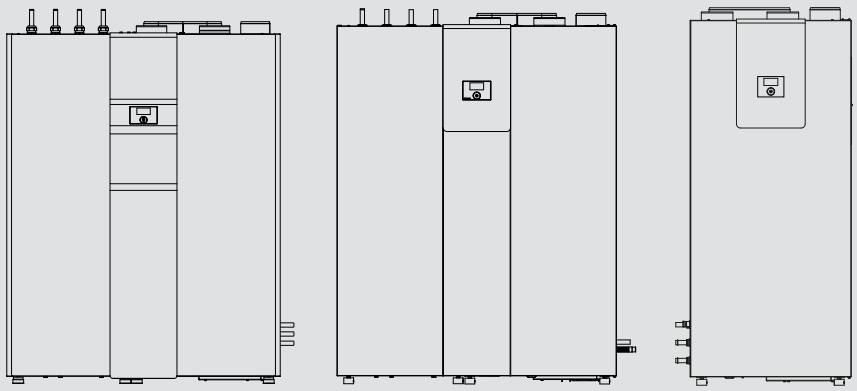
COMMISSIONING AND NOTIFICATION LIST

Central ventilation unit with heat recovery / Integral system with air/water heat pump for central DHW heating and heating

- » LWZ 8 CS Premium
- » LWZ 5 CS Premium
- » LWZ 5 S Plus
- » LWZ 8 CS Trend
- » LWZ 8 S Trend
- » LWZ 5 S Trend
- » LWZ 5 S Smart



STIEBEL ELTRON

1. General information 2
1.1 Relevant documents 2
2. Commissioning 2
2.1 Commissioning via the programming unit 2
3. Settings 4
3.1 Menus and parameters 4
■ INFO 4
■ DIAGNOSIS 4
■ PROGRAMS 5
☐■ STANDARD SETTING 5
■ SETTINGS 5
☐■ HEATING 5
☐■ DHW 6
☐■ VENTILATION 7
☐■ COOLING 9
☐■ SOLAR THERMAL 10
☐■ SCREED DRYING PROG. 11
☐■ COMMISSIONING 11
■ CONTRACTOR 12
☐■ ENTER CODE 12
☐■ FAULT SEARCH 12
☐■ SWITCH ON MANUALLY 12
☐■ DHW CYLINDER 12
☐■ EVAPORATOR 12
☐■ REFRIGERATION UNIT 13
☐■ VENTILATION 13
☐■ PUMPS 13
☐■ PUMP CYCLES 13
☐■ EMERGENCY MODE AUTO 14
☐■ POWER-OFF 14
☐■ SILENT MODE 14
☐■ PROCESS VALUES 14
☐■ PROCESS STATUS 14
☐■ ANALYSIS 14
☐■ INVERTER 15
3.2 Economy settings 15
4. Troubleshooting 16
4.1 Notification list 16

1. General information

These instructions are intended for qualified contractors.

1.1 Relevant documents

📖 Operating instructions
📖 Installation instructions

Note
Please see the device's operating instructions for information on "Customer service and guarantee" and "Environment and recycling".

2. Commissioning

2.1 Commissioning via the programming unit

In addition to the factory-fitted programming unit, external programming units can also be connected to the appliance.

If more than one programming unit has been connected to the appliance, assign each one an individual, unique „TERMINAL ADDRESS“ in the „COMMISSIONING“ menu.

If the terminal addresses were not assigned, there would be conflicts in communication between the appliance and the programming units, as every programming unit is given the same standard value for the terminal address parameter.

Assign value 1 to parameter „TERMINAL ADDRESS“ of the first external programming unit. Assign value 2 to parameter „TERMINAL ADDRESS“ of the second external programming unit and value 3 to parameter „TERMINAL ADDRESS“ of the third external programming unit.

Note
If, before commissioning for the intended use, you want to dry out or heat the building, continue with the following chapter; otherwise with chapter "Commissioning for the intended operation".

2.1.1 Sizing

The design outside temperature for the maximum heat pump output (dual mode point) in heating mode is an indicator for the output controller of the heat pump. The design outside temperature is used to optimise the compressor speed control subject to the outside temperature. Here you should adjust the dual mode temperature. In a mono mode design, the dual mode temperature is the standard outside temperature.

▶ Use the standard outside temperature and the heat load of the building to determine the standard design point.

Standard design point below the max. heating output curve

▶ If the standard design point is below the max. heating output curve, determine the percentage value by estimating the distance between the curve below and the curve above.
▶ In the parameter „HEATING SYS OUTPUT SIZING“, enter the percentage value determined.
▶ Set the „DESIGN TEMPERATURE“ parameter to the standard outside temperature.

Standard design point above the max. heating output curve

- ▶ If the standard design point is above the max. heating output curve, you must set parameter „HEATING SYS OUTPUT SIZING“ to 100 %.
- ▶ Draw in a straight line for the heat load. This heat load line starts at the standard design point and ends at point (20 °C, 0 kW).
- ▶ Determine the point of intersection of the max. heating output curve with the heat load line. This is the dual mode point.
- ▶ Set the „DESIGN TEMPERATURE“ parameter to the dual mode temperature.

2.1.2 Commissioning for drying out or heating

Note
We recommend setting the design point to -20 °C and 80 % before drying out.

Note
During drying out, the evaporator can ice up and condensate can form on the housing parts.

- ▶ Isolate all poles of the compressor and electric emergency/booster heater from the power supply by tripping their MCBs.
- ▶ Open the thermostatic valves or zone valves of all radiators and/or heating circuits.
- ▶ Open the automatic air vent valve in the heating circuit and in the appliance. Automatic air vent valves are located in the cylinder module as well as in the refrigeration unit at the pump and the multifunction assembly.
- ▶ Start the appliance using the control unit MCB. Subject to demand, the appliance components (pumps, fans) start.

The tap symbol appears on the display. The appliance is in DHW heating mode.

After a while, fault F07 is indicated, which shows that the exhaust air filter has failed. This is normal as the exhaust air filter is supplied via the compressor MCBs/fuses.

- ▶ Switch manual mode ON.
- ▶ In the „DHW“ menu set the „DHW SET MANUAL“ parameter to 10 °C.

The appliance switches over to heating mode. The radiator symbol appears on the display. In this operating mode, the heating circuit pump should run until no more air noise can be heard.

- ▶ Switch automatic mode ON.
- ▶ Shut down the appliance by isolating all poles of all supply circuits from the mains.
- ▶ Switch ON the compressor MCBs.
- ▶ Switch the controller MCBs back ON.

The compressor starts after some time.

Note
Check the exhaust air fan. If the exhaust air fan drags, switch off the appliance and align the exhaust air fan. See chapter "Troubleshooting".

- ▶ Start the dry heating (screed drying) program. Ensure that all radiators or heating circuits are and remain open.

Once the appliance has operated in the dry heating (screed drying) program without fault for at least two days you can enable the electric emergency/booster heater.

- ▶ To do so, switch on the MCBs for the electric emergency/booster heater.

If all dusty work has stopped, you can back up the drying process with ventilation.

- ▶ Set the fan stage for day mode („DAY STAGE“) to 2.

2.1.3 Commissioning for the intended operation

If the ventilation should not or cannot be operated during the drying out phase, and the air lines are routed through a cold area, prevent the ingress of warm moist air into the air lines where it could condensate.

Before switching on the MCBs, carry out the following checks in addition to those in chapter „Checks before commissioning“:

- Was the heating system vented?
- If an air heating coil is used as the only heating system: Was the cylinder temperature sensor positioned correctly?
- Has the DHW heating line of the heating circuit been vented? See chapter „Installation / Filling and venting the heating system“ on venting the DHW heating line.

- ▶ Reset the MCBs.

Material losses
Check the exhaust air fan. If the exhaust air fan drags, switch off the appliance and align the exhaust air fan. See chapter "Troubleshooting".

- ▶ Using the „HUMIDITY PROTECTION“ parameter switch on the humidity protection function.

2.1.4 Checking the minimum flow rate of the heat sink

The appliance is designed in such a way that no buffer cylinder is required to provide hydraulic separation of the flow in the heat pump circuit and the heating circuit in conjunction with area heating systems. For installations with several heating circuits, we recommend the use of a low loss header.

- ▶ In the „FAVOURITES“ menu, select the „FLOW RATE“ parameter.

The setting is made in heat pump mode. In order to do this, firstly make the following settings:

- ▶ Operate the appliance in heating mode. For this, switch the appliance to „MANUAL MODE“, for example. Note down the previously set value and set the „DHW SET MANUAL“ parameter to 10 °C.
- ▶ Increase the „MANUAL SET HC“ parameter to its maximum value so that the compressor starts.

Wait until the appliance has been in operation for at least five minutes. The display must show the following symbols:

Minimum flow rate without buffer cylinder or low loss header

In such cases, one or more heating circuits in the heating system must be left open. The open heating circuit(s) should be installed in the lead room (room in which the external programming unit is installed, e.g. the living room or bathroom). The lead room can be individually controlled using the external programming unit, or indirectly by adjusting the heating curve, or by activating the room influence.

