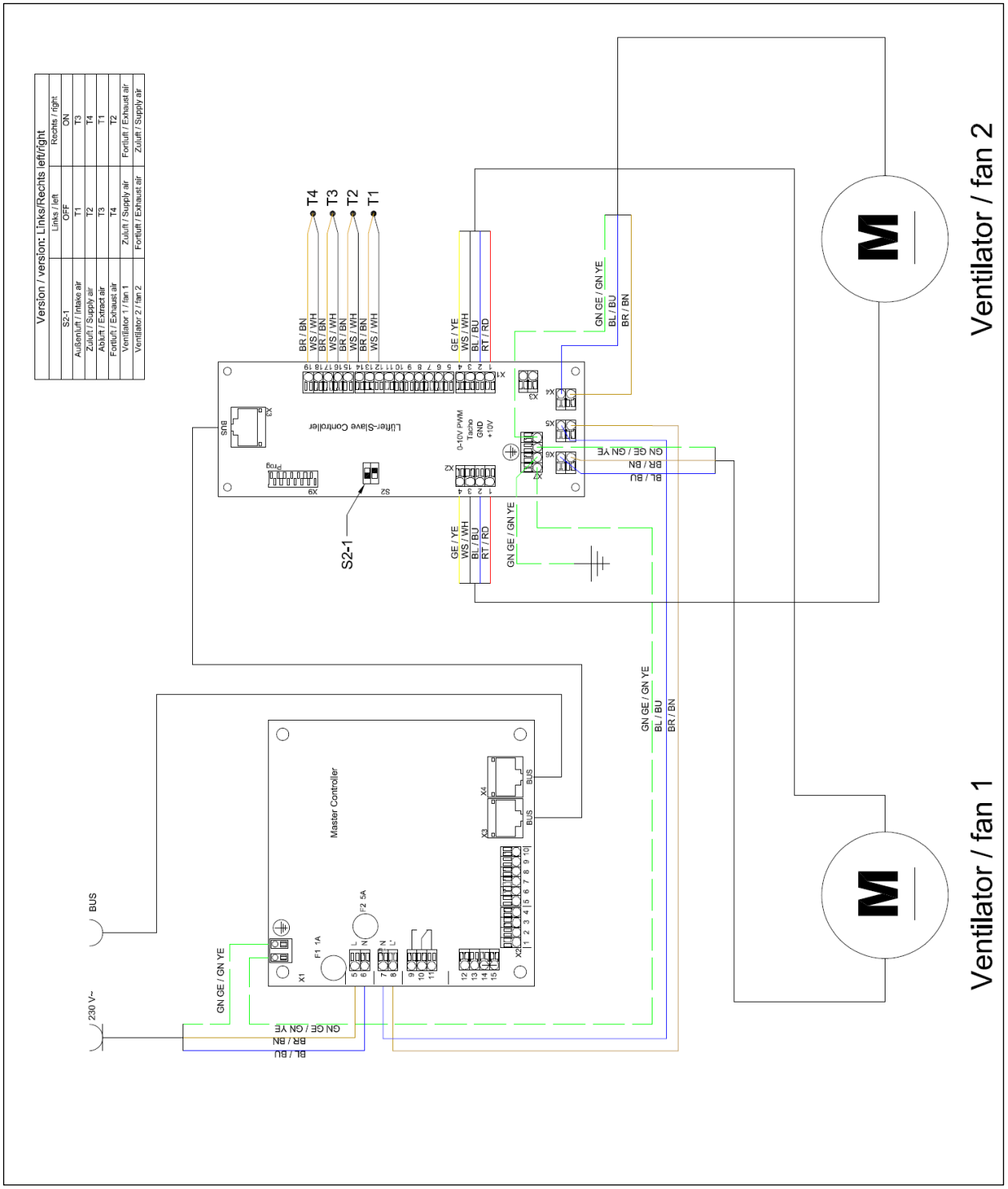


Fig. 44: Terminal assignment circuit diagram FOCUS

5.9.6 Master Controller terminal assignment

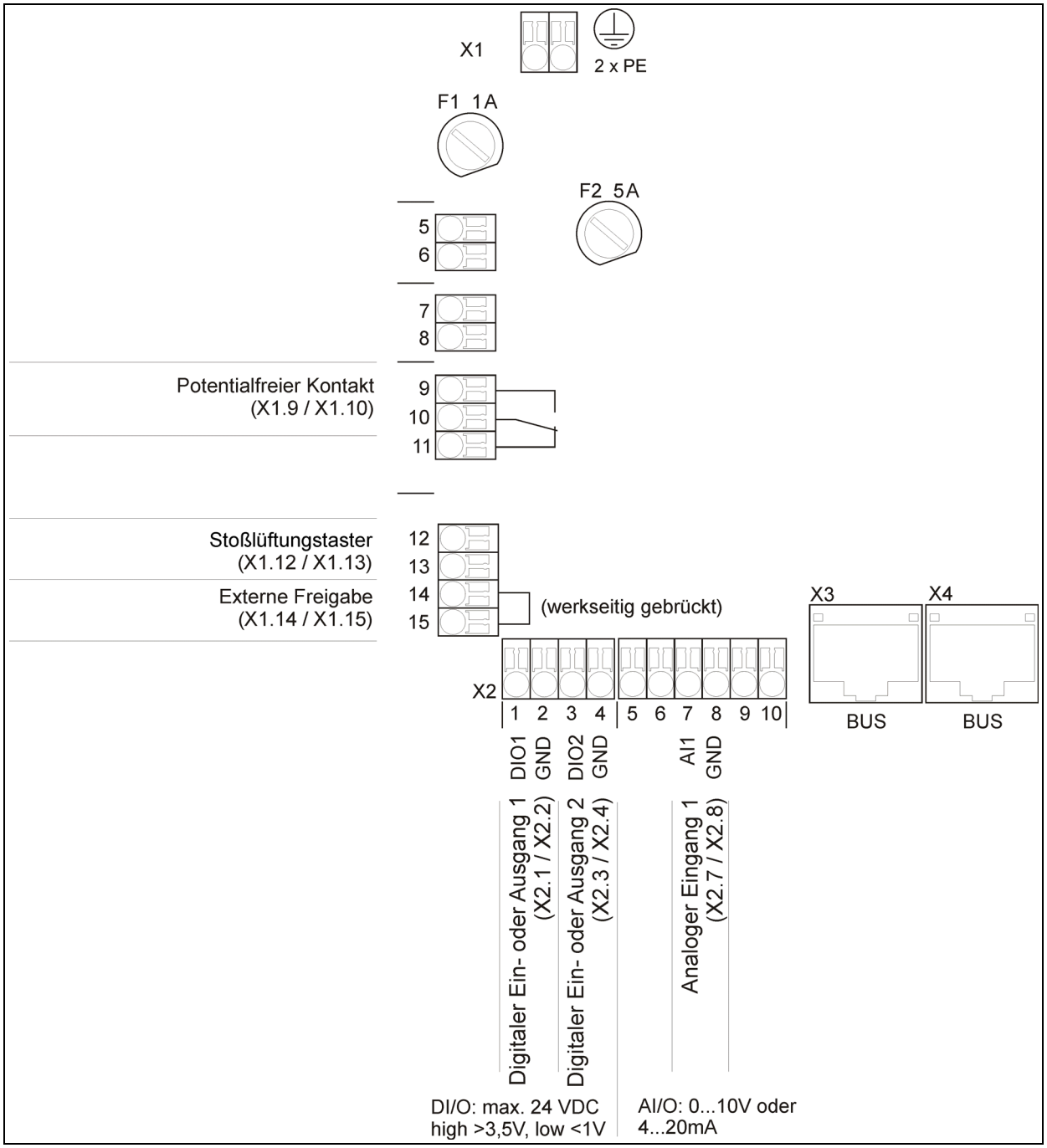


Fig. 45: Master-Controller terminal assignment

6 Appendices

6.1 Checklist A Maintenance work for users

Maintenance work	Enter date in quarter			
1st Replace both filters in the ventilation unit (filter replacement cycle 90 days)				
Quarter / Year	**I**	**II**	**III**	**IV**
20...				
20...				
20...				
20...				
20...				
20...				
20...				
20...				
20...				
20...				
2nd Extract air supplementary filter / clean the filters in extract air valves (filter replacement cycle approx. 2 months)				
Quarter / Year	**I**	**II**	**III**	**IV**
20...				
20...				
20...				
20...				
20...				
20...				
20...				
20...				
20...				
20...				
3rd Replace other filters in the ventilation tube system				
Quarter / Year	**I**	**II**	**III**	**IV**
20...				
20...				
20...				
20...				
20...				
20...				
20...				
20...				
20...				
20...				