- ▶ Fully open the heating circuit(s) in the lead room.
- ▶ Close all other heating circuits.
- ▶ If an overflow valve is installed in the heating system, close this fully before determining the minimum flow rate.
- ▶ Set the „PUMP SPEED HEATING“ parameter so that the minimum flow rate required for the system operation is assured (see chapter „Specification / Data table“). You can check the current flow rate via the value of the previously set favourite „FLOW RATE“.

Note
Never change the "PUMP SPEED DHW" parameter. The pump speed for DHW operation was optimised at the factory.

Flow rate with buffer cylinder or low loss header

- ▶ Set the „PUMP SPEED HEATING“ parameter so that the nominal flow rate required for system operation is assured (see chapter „Specification / Data table“). You can check the current flow rate via the value of the previously set favourite „FLOW RATE“.

Note
Never change the "PUMP SPEED DHW" parameter. The pump speed for DHW operation was optimised at the factory.

2.1.5 Completing commissioning

- ▶ Set all required parameters that you will find in the „COMMISSIONING“ menu.
- ▶ Start ventilation if you are sure that no more large amounts of dust are going to be generated.
- ▶ Set the following values:

DAY STAGE	2
NIGHT STAGE	1
STANDBY STAGE	0
MANUAL STAGE	2
PARTY STAGE	3

- ▶ Set the „DUAL MODE POINT“ parameter in accordance with the heat demand of the building.

If the appliance is designed for mono mode operation, we recommend setting the dual mode point to the standard outside temperature. The standard outside temperature can be found in the technical guides.

Note
On account of the moisture contained in building materials, new buildings have a higher heat demand than will be the case one or two years later. It may therefore be required to set a higher dual mode point.

- ▶ Activate „DHW BUFFER MODE“ only if an air heating coil is used as the only heating system. For this, in the menu call up the „DHW“ function and then the „STANDARD SETTING“ field.
- ▶ Heat the system up to the maximum operating temperature. For this, set the appliance to manual mode and select the corresponding set values. Then vent the heating system again.

Material losses
Observe the maximum system temperature in underfloor heating systems.

3. Settings

3.1 Menus and parameters

Apart from the selected set values, as described in chapter „Operation“ of the operating instructions, you can also adjust the system-specific parameters. These parameters are protected against accidental adjustments and are only accessible after entering a four-digit code. At the factory, the code is set to 1000.

Note
The following describes all parameters that should only be set by you the qualified contractor. These parameters are protected by an access code.
There are also parameters that are reserved with a special code for our service department only. The functions this affects do not need to be adjusted for the regular operation of the appliance.

Note
An overview of all parameters can be found in the operating instructions.

■ INFO

See operating instructions.

■ DIAGNOSIS

See operating instructions.

■ PROGRAMS

□■ STANDARD SETTING

□□■ MAX. ADVANCE

With the „MAX. ADVANCE“ parameter you determine for what period, prior to starting day mode, the appliance switches back to standard operation. This achieves the required set value being reached again at the end of setback mode. This means, for example, that following a return from holiday a building is warm, well ventilated and that the DHW inside the cylinder is at the required temperature. In heating mode, for half of the time selected here the electric emergency/booster heater will be blocked, so that the heat pump alone heats the building, subject to the output being sufficient.

■ SETTINGS

□■ HEATING

□□■ STANDARD SETTING

□□□■ PROP. COMP.

This parameter is used to set the output matching of the heat pump per kelvin control deviation.

□□□■ I COMPONENT INV

Here you select the factor for the integral component of the healing output controller. The integral component influences the stabilisation speed of the heat pump output controller. The heat pump output controller functions primarily as an integral controller. The control deviation (the differential between the set and actual heating circuit temperatures) is totalled up over the time. The result is the integral of the control deviation in Kelvin minutes. Every time the value specified by this parameter is reached, the heat pump is operated at the maximum output stage. A large integral component reduces the speed of the heat pump output controller. This setting is recommended for slow-response heating systems, such as underfloor heating systems.

A small integral component increases the speed of the heat pump output controller. This setting is suited to highly responsive heating systems, such as radiator heating. The value is reset after a power failure and after DHW heating. The integration is stopped if the „HTG OUTPUT RELATIVE“ output figure is less than -10 % or greater than 210 %. If the runtime is too short, this results in inaccuracies in the computation.

□□□■ MAX BOOSTER STG HTG

Up to three electric booster stages can be enabled. Since the heat pump has only a low heating output at extremely low outside temperatures, all three stages of the electric emergency/booster heater should usually be enabled. The control unit ensures that as much heat as possible is generated by the heat pump, and the electric emergency/booster heater only starts when the heating output of the heat pump is no longer adequate.

□□□■ MAX FLOW TEMP HTG.

Under „MAX FLOW TEMP HTG.“, the maximum flow temperature can be set according to local conditions, for example to protect an underfloor heating system from excessive temperatures. If this temperature is exceeded, the compressor and electric emergency/booster heater are switched off.

This is a limiter function. Compressor and electric emergency/booster heater restart when the maximum flow temperature is undershot again. This internal limiter function does not replace the temperature limiter for appliance-independent underfloor heating system protection, as required by EN 1264-4.

□□□■ SUMMER MODE

At the value set here for the outside temperature, there is a changeover between summer and winter mode. In summer mode, the heating is switched off.

Note
In summer mode, the "OUTSIDE TEMP MIN CYC" parameter will not be taken into account. The heating circuit pump runs as often as is set in the "MINIMUM CYCLES" parameter.

□□□■ HYST. SUMMER MODE

Here, the switching hysteresis for the changeover from summer to winter mode is determined.

Conditions	
Outside temperature ≥ SUMMER MODE + HYST. SUMMER MODE/2	Heating blocked
Outside temperature ≤ SUMMER MODE - HYST. SUMMER MODE/2	Heating enabled

□□□■ OUTSIDE T ADJUSTMENT

The outside temperature is adjusted to prevent an offsetting of the heating curve when there are rapid changes in the outside temperature resulting in a constant cycling of the heat pump. An average value is calculated over the selected time. The adjustment can be varied from 0 to 24 hours under this parameter.

□□□■ DUAL MODE POINT

The electric emergency/booster heater for heating mode is enabled if the outside temperature drops below the dual mode point. The electric emergency/booster heater is blocked if the outside temperature lies above the dual mode point. You can define this temperature threshold with the „DUAL MODE POINT“ parameter.

Note
If the heating output of the heat pump is inadequate at low outside temperatures, adjust the dual mode point to a higher temperature.

□□□■ BOOSTER TIMEOUT

After starting the heat pump when heat demand is below the dual mode point, the electric emergency/booster heater is blocked for

the time set under „BOOSTER TIMEOUT“. This prevents the electric emergency/booster heater switching on unnecessarily.

□□□■ OUTSIDE T CORRECTION

It may be advisable to correct the actual temperature value, because of tolerances of the outside temperature sensor and to compensate for external influences, for example having the sensor in an unfavourable position. In parameter „OUTSIDE T CORRECTION“, enter the difference between the actual outside temperature and the outside temperature displayed on the programming unit.

Example:

Actual temperature	°C	19
Displayed temperature	°C	21
New parameter value		-2

□□□■ SUPPR TEMP MEAS

After the heating circuit pump has started, the actual flow and return temperatures remain suppressed for the time set under the „SUPPR TEMP MEAS“ parameter. The actual sensor values are only used to calculate the heating system heat demand after expiry of this time.

□□□■ DESIGN TEMPERATURE

With this parameter you determine the reference point for the pre-control curve „Heating output estimated“ at which the output figure „Heat demand“ applies. See chapter „Commissioning / Commissioning / Sizing“.

□□□■ HEATING SYS OUTPUT SIZING

With this parameter you determine the reference point for the pre-control curve „Heating output estimated“ at which the „Design temperature“ applies. See chapter „Commissioning / Commissioning / Sizing“.

□■ DHW

Note
LWZ 5-8 S Trend: All operating modes, menus and parameters relating to DHW heating are only displayed if the “DHW cylinder” parameter is activated.

□□■ STANDARD SETTING

□□□■ HYSTERESIS

This determines the switching hysteresis for DHW operation. DHW heating starts when the temperature falls below the set DHW temperature minus „HYSTERESIS“. DHW heating stops when the set DHW set temperature plus „HYSTERESIS“ has been reached.

□□□■ MWM HYSTERESIS

This parameter has no function for this appliance.

□□□■ BOOSTER TIMEOUT

DHW is generally heated by heat pump (compressor mode). The electric emergency/booster heater is switched on only if the required DHW temperature in the cylinder has not been reached after „BOOSTER TIMEOUT“ has expired.

Heating by the solar thermal system takes priority over the heat pump if a solar thermal system is connected and there is adequate insolation. This, on the other hand, takes priority over the electric emergency/booster heater.

□□□■ BOOSTER T ACTIVATE

The electric emergency/booster heater for DHW heating is immediately switched on if the outside temperature falls below the value selected under the „BOOSTER T ACTIVATE“ parameter. This means heating is not interrupted for longer than necessary.

If the outside temperature lies above the value set in the „BOOSTER T ACTIVATE“ parameter, then the electric emergency/booster heater will only start after expiry of the „BOOSTER TIMEOUT“, but no sooner than after 10 minutes.

□□□■ PASTEURISATION

When starting the appliance, the water in the DHW cylinder is heated up to the temperature set for pasteurisation. Subsequently, the cylinder is heated up for pasteurisation according to the interval (specified in days) set under the „PASTEURISATION“ parameter. The start point for the next interval occurs only when the temperature set in the „PASTEURISATION TEMP.“ parameter has been reached. This interval applies only if the DHW temperature has not in the meantime exceeded the temperature set in the „PASTEURISATION TEMP.“ parameter on account of other appliance functions.

▶ After modifying the set interval, press the reset button for the electronics to start a new cycle immediately. Otherwise the old cycle will be finished first.

□□□■ MAX DHW HTG DUR.

Using the „MAX DHW HTG DUR.“ parameter, the maximum duration for DHW heating is specified. If the set DHW temperature in the cylinder has not been reached after this number of hours, there is a fault with the DHW heating (Fault 15), and DHW heating is blocked until 22:00 h. After this, DHW heating is restarted. If the set DHW temperature is not reached again, DHW heating is blocked until 22:00 h the following day.

□□□■ PASTEURISATION TEMP.

As part of every pasteurisation event to protect against the growth of legionella bacteria, the water in the DHW cylinder is heated up to the temperature set in the „PASTEURISATION TEMP.“ parameter. For effective pasteurisation, you should set this parameter to at least 55 °C. As temperatures above 50 °C are not reached with the heat pump alone, the enabled electric emergency/booster heater stages always switch on during the heat-up process for pasteurisation.

□□□■ PASTEURISATION TIME

In the parameter „PASTEURISATION“, you have set how often pasteurisation to protect against the growth of legionella bacteria is

to be carried out (every X days). With the parameter „PASTEURISATION TIME“ you set the time of day at which that pasteurisation will be carried out.

□□□■ DHW BOOSTER STAGE

With the „DHW BOOSTER STAGE“ parameter you can enable up to three stages of the electric emergency/booster heater. The heat pump can only heat DHW up to a temperature of approx. 50 °C. The electric emergency/booster heater is used for higher set DHW temperatures.

Note
DHW heating may possibly not complete if the electric emergency/booster heater has been blocked because the high limit safety cut-out has tripped or the electric emergency/booster heater has been switched off via an external MCB. The entire room heating system is then blocked for the time set under "MAX DHW HTG DUR.". When outside temperatures are low, DHW heating cannot be accelerated due to "BOOSTER TIMEOUT" and "BOOSTER T ACTIVATE", leaving the room heating system blocked for prolonged times in this situation too. It is not possible to enable less than one stage of the electric emergency/booster heater.

□□□■ DHW BUFFER MODE

If you enable „DHW BUFFER MODE“, the DHW cylinder will be used as a buffer cylinder for excess output. Use this parameter exclusively for convector heaters.

□□□■ MAX FLOW TEMP DHW

Using the „MAX FLOW TEMP DHW“ parameter, you can limit the flow temperature in DHW mode. If this value is set too low, it may not be possible for DHW heating to be completed. This can lead to a fault message (F 15).

□□□■ DHW ECO

If the parameter „DHW ECO“ is set to „ON“, DHW is normally heated only by the heat pump. The electric emergency/booster heater only backs up DHW heating in the case of very low outside temperatures or if DHW heating takes unusually long.

In „DHW ECO“ mode, DHW is initially heated according to the set cylinder temperature. If the application limits of the heat pump are reached before the required temperature, DHW heating is terminated and the cylinder temperature that has been reached is accepted as the new set DHW temperature in the parameter set („DHW SET DAY“, „DHW SET NIGHT“, „DHW SET STANDBY“). The system „learns“ the maximum set DHW temperature that can be reached with the compressor only. If „DHW ECO“ has the value „OFF“, the electric emergency/booster heater starts if the heat pump reaches its application limit.

□□□■ DHW OUTPUT SUMMER

In the parameter „DHW OUTPUT SUMMER“, you enter (as %) the output of the compressor for DHW operation in summer. The lower the value, the more energy efficient is DHW heating.

□□□■ DHW OUTPUT WINTER

In the parameter „DHW OUTPUT WINTER“, you enter (as %) the set output of the compressor for DHW operation in the heating season. This may result in heating being delayed. The higher the value, the faster the DHW will be heated.

□□□■ INTEGRAL SENSOR

This parameter has no function for this appliance.

□□□■ INTEGRAL SENSOR CLASS

This parameter has no function for this appliance.

□□□■ 2ND DHW CYLINDER

Enable this parameter if a second DHW cylinder is connected to the appliance. In the delivered condition, the parameter is disabled.

□■ VENTILATION

□□■ FAN CONTROL

Option	
FLOW RATE	
DIFFERENTIAL PRESSURE	

Standard setting: FLOW RATE

□□■ DIFFERENTIAL PRESSURE

□□□■ DIFFERENTIAL PRESSURE STAGE 1
□□□■ DIFFERENTIAL PRESSURE STAGE 2
□□□■ DIFFERENTIAL PRESSURE STAGE 3
□□□■ I FACTOR
□□□■ P FACTOR

If differential pressure ventilation is active, the unit regulates the fans to a set pressure differential between the extract air and the surroundings. If time programs are used when differential pressure ventilation is active, the time program determines the level whose differential pressure is taken into account. Example: If the parameter “Day level” in the “Ventilation levels” menu has a value of 2, the unit regulates to “Differential pressure level 2” for the periods defined in the time program.

□□■ FLOW RATE

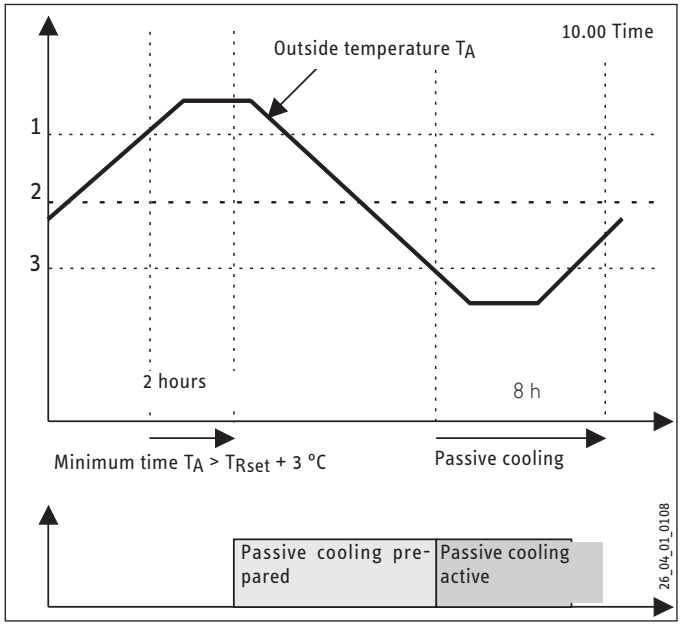
□□□■ FAN STAGE VENT. AIR 1
□□□■ FAN STAGE VENT. AIR 2
□□□■ FAN STAGE VENT. AIR 3
□□□■ FAN STG. EXTRACT AIR 1
□□□■ FAN STG. EXTRACT AIR 2
□□□■ FAN STG. EXTRACT AIR 3

These parameters determine the air flow rates of the individual fan stages. They should be set according to the design of the ventilation system. The control unit maintains a constant flow rate. The set value for „STAGE 0“ is generally 0 m³/h for both fans.

□□■ PASSIVE COOLING

□□□■ PASSIVE COOLING

At high outside temperatures, temperatures in the house can rise significantly above the set room temperature. With the „PASSIVE COOLING“ function, the building can be supplied with cooler outdoor air by bypassing the cross-countercurrent heat exchanger.



1 Set room temperature + 3 K
2 Set room temperature T_{Rset}
3 Set room temperature - 3 K

Passive cooling will be enabled if the outside temperature has, for at least two hours, been 3 K higher than the set room temperature for heating circuit 1, as set with the „ROOM TEMPERATURE DAY“ parameter in the „HEATING“ menu. If the outside temperature then drops 3 K below the set room temperature with a room temperature sensor connected, passive cooling is activated.

Options	
OFF	Activated passive cooling has no effect. The fans operate as programmed. Windows stay shut.
EXTRACT AIR	The supply air fan is stopped and the extract air fan output is increased by 20 % (e.g. from 47 % to 67 %). This means cool outdoor air is drawn into the room through the open windows. On hot days, this supports the cooling with cool night air when a window is open. In this case, open the windows in rooms supplied with air (living room, nursery and bedrooms), for example using the "WINDOW OPEN" control signal.
SUPPLY AIR	The extract air fan is stopped, and the supply air fan output is increased by 20 %. In this case you do not have to open the windows. However, this option is less effective and does not work in very airtight houses, i.e. if in the blower door test, the air change value n50 is ≤ 1.
BYPASS	This option caters for systems where an external bypass was installed on site. Both fans continue to run as programmed. The "WINDOW OPEN" control signal is then used for the damper in the bypass module.
SUMMER CASSETTE	With summer cassette (option): The fans will switch off if the outside temperature is higher than the set room temperature. If the outside temperature falls to 3 K below the room temperature, or 3 K below the set room temperature if there is no room temperature sensor, the fans are switched on and will run according to the program. The "WINDOW OPEN" control signal is enabled.

If an additional programming unit for heating circuit 1 or a room temperature sensor is connected in the living space, the actual room temperature is taken into account instead of the set room temperature.

Passive cooling ends no later than at 10:00 h.