6.2 Checklist B Maintenance work for qualified personnel

Maintenance work			enter result					
– The listed maintenance work must be carried out in accordance with the components actually present. – Comments on status using informal protocol – Further annual tranches on separate sheet								
No.	**Components**	**Annually**	**Result**	**20...**	**20...**	**20...**	**20...**	**20...**
1	Fan / ventilation unit	Cleaning of components carried out? - Fan - Enthalpy exchanger - Air-contacting surfaces on unit	yes / no					
		Frost protection / dew device operational?	yes / no					
		Structure-borne sound transmission, are fasteners avoided?	yes / no					
		Are status displays operational?	yes / no					
2	Electrical engineering / control	Cable connections and clamping assemblies secure?	yes / no					
		Are the regulating and control units functional?	yes / no					
3	Ventilation tube / heat insulation	Has cleaning (if necessary) been carried out? Testing OK? For cleaning when needed, see VDI 6022	yes / no					
		Heat insulation and moisture barrier OK?	yes / no					
		Are flexible connections between the unit and ventilation tube functional?	yes / no					
4	Fan, ventilation unit, filter, filter status	Stipulated filter class adhered to?	yes / no					
5	Fan / ventilation unit and fireplace if available	Safety feature with fireplace operational?	yes / no					
6	Extract air / supply air passage	Seat and locking provided?	yes / no					
		Stipulated filter class adhered to?	yes / no					
		Filter, filter status OK?	yes / no					
		Air volumes acc. to protocol OK?	yes / no					
7	Overflow air vents	Open cross section provided?	yes / no					
		No structure-borne and airborne sound transmission?	yes / no					

6.3 Commissioning and handover protocol

Customer data		
Family name:	First name:	Tel.:
Street:	Postcode:	Town/city:
Construction project:		
Unit type:	Serial no.:	Year of construction:

Completeness			
No.	**Components**	**Version**	**Result**
1	Supply air duct	- Design as planned - Cleaning option provided	yes / no yes / no
2	Supply air vents	- Arrangement as planned - Design as planned - Cleaning option provided	yes / no yes / no yes / no
3	Overflow air vents	- Arrangement as planned - Design as planned	yes / no yes / no
4	Extract air vents	- Arrangement as planned - Design as planned - Cleaning option provided	yes / no yes / no yes / no
5	Extract air duct	- Cleaning option provided	yes / no
6	Extractor fan	- Cleaning option provided	yes / no
7	Control / regulation system	- Operational	yes / no
8	Filter, optional	- Replacement or cleaning option provided	yes / no
9	Heat exchanger for waste heat recovery	- Cleaning option provided	yes / no
10	Documentation	- Available	yes / no
Function			
1	Operational with rated ventilation, as planned	Result OK Action required	yes / no yes / no
2	Switching steps possible, as planned	Result OK Action required	yes / no yes / no
3	Electrical power consumption	Result OK Action required	yes / no yes / no

Record of confirmation

Date: .....Signature/stamp: .....
Commissioning personnel / installation technician

6.4 Air volume protocol

Customer data		
Family name:	First name:	Tel.:
Street:	Postcode:	Town/city:
Construction project:		

Unit type:	Serial no.:	Year of construction:

Measurement data		
Measuring instrument used:	Faults during measurement:	Indoor temperature: Outdoor temperature:

Filter status when measuring	Outdoor	Extract	Building moisture status: ..... % relative humidity without ventilation mode	Fan speed ratio Extract air / supply air: .....
clean				
approx. ... days used				
very dirty				

Supply air				Fan speed: %	
No.	Room name	Project data		Measurement data	
		m³/h	m³/s	m³/h	m³/s

Extract air				Fan speed: %	
No.	Room name	Project data		Measurement data	
		m³/h	m³/s	m³/h	m³/s

P_{el} = W

⇨ The listed measurement data must be determined in accordance with the components actually present.
⇨ Reference has been made to the hygienic requirements for operating the ventilation system.
⇨ Reference has been made to the influence of room air humidity for winter and summer operation.
⇨ To safeguard warranty claims, only original parts (e.g. filters) are allowed to be used.

Date: ..... Signatures: .....
Commissioning personnel / installation technician User