□□□■ PASS. COOL EXP. AIR

This function is currently not available and must remain disabled.

□□□■ AIR STOP SUMMER DHW

The appliance has a preheating coil for preheating the outdoor air before it enters the cross-countercurrent heat exchanger. This is not required in summer. You can use this parameter to deactivate the appliance‘s ventilation function during DHW heating. This parameter is only available if a DHW cylinder has been integrated or connected.

□□■ HUMIDITY PROTECTION

	Options
□□□■ HUMIDITY PROTECTION	OFF | ON
□□□■ HUM. THRESHOLD VALUE	
□□□■ HUMIDITY HYSTERESIS	
□□□■ HUM. MASKING TIME	
□□□■ SET HUMIDITY MIN	
□□□■ OUTPUT REDUCTION	
□□□■ SET HUMIDITY MAX	
□□□■ OUTPUT INCREASE	

The appliance is equipped with humidity control that is intended to protect your building against damage from humidity.

The humidity protection should always be switched on. The humidity protection is only effective in fan stage 0. In its delivered condition, humidity protection is disabled, i.e. the „HUMIDITY PROTECTION“ parameter is set to 0 („OFF“). For drying buildings, the „HUMIDITY PROTECTION“ parameter must be set to 0 („OFF“). When commissioning the appliance, switch the parameter „HUMIDITY PROTECTION“ to „ON“.

Humidity protection ventilation is activated when the ventilation is switched off (stage 0). The fans are switched off during the first 24 hours after stopping ventilation. The humidity protection function then checks every hour whether the rooms need to be ventilated. For this, the fans operate for the duration of the „HUM. MASKING TIME“ at stage 1. If the measured value exceeds the set humidity level, both fans operate until the set humidity level falls below the „HUMIDITY HYSTERESIS“. The humidity protection becomes active as soon as the appliance starts following the restoration of the power supply following a power failure.

A set humidity level function is implemented to protect the building from condensation forming on the inside of exterior walls. For this, humidity of 100 % at 20 °C outside temperature is interpolated with the „HUM. THRESHOLD VALUE“ at -10 °C outside temperature. In order to take the type of building and the insulation of the exterior walls into account, set parameter „HUM. THRESHOLD VALUE“ as follows:

- Brickwork, 25 cm thick, not insulated: 55 % (default)
- Brickwork, 25 cm thick, 10 cm external insulation: 75 %

Fan output correction (stage 1/2/3) subject to humidity

For output stages 1, 2 and 3, the qualified contractor can activate a correction subject to humidity that orients itself on the internal relative humidity. This enables an increase in the air flow rate when the relative humidity is higher. In winter, an excessively high air flow rate can contribute to the ambient air becoming too dry. This can be counteracted by a reduction of the air flow rate subject to the prevailing humidity level.

„SET HUMIDITY MIN“: This parameter sets the lower limit of relative humidity.

„SET HUMIDITY MAX“: This parameter sets the upper limit of relative humidity.

„OUTPUT INCREASE“: This parameter determines the percentage by which the fan output is to be increased, if the value set in the „SET HUMIDITY MAX“ parameter is exceeded by a margin greater than the „HUMIDITY HYSTERESIS“.

„OUTPUT REDUCTION“: This parameter determines the percentage by which the fan output is to be reduced, if the value set in the „SET HUMIDITY MIN“ parameter is not reached by a margin greater than the „HUMIDITY HYSTERESIS“. In the delivered condition, „OUTPUT INCREASE“ and „OUTPUT REDUCTION“ are set to 0 %. This disables the correction of fan output subject to humidity. The percentage entered with the „OUTPUT INCREASE“ and „OUTPUT REDUCTION“ parameters relates to the maximum fan output and not to the currently selected fan output.

□□■ STOVE / FIREPLACE

If operating combustion equipment in the accommodation, you can go to the „STOVE / FIREPLACE“ menu to set how the ventilation unit responds when a signal transmitter is connected to terminal XD03-13/14, which switches when the combustion equipment is operated. In the „STOVE / FIREPLACE“ menu there are five options, of which only one can ever be enabled at a time (indicated by a filled box).

Option	
OFF	No action
N/O CONTACT OFF	With a 230 V input signal, the supply air fan, extract air fan, exhaust air fan and compressor are switched off.
N/C CONTACT OFF	With a 0 V input signal, the supply air fan, extract air fan, exhaust air fan and compressor are switched off.
N/O MONITORING	With a 230 V input signal, the extract air fan, exhaust air fan and compressor are switched off when the supply air fan stops.
N/C MONITORING	With a 0 V input signal, the extract air fan, exhaust air fan and compressor are switched off when the supply air fan stops.

□□■ LWA FUNCTION

This function is only for cases where the unit is installed as an extractor. This function is only available with constant flow rate control.

▶ Set the following parameters:

Parameter	Setting	Factory setting
SETTINGS/ VENTILATION / FAN CONTROL	FLOW RATE	FLOW RATE
SETTINGS / VENTILATION / LWA FUNCTION	ON	OFF

The unit switches the supply air fan off. Only the extract air fan is operational. The supply air provision is decentralised.

□□■ AIR DAMPERS

If the “AIR DAMPERS” parameter has a value of “ON”, the unit can switch the air dampers to supply air routing and extract air routing. The air dampers close when the fans are switched off.

□□■ AIR/AIR HE (air/air heat exchanger)

□□□■ MAX DEFROST DUR.

Defrost terminates if, during defrosting the air/air heat exchanger, the maximum defrost duration is exceeded.

□□□■ DEFR START THRESHOLD

Here, you specify the speed change (in %) from which defrost begins.

□□□■ FILTER SPEED

The air flow rate is continuously adjusted. If the filter is dirty, the fan speed increases. If it is above the start value by the set value (in %), the filter symbol shows that the filter is dirty.

□□□■ FILTER CHANGE VOLUME

The prompt for filter change via display of the „Filter change“ symbol is time controlled and subject to air volume. This parameter serves to define the air volume that will trigger a filter change prompt. Unit: 1000 m³/h

□□■ SERVICE

□□□■ RUNTIME FILTER

This value indicates how many days have passed since the last filter reset.

□□□■ RESET FILTER

When you set this parameter to „ON“, a filter reset will be triggered.

□■ COOLING

The „Cooling“ menu will only be shown if the appliance recognises an external programming unit connected to the BUS.

Material losses
In the "AREA HEATING SYSTEM" mode, dew point monitoring is active. There is a high risk of severe building damage if cooling is provided by means of an area heating system in "Fan convectors" operating mode.

▶ Set the following parameters for the heating circuits:

□□■ COOLING MODE HC1 / COOLING MODE HC2

□□□■ COOLING MODE HC1	OFF | ON
□□□■ COOLING SYSTEM HC1	AREA COOLING | FAN COOLING
□□□■ HC TEMP. COOLING HC1	
□□□■ HYST. ROOM TEMP. HC1	

To allow the appliance to cool, you must set the „COOLING MODE“ parameter to the value „ON“.

Cooling is enabled when the appliance is in summer mode and the outside temperature exceeds the set room temperature for heating (parameter „ROOM TEMPERATURE DAY“ in menu „HEATING / ROOM TEMPERATURES HC1“ or „ROOM TEMPERATURES HC2“) for 2 hours by 3 K.

If the room temperature is then higher than the set room temperature for cooling by the amount set in the „HYST. ROOM TEMP.“ parameter, cooling will be prepared. The display shows a snowflake. The circulation pump starts, the three-way valve changes over to the heating circuit and the „cooling“ output is activated in order to, for example, open the thermostatic valves in the rooms to be cooled.

□□■ STANDARD SETTING

□□□■ COOLING CAPACITY

With the parameter „COOLING CAPACITY“ you determine the maximum set cooling capacity of the compressor. The value must be set as low as possible, to achieve the longest possible runtimes for the compressor. For large building floor areas that require a high cooling capacity the value must be increased.

□□□■ HYST. FLOW TEMP.

The compressor starts if the flow temperature lies higher than the set flow temperature for cooling by the amount of the „HYST. FLOW TEMP.“. The compressor stops when it is lower than this by the amount of flow temperature hysteresis. The dew point is monitored in area heating systems.

The dew point is that temperature at which humidity in the air begins to condensate. The compressor stops once the flow temperature is within 2 K of the dew point. The compressor will be enabled if it lies above this value by the hysteresis set in parameter „HYST. FLOW TEMP.“.

□■ SOLAR THERMAL

	Option
□□■ SOLAR HYSTERESIS	
□□■ COLLECTOR TEMP LIMIT	
□□■ COLL. PROTECT TEMP	
□□■ COLL. CUT-OFF TEMP	
□□■ COLLECTOR PROTECTION	OFF | ON
□□■ PRIORITY SOLAR	SOLAR | COOLING | COOLING TIME
□□■ COOLING TIME	
□□□■ COOLING TIME START	
□□□■ COOLING TIME END	

□□■ SOLAR HYSTERESIS

„SOLAR HYSTERESIS“ in combination with „TEMP. DIFFERENTIAL“ serves as a threshold for starting and stopping the solar circuit pump. Most systems work well with a hysteresis value of 1 K. For system with very long line lengths, a higher value can be entered here.

„Solar overheating“ function

If there is no heat demand and, at the same time, the cylinder temperature is lower than the temperature set in the „DHW SOLAR TEMP.“ parameter, the appliance checks whether the collector temperature is higher than the cylinder temperature by the sum of the differential temperature and hysteresis. If so, the DHW pump and the solar circuit pump are started.

□□■ COLLECTOR TEMP LIMIT

To protect the heating circuit, the solar circuit pump modulates its operation when the collector temperature exceeds the value set under parameter „COLLECTOR TEMP LIMIT“.

□□■ COLL. PROTECT TEMP

If the adjustable „COLL. PROTECT TEMP“ has been reached and „COLLECTOR PROTECTION“ enabled with the value „ON“, the DHW cylinder is heated to the temperature set under „DHW SOLAR TEMP.“. The selected „MAX FLOW TEMP DHW“ terminates the process. If, after maximum cylinder heating, the collector temperature exceeds the set value, the solar circuit pump is stopped and blocked until the cylinder temperature meets the following condition: „DHW TEMPERATURE“ ≤ „DHW SOLAR TEMP.“-5 K hysteresis.

WARNING Burns
Temperatures in excess of 60 °C can be reached. There is a risk of scalding at outlet temperatures in excess of 43 °C.

□□■ COLL. CUT-OFF TEMP

The collector is blocked for heat transfer if the collector temperature rises above the set „COLL. CUT-OFF TEMP“. It is not enabled again until it falls back below the collector protection temperature. The collector protection temperature must be lower than the collector cut-off temperature.

□□■ COLLECTOR PROTECTION

See chapter „Collector protection temperature“.

□□■ PRIORITY SOLAR

With parameter „PRIORITY SOLAR“ you can select the priority for the cooling mode if a solar thermal system is connected. Possible settings are „SOLAR“, „COOLING“ and the time-controlled setting via „COOLING TIME“. This programs the cooling period.

Option	
SOLAR THERMAL	Cooling is not enabled for as long as the solar starting conditions are met and the maximum system temperatures (max. DHW and max. heating circuit) have not been reached.
COOLING	The "solar overheating" function and collector protection are deactivated. The solar start conditions are checked as soon as cooling ends.
COOLING TIME	The "solar overheating" function and collector protection function are deactivated under a time control. There is a specific parameter for the cooling time, which can be used to adjust it (see chapter "Cooling time").

□□■ COOLING TIME

With parameter „COOLING TIME“ you can select the period for which collector protection is to be disabled. Cooling time will only be considered if the value „COOLING TIME“ is set in parameter „PRIORITY SOLAR“.

In parameters „Start“ and „End“ set the required times.

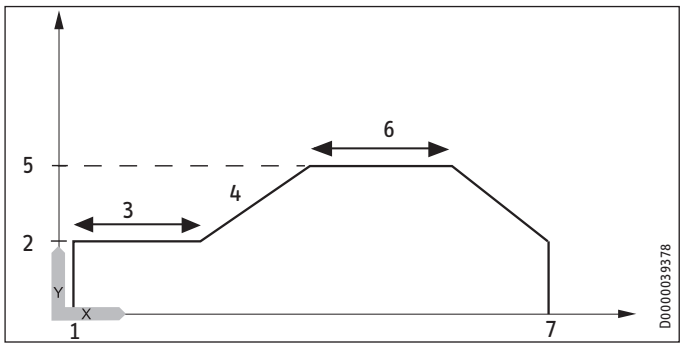
□■ SCREED DRYING PROG.

Material losses
Never ventilate when dust is being generated in the house, for example when cutting tiles or sawing plasterboard.

If an underfloor heating system is installed, you can activate screed drying with the „SCREED DRYING PROG.“ (see menu „Settings“). Here, you can specify a temperature curve as provided by the screed contractor for gently drying the screed. The program is started by setting the „START“ parameter to „ON“. The appliance heats until the „LOW END TEMPERATURE“ has nearly been reached (max. deviation 5 °C).

After that, the low end temperature is constantly maintained for the number of days set under „TEMP. RISE PERIOD“. The set temperature is then increased by the value set under „GRADIENT“, given in Kelvin per day (K/d).

Dry heating (screed drying) program curve



X Time
Y Temperature
1 „START“
2 „LOW END TEMPERATURE“
3 „TEMP. RISE PERIOD“
4 „GRADIENT“ [K/d]
5 „HIGH END TEMPERATURE“
6 „MAX HUT TIME“
7 End

When this temperature has been reached, the set temperature is increased further. When the high end temperature set under the „HIGH END TEMPERATURE“ parameter has been reached, the temperature will be held constant for the time set under „MAX HUT TIME“. The temperature is then reduced to the low end temperature in the same steps. The screed drying program is completed when „OFF“ is displayed under the „START“ parameter.

If the screed drying program is interrupted by a power failure or the appliance being switched off, the dry heating program continues when the appliance is switched back on. If the screed drying program is to be cancelled, set the „START“ parameter to „OFF“.

Drying out can take a long time, as the heat pump output is insufficient for this purpose. If necessary, also switch on the booster stages. Always expect a considerably higher energy demand during drying out.

The dual mode point is not taken into consideration during drying out. The booster stages are always enabled when the controller detects a deviation above the hysteresis.

If no work is being carried out that generates dust, you can start ventilation during drying out, to extract humidity efficiently. This can result in condensate escaping from the appliance. Condensate will stop escaping when more regular operating conditions are restored.

□■ COMMISSIONING

□□■ PROGRAMMING UNIT

□□□■ TOUCH SENSITIVITY

This parameter enables you to select the touch sensitivity of the scroll wheel. Example: You can reduce the sensitivity if large fingers are used or firm pressure. For this, increase the value of the parameter.

□□□■ TOUCH ACCELERATION

Faster circular motions increase the step magnitude when changing parameters. With the „TOUCH ACCELERATION“ parameter you can determine at what speed of rotation the step changeover occurs.

□□□■ TERMINAL ADDRESS

Up to four programming units can be connected to the appliance. However, this includes the programming unit built in at the factory and the Internet Service Gateway that can be connected as an accessory. If more than one programming unit has been connected to the appliance, assign each one an individual, unique „TERMINAL ADDRESS“ in the „COMMISSIONING“ menu.

If the terminal addresses were not assigned, there would be conflicts in communication between the appliance and the programming units, as every programming unit is given the same standard value for the terminal address parameter.

The internal programming unit has terminal address 4 as standard. Programming units to be used for capturing the room temperature and relative humidity must be given terminal address 1 or 2.

□□□■ HC ROOM T DETECTOR

If the programming unit is integrated directly in the appliance, this parameter does not appear.

If a second programming unit is connected, after being enabled during commissioning, the system prompts for the assignment of a heating circuit. Select „HC1“ to assign the programming unit to heating circuit 1 or „HC2“ accordingly. If you select „NONE“, the actual room temperature will not be taken into account when controlling the appliance, and the programming unit will work only as a remote control.

☐☐■ CONTROLLER

☐☐☐■ RESET CONTROLLER

If you set this parameter to the value „ON“, the appliance will be reset. Your own customised settings will not be overwritten by the standard values.

☐☐☐■ FACTORY SETTING

If you give this parameter the value „ON“, then all parameters will be reset to their factory settings. All changes made will be lost. Even the appliance type will need to be re-entered under the „APPLIANCE TYPE“ parameter. The delivered condition only loads the default values; it does not reset any component.

☐☐☐■ APPLIANCE TYPE

You can set the appliance type here.

Note
Changing the "APPLIANCE TYPE" parameter can result in incorrect functioning of the appliance; it must therefore be changed only by our service department. Therefore this parameter can only be adjusted after entering the customer service code.

The appliance type must be re-entered after the delivered condition has been reinstated or after a new PCB has been fitted.

■ CONTRACTOR

☐■ ENTER CODE

When the numerical contractor code is entered here, all contractor parameters of the appliance become freely accessible. At the factory, the „CODE“ is set to 1000.

If the customer service code is entered at this point, further parameters reserved for service department become accessible.

Note
If there is no operating action after a certain period of time, the control disables access to the protected parameters. In that case you will need to enter the contractor code again.

☐■ FAULT SEARCH

☐☐■ FAULT LIST

The appliance records the faults that have occurred in a circular memory. The fault list contains the ten most recent fault messages. If one fault occurs several times, it will only be recorded in the fault list on its first occurrence.

☐☐■ DELETE FAULT MEMORY

If you set the option „ON“ in this parameter, the fault list is cleared.

☐☐■ STOP EVENT

All actual values and switching states of the appliance are recorded in a circular memory. With „STOP EVENT“, the recording stops and it may be possible to draw conclusions from it as to the cause of the fault.

☐■ SWITCH ON MANUALLY

Here, you can switch appliance components or functions on manually. To do so, you have to enter the customer service code.

Parameter	
☐☐■ CONTROL VALVE HTG	
☐☐■ CONTROL VALVE DHW	
☐☐■ SOLAR PUMP	
☐☐■ MIXER PUMP	
☐☐■ MIXER OPEN	
☐☐■ MIXER CLOSE	
☐☐■ DIVERTER VALVE	
☐☐■ COMPRESSOR	
☐☐■ BOOSTER STAGE 1	
☐☐■ BOOSTER STAGE 2	
☐☐■ BOOSTER STAGE 3	
☐☐■ EXTR. AIR FAN SPEED	Activating this parameter sets the speed to 100 %.
☐☐■ SUPPLY AIR FAN SPEED	Activating this parameter sets the speed to 100 %.
☐☐■ WINDOW OPEN	
☐☐■ CONTACT COOLING	
☐☐■ 2ND DHW CYLINDER	
☐☐■ OIL SUMP HEATING	With this parameter, you activate the relay contact X18/3.

☐■ DHW CYLINDER

LWZ 5-8 S Trend: If you are connecting a DHW cylinder to the appliance, you will need to enable the “DHW CYLINDER” parameter. In the delivered condition, the parameter is disabled.

☐■ EVAPORATOR

☐☐■ DEFROST END TEMP.

The evaporator stops defrosting if this temperature is reached during the defrosting process. Never change this value.

☐☐■ MAX DEFROST DUR.

Evaporator defrost is terminated after the time set here has expired, and the appliance returns to its original operating state. If the evaporator has not yet been defrosted, the defrosting process is re-initiated. This process is repeated until the upper evaporator temperature limit is reached or exceeded. If defrost is terminated through the maximum defrost time 10 times in a row, a fault (F17) is displayed.

☐☐■ BOOSTER REFR. GUARD

If, during the defrosting process, the condenser temperature falls below the limit value defined under „BOOSTER REFR. GUARD“, the electric emergency/booster heater is switched on to stop the heating water cooling down any further.

☐☐■ DEFROST STOP

If the condenser temperature still continues to drop after the electric booster heater has been switched on, there is a risk that the condenser may freeze up. In this case, the defrosting process will be terminated when the temperature defined under the „DEFROST STOP“ parameter is reached.

☐■ REFRIGERATION UNIT

☐☐■ COMPRESSOR CYCLING

Here, you define the delay before the compressor switches back on. To limit the compressor to three start cycles per hour, a value of 20 minutes is preset. This time counts from when the compressor starts. For example, the compressor can run for 15 minutes, and start again after 5 minutes downtime.

☐☐■ EXHAUST AIR SPEED

This parameter enables you to set the speed of the exhaust air fans as a percentage of the maximum speed. To ensure efficient heat pump operation, the exhaust air fan should always be set to the standard value detailed in the parameter overview.

☐☐■ STARTING CURR. LIMTR

With the parameter „STARTING CURR. LIMTR“ you can limit the starting current.

☐■ VENTILATION

☐☐■ FAN

Note
If you replace a fan, please note that the extract air fan and the supply air fan must be the same fan type.

Option	Fan type
0	EBM

☐■ PUMPS

☐☐■ PUMP SPEED DHW

This parameter enables you to set the speed of the internal circulation pump during DHW heating.

☐☐■ PUMP SPEED HEATING

This parameter enables you to set the speed of the internal circulation pump during room heating.

☐☐■ MIXER/HEATING RATIO

With this parameter, you set the speed ratio between the internal circulation pump and the high efficiency mixer pump connected to the mixer PWM output.

☐☐■ MIXER P. RUN-ON

This parameter enables you to set the pump run-on for the mixer pump after the internal circulation pump is switched off. This assists in draining any buffer cylinder that may be present.

☐☐■ MIXER P. TYPE

Set the type of control characteristic for the external heating circuit pump connected to the mixer PWM output.

Type of control characteristic	
Type 0 (PWM signal logic 1)	At the minimum pump control percentage, the pump operates at full output. At higher pump control percentages, the output of the pump decreases.
Type 1 (PWM signal logic 2)	At the minimum pump control percentage, the pump operates at zero output. At higher pump control percentages, the output of the pump increases.
Type 2	From a particular threshold value, the pump speed increases in direct linear proportion to the voltage applied to the pump.

☐☐■ SOLAR P. TYPE

Set the type of control characteristic of the pump connected to the solar PWM output. For pump types, see „MIXER P. TYPE“.

☐■ PUMP CYCLES

☐☐■ MINIMUM CYCLES
☐☐■ MAXIMUM CYCLES
☐☐■ OUTSIDE TEMP MIN CYC
☐☐■ OUTSIDE TEMP MAX CYC

Determine here how many times each day the heating circuit pump starts. Under „OUTSIDE TEMP MIN CYC“, you define the outside temperature above which the pump starts as often as is set under „MINIMUM CYCLES“. Accordingly, „OUTSIDE TEMP MAX CYC“ determines the temperature below which the pump starts as often as set under „MAXIMUM CYCLES“.

Example: In factory settings, if the outside temperature is above 20 °C („OUTSIDE TEMP MIN CYC“) the pump runs once a day („MINIMUM CYCLES“); below 19 °C („OUTSIDE TEMP MAX CYC“) 288 times a day for five minutes at a time (288*5/60=24 hours). This means that below 19 °C, the pump is constantly on; above 20 °C, the pump starts once a day so it does not seize up during the summer. The appliance interpolates between the temperatures „OUTSIDE TEMP MIN CYC“ and „OUTSIDE TEMP MAX CYC“. At 19.5 °C the circulation pump starts 144 times each day.

With the aid of „PUMP CYCLES“, you can set the pump not to start during the compressor blocking time (20 min) in winter.

Set the following values:

MAXIMUM CYCLES		50
OUTSIDE TEMP MAX CYC	°C	0

Below 0 °C, the pump therefore starts no more than 50 times a day. This prevents the electric emergency/booster heater being started while the compressor is blocked, although the compressor output should still be sufficient.

Note
In summer mode and in exclusive DHW mode, the "OUTSIDE TEMP MIN CYC" parameter will not be taken into account. The circulation pump runs as often as set in the "MINIMUM CYCLES" parameter. If the outside temperature falls below 4 °C, the circulation pump runs in DHW mode as often as set in the "MAXIMUM CYCLES" parameter.
In manual mode, the circulation pump runs as often as set in parameter "MAXIMUM CYCLES".

In cooling mode the pump runs under room temperature-dependent control.

☐■ EMERGENCY MODE AUTO

When this parameter is activated, emergency mode will be activated if the compressor is disabled as a result of a fault.

☐■ POWER-OFF

With the „POWER-OFF“ parameter the effect of the power input on the blocking of individual heat sources can be selected.

Option	
0	No blocking
1	The heat pump is blocked. The electric emergency/booster heater is blocked above the dual mode point for heating. After restarting, the electric emergency/booster heater remains blocked for a certain time. For this purpose, a restart time is set in the "COMPRESSOR CYCLING" parameter. The electric emergency/booster heater for DHW heating is started after the saved delay time stored in the "Booster timeout" parameter has expired.
2	The heat pump is blocked. The electric emergency/booster heater is enabled for DHW heating after a delay time of 10 minutes has elapsed. The electric emergency/booster heater is blocked above the dual mode point for heating.
3	The heat pump is blocked. The electric emergency/booster heater is enabled for DHW heating and heating after a delay time of 10 minutes has elapsed.
4	The electric emergency/booster heater is blocked.
5	Electric emergency/booster heater and heat pump are blocked.

☐■ SILENT MODE

Note
Silent mode has an effect on the heating output and efficiency of the unit. When silent mode is active, operating costs will be higher.

Silent mode is a reduced noise mode.

☐☐■ SILENT MODE FACTOR OUTPUT RELATIVE

The reduction in the compressor output can be set here in %.

☐☐■ SILENT MODE FACTOR FAN RELATIVE

Here you can specify the percentage by which the speed of the exhaust air fan is reduced.

If you do not limit compressor output and you reduce the speed of the exhaust air fan too much, problems can occur. If silent mode is required and you reduce the speed of the exhaust air fan, we recommend that you also reduce the compressor output.

☐☐■ SILENT MODE START TIME

▶ Set the time at which the unit is to switch to a reduced noise mode.

☐☐■ SILENT MODE END TIME

▶ Set the time at which the unit is to terminate reduced noise mode.

☐☐■ SILENT MODE ACTIVE

▶ Switch silent mode on or off here.

☐■ PROCESS VALUES

These values are used for analysis in the event of a fault.

☐☐■ FAN (PRC)	
☐☐■ OUTSIDE TEMPERATURE	
☐☐■ EVAP. OUTLET TEMP.	
☐☐■ HOT GAS TEMPERATURE	
☐☐■ FLOW TEMPERATURE	
☐☐■ CONDENSER TEMP.	
☐☐■ RETURN TEMPERATURE	
☐☐■ COOLING TEMP.	
☐☐■ HIGH PRESSURE	
☐☐■ LOW PRESSURE	
☐☐■ LP FILTERED	
☐☐■ POSITION VALVE	
☐☐■ PWM SOLAR PUMP	
☐☐■ PWM HTG CIRCUIT PUMP	
☐☐■ PWM MIXER PUMP	
☐☐■ HTG OUTPUT RELATIVE	Estimated relative heating output determined from the pre-control curve
☐☐■ COMPRSSR SET OUTPUT	Calculated output setting for the compressor in heating and cooling mode
☐☐■ COMP N SET VAL UNLTD	
☐☐■ COMPR. N SET VAL LTD	

☐■ PROCESS STATUS

These values are used for analysis in the event of a fault.

☐☐■ HP SWITCH	OFF / ON
☐☐■ MOTOR PROTECTION	OFF / ON
☐☐■ DEFROST SIGNAL	OFF / ON
☐☐■ COMPRESSOR	OFF / ON
☐☐■ DHC 1	OFF / ON
☐☐■ DHC 2	OFF / ON
☐☐■ DHC 3	OFF / ON
☐☐■ DEFROST VALVE	OFF / ON
☐☐■ FAN	OFF / ON
☐☐■ COOLING	OFF / ON
☐☐■ POWER-OFF	OFF / ON
☐☐■ STOVE / FIREPLACE	OFF / ON

☐■ ANALYSIS

In the „ANALYSIS“ submenu actual values are displayed that may be useful to the service department when troubleshooting.

☐☐■ CURRENT MODE IWS
☐☐■ CURRENT MODE EVE
☐☐■ SUPERHTG EVAP. SET
☐☐■ SUPERHTG EVAP ACTUAL

□□■ SUPERHTG RECUP. ACT.
□□■ CYCLING REL.
□□■ DYNAMIC FACTOR
□□■ P FACTOR
□□■ I FACTOR
□□■ D FACTOR
□□■ OPENING EXV PRE-CTRL
□□■ OPENING EXV
□□■ OPENING EXV COOLING
□□■ ACTUAL HTG/COOL OUTPUT

□■ INVERTER

These values are used for analysis in the event of a fault.

□□■ COMPRESSOR SPEED	Compressor speed transferred from the inverter
□□■ MOTOR CURRENT	Motor current transferred from the inverter
□□■ MOTOR POWER	Motor power transferred from the inverter
□□■ MOTOR VOLTAGE	Motor voltage transferred from the inverter
□□■ INVERTER TEMPERATURE	Temperature of IGBTs, transferred from the inverter
□□■ INVERTER FAULT	The last fault number transferred from the inverter

3.2 Economy settings

The appliance has been set up at the factory to give priority to providing heating and DHW conveniently under all circumstances. In doing this, it may occur that more energy than required is used. The following describes a range of measures you can take to reduce energy consumption with only small sacrifices to comfort.

Note
Please note that the energy demand of a new building can be significantly higher in the first two years (drying out) than the calculated energy demand.

3.2.1 DHW temperature

If the DHW temperature for day mode is set above 45 °C, the heat pump may not be able to complete DHW heating under some circumstances. In this case, the electric emergency/booster heater is also started, so the required DHW temperature of up to 55 °C is reached.

To avoid this, you can use the „DHW ECO“ function. If the set DHW temperature is not reached with the heat pump alone, the set DHW value is adjusted automatically so the electric emergency/booster heater will not be required.

► Set „DHW ECO“ to „ON“.

3.2.2 Pasteurisation

To protect against the growth of legionella bacteria, the contents of the DHW cylinder are heated at adjustable intervals to the temperature selected under the „PASTEURISATION TEMP.“ parameter (“SETTINGS / DHW / STANDARD SETTING).

When heating DHW in detached houses check whether this function may possibly be omitted. In such cases, the „PASTEURISATION TEMP.“ parameter can be set to 10 °C. This value is preset.

There is a risk of legionella bacteria growth if only little DHW is used. Legionella bacteria are generally only a danger to people with weakened immune systems.

3.2.3 Heating curve

Adjust the heating curve carefully, as the heat pump efficiency will be reduced with an increasing flow temperature. See chapter „Operation / MAIN MENU / Settings / Heating“ in the operating instructions.

3.2.4 Electric booster in heating mode

If it is correctly sized, the heat pump should cover the heat demand by itself, down to an outside temperature of approx. -5 °C, if the DHW demand is not excessive. The electric emergency/booster heater starts subject to output. However, it may occur that the electric emergency/booster heater starts even though the heating output of the heat pump would still be sufficient. To prevent this, the dual mode point, above which the electric emergency/booster heater is blocked, should be set to -5 °C. The factory setting is 0 °C.

Note
On account of the moisture contained in building materials, new buildings have a higher heat demand than will be the case one or two years later. It may therefore be required to set a higher dual mode point.

3.2.5 Summer mode

■ SETTINGS		Example
□■ HEATING		
□□■ STANDARD SETTING		
□□□■ SUMMER MODE	°C	20
□□□■ HYST. SUMMER MODE	K	2

Conditions	
Outside temperature ≥ SUMMER MODE + HYST. SUMMER MODE/2	Heating blocked
Outside temperature ≤ SUMMER MODE - HYST. SUMMER MODE/2	Heating enabled

Sample application: At an outside temperature above 21 °C, heating stops; heating restarts if the outside temperature drops below 19 °C. This significantly reduces the heating runtime.

Note
One condition for the cooling function is that summer mode has been activated.

3.2.6 Pump cycles

In the „CONTRACTOR“ menu under „PUMP CYCLES“, you can set how many times a day the heating circuit pump starts. With the aid of pump cycles, in winter you can set the pump not to start while the compressor is blocked (20 min). For this purpose, set „MAXIMUM CYCLES“ to 50 and „OUTSIDE TEMP MAX CYC“ to 0 °C. Below 0 °C, the pump starts no more than 50 times a day.

This stops the electric booster heater being started while the compressor is blocked, although the compressor output should still be sufficient.

In summer, the pump should start only once a day while the temperature is above the summer/winter changeover temperature („SUMMER MODE“ parameter). For this, „OUTSIDE TEMP MIN CYC“ must be set to the total of the values „SUMMER MODE“ and „HYST. SUMMER MODE“.

Note
For solar DHW heating, set the values listed under the description with "DHW SOLAR TEMP." for these pump cycle parameters.

Note
Feedback from the rooms is only available when the heating circuit pump runs, making this a condition for the recognition of a heat demand.

4. Troubleshooting

4.1 Notification list

Note
If the appliance blocks the compressor in the event of a fault, the electric emergency/booster heater only starts immediately for heating and DHW if automatic emergency mode is on.
If automatic emergency mode is not on, the electric emergency/booster heater only starts once the time set in parameter "Booster timeout" has elapsed. The "Heating" and "DHW" menus each have their own "Booster timeout" parameter.
For heating without automatic emergency mode, the dual mode temperature must also be undershot so that the electric emergency/booster heater will start following expiry of the time set in parameter "Booster timeout".
If a fault occurs which causes the appliance to switch off the heat pump, you can activate "Emergency mode". The emergency/booster heater then ensures the functioning of the heating system and DHW heating.

	Fault	Unit response	Cause	Remedy
01	Anode		The anode has either been consumed or the connection cable is faulty.	Notify your qualified contractor.
02	The high limit safety cut-out has tripped	The electric emergency/booster heater has overheated and was therefore stopped by the high limit safety cut-out.	The flow rate through the heat pump is too low. The external filter on the return is contaminated.	Clean the filter.
			The pump has seized.	Ensure its function or replace the pump.
			The flow rate through the heat pump is too low, for example if the thermostatic valves on all the radiators or the zone valves in the underfloor heating system are closed.	If you add the flow rate to "Favourites", you can easily monitor it. If all valves are closed, this indicates that a heating curve has been set too high. Match the heating curve in accordance with the description in chapter "Heating/Heating curve".
			This fault may also occur if the power supply utility shuts down the electric emergency/booster heater during a power-off period and the parameter "POWER-OFF" has been set incorrectly.	Ensure that the power-OFF contact has been connected correctly. Set parameter "POWER-OFF" in accordance with the specification issued by the power supply utility (see chapter "Settings / Contractor level / Power-OFF"). Press the electronics reset button.
				Press the high limit safety cut-out reset button. Press the electronics reset button. If the fault recurs, inform your qualified contractor.
03	High pressure switch	The high pressure switch has responded five times within a compressor runtime of two hours. The heat pump will shut down.	The external filter on the return is contaminated.	Clean the filter.
			The pump has seized.	Ensure its function or replace the pump.
			The flow rate through the heat pump is too low, for example if the thermostatic valves on all the radiators or the zone valves in the underfloor heating system are closed.	If you add the flow rate to "Favourites", you can easily monitor it. If all valves are closed, this indicates that a heating curve has been set too high. Match the heating curve in accordance with the description in chapter "Heating/Heating curve".

Troubleshooting

	Fault	Unit response	Cause	Remedy
				Isolate the appliance across all poles from the mains power for three minutes. If the fault recurs, inform your qualified contractor.
04	Low pressure switch	The low pressure switch has responded five times in five hours. The heat pump will shut down.	The exhaust air fan is faulty. Fault 07 should then also be in the fault list.	
			Fault in defrost detector.	Remove the defrost hose (see chapter "Maintenance and cleaning / Cleaning the evaporator") and check whether it has iced up. Then push the hose on again to the same length.
			Heat pump intake or discharge is blocked.	Check and clean if required
				Press the electronics reset button. If the fault recurs, inform your qualified contractor.
05	Extract air fan	The fan is blocked.	The fan is switched on but there is no feedback to the PCB. The fans are protected by a fuse against excess current. If one of these fuses has blown, the fan is blocked until it has been isolated from the power supply.	Isolate the appliance across all poles from the mains power for approx. one minute. If the fan repeatedly fails to start, inform your qualified contractor.
06	Supply air fan	The fan is blocked.	The fan is switched on but there is no feedback to the PCB. The fans are protected by a fuse against excess current. If one of these fuses has blown, the fan is blocked until it has been isolated from the power supply.	Isolate the appliance across all poles from the mains power for approx. one minute. If the fan repeatedly fails to start, inform your qualified contractor.
07	Exhaust air fan	The fan is blocked. The heat pump will be locked out.	The fan is switched on but there is no feedback to the PCB. The fans are protected by a fuse against excess current. If one of these fuses has blown, the fan is blocked until it has been isolated from the power supply.	Isolate the appliance across all poles from the mains power for approx. one minute. If the fan repeatedly fails to start, inform your qualified contractor.
			This fault may also occur if the power supply utility shuts down the heat pump during a power-off period and parameter „POWER-OFF“ has been set incorrectly.	Ensure that the power-OFF contact has been connected correctly. Set parameter "POWER-OFF" in accordance with the specification issued by the power supply utility (see chapter "Settings / Contractor level / Power-OFF"). Press the electronics reset button.
08	Hot gas max.	The compressor was shut down for safety reasons.	The max. hot gas temperature of 120 °C was exceeded.	This is not a fault. This situation can occur when high flow temperatures are requested at very low outside temperatures. Depending on the setting, the electrical emergency/booster heater provides heating.
09	EVE min.	The heat pump will shut down.	The "Superheating min." switch has responded five times within a compressor runtime of about two hours.	Press the electronics reset button. If the fault recurs, inform your qualified contractor.
10	Flow max	Heat generators are disabled until the flow temperature has fallen again. As a consequence, the enabled heat generator cycles constantly between on and off.	The switch for the maximum flow temperature has responded, either in DHW heating or heating mode.	Check the maximum flow temperature setting in the „DHW“ and „Heating“ menus. Notify your qualified contractor.
11	Low pressure sensor	The low pressure sensor does not deliver a plausible signal (< 2 mA longer than 10 s). The heat pump is blocked in cooling mode.	Cause may be the low pressure sensor fault.	Also check the sensor lead. If the fault recurs, inform your qualified contractor.
12	High pressure sensor	The high pressure sensor does not deliver a plausible signal (< 2 mA longer than 10 s).	Likely cause is the high pressure sensor fault.	Also check the sensor lead. If the fault recurs, inform your qualified contractor.
13	EVE refrigerant shortage	The "Refrigerant shortage" limiter has triggered five times in five hours. The heat pump will shut down.		Press the electronics reset button. If the fault recurs, inform your qualified contractor.
14	EVE Ex valve will not close			Check that the expansion valve is working correctly. Notify your qualified contractor.
			The inverter fuse may have tripped.	Reset the inverter fuse. If the fault recurs, inform your qualified contractor.
15	DHW temperature	DHW heating has developed a fault if the set DHW temperature in the cylinder has not been reached after the defined time (see "Maximum duration DHW heating"). DHW heating is blocked until 22:00 h and then restarted. If the set DHW temperature is not reached again, DHW heating is blocked until 22:00 h the following day.	The electric emergency/booster heater stages for DHW operation are not enabled or are blocked by the high limit safety cut-out. It may then no longer be possible to reach the required DHW temperature at DHW temperatures above 50 °C and high outside temperatures. This can happen even if a pasteurisation temperature above 50 °C is entered.	Check whether the high limit safety cut-out for the emergency/booster heater stages has responded (see fault 02). Reset the high limit safety cut-out, if necessary. If the high limit safety cut-out had responded, the flow rate was probably too low (see fault 03). Starting „DHW ECO“ may provide a remedy.
			The DHW diverter valve does not work.	Multiple attempts by adjusting the set DHW temperature to 10 °C and 50 °C.
			The maximum flow temperature for DHW mode ("MAX FLOW TEMP DHW") is set too low.	
				If the fault recurs, inform your qualified contractor.

Troubleshooting

	Fault	Unit response	Cause	Remedy
16	Inverter communication fault			Notify your qualified contractor.
17	Defrost time exceeded	The evaporator is not defrosted within the defined period. If the fault has occurred ten times in succession, the heat pump is blocked.		Press the electronics reset button. If the fault recurs, inform your qualified contractor.
18	Heating circuit pressure sensor	The heating circuit pressure sensor is not providing a plausible signal.		
19	Defrost duration of cross-countercurrent heat exchanger	Defrosting is not completed after expiry of the defined time. The fault is displayed until the defrost process has been completed.		
20	Solar sensor	The solar circuit pump is not being switched.	The measured sensor values have been constantly outside the permissible range for a specified period.	Check whether the solar sensor is connected or, if no solar thermal system is connected, whether parameter "SOLAR ACTIVATION" is set to "OFF".
				Press the electronics reset button for one second. If the fault recurs, inform your qualified contractor.
21	Outside temperature sensor	The heating system runs constantly with the flow temperature for manual mode.	The measured sensor values have been constantly outside the permissible range for a specified period.	Press the electronics reset button for one second. If the fault recurs, inform your qualified contractor.
22	Hot gas temperature sensor	The compressor is switched off at outside temperatures < –10 °C and condenser temperatures > 40 °C.	The measured sensor values have been constantly outside the permissible range for a specified period.	Press the electronics reset button for one second. If the fault recurs, inform your qualified contractor.
23	Condenser temperature sensor	The compressor is stopped.	The measured sensor values have been constantly outside the permissible range for a specified period.	Press the electronics reset button for one second. If the fault recurs, inform your qualified contractor.
24	Evaporator temperature sensor	The compressor is stopped.	The measured sensor values have been constantly outside the permissible range for a specified period.	Press the electronics reset button for one second. If the fault recurs, inform your qualified contractor.
25	Compressor inlet temperature	Cooling mode is blocked.	The measured sensor values have been constantly outside the permissible range for a specified period.	Press the electronics reset button for one second. If the fault recurs, inform your qualified contractor.
26	Return temperature sensor in heating circuit	The heating system switches over to heating mode subject to flow temperature. The amount of solar heat cannot be calculated.	The measured sensor values have been constantly outside the permissible range for a specified period.	Press the electronics reset button for one second. If the fault recurs, inform your qualified contractor.
27	Evaporator output temperature	Evaporator control of the heat pump is disabled.	The measured sensor values have been constantly outside the permissible range for a specified period.	Press the electronics reset button for one second. If the fault recurs, inform your qualified contractor.
28	Flow temperature sensor in heating circuit	The heating system switches over to heating mode subject to return temperature. The electric emergency/booster heater output cannot be calculated.	The measured sensor values have been constantly outside the permissible range for a specified period.	Press the electronics reset button for one second. If the fault recurs, inform your qualified contractor.
29	DHW temperature sensor	DHW heating is blocked.	The measured sensor values have been constantly outside the permissible range for a specified period.	Press the electronics reset button for one second. If the fault recurs, inform your qualified contractor.
30	Software version			Press the electronics reset button. If the fault recurs, inform your qualified contractor. The software version does not match the hardware version.
31	RAM			Press the electronics reset button. If the fault recurs, inform your qualified contractor. Replace the control unit.
32	EEProm			Press the electronics reset button. If the fault recurs, inform your qualified contractor. Replace the control unit.
33	Extract air humidity sensor		The actual values captured by a humidity sensor are continuously outside the permissible range for a defined period.	Press the electronics reset button. If the fault recurs, inform your qualified contractor.
35	Min. flow, cooling	The inlet pressure of the refrigerant lies below the threshold value during cooling. The heat pump will be locked out. If the temperature rises, the compressor will start after an idle period.	BT42: The measured value of the condenser temperature sensor (frost protection) was below 6.5 °C for more than 10 seconds.	Select a higher pump speed.
37	Min. water pressure	The overpressure is less than 0.05 MPa (0.5 bar). At the same time, the minimum flow rate has not been achieved. The electric emergency/booster heater will be blocked.	This fault may occur following venting or due to leaks.	Top up with water.
40	Float switch, bottom panel	The heat pump and the ventilation are switched off.	The cause is the defrost pan overflowing or leaks in the heating or DHW circuit of the appliance. This fault may reset automatically.	Check for leaks. Check the float switch is working correctly.

Troubleshooting

	Fault	Unit response	Cause	Remedy
42	Excess temperature, compressor	The heat pump remains off.	The Klixon has tripped.	Activate emergency mode if necessary.
43	Low pressure too low	The compressor is switched off for several minutes.		
44	Low pressure too high	The compressor is switched off for several minutes.		
45	Low pressure not assigned	The compressor is switched off for several minutes.		
46	High pressure too low	The compressor is switched off for several minutes.		
47	High pressure too high	The compressor is switched off for several minutes.		
48	High pressure not assigned	The compressor is switched off for several minutes.		
50	Sensor on heat pump return	Control of the appliance continues despite this fault. The amount of solar heat and compressor heat cannot be calculated.	The measured sensor values have been outside the permissible range for a specified period.	Press the electronics reset button for one second. If the fault recurs, inform your qualified contractor. Replace the sensor.
51	Sensor on heat pump flow	Control of the appliance continues despite this fault. The amount of compressor heat and the output of the electric emergency/booster heater cannot be calculated.	The measured sensor values have been outside the permissible range for a specified period.	Press the electronics reset button for one second. If the fault recurs, inform your qualified contractor. Replace the sensor.
52	Sensor on condenser outlet	Control of the appliance continues despite this fault.	The measured sensor values have been outside the permissible range for a specified period.	Press the electronics reset button for one second. If the fault recurs, inform your qualified contractor. Replace the sensor.
53	Extract air temperature sensor			Replace the sensor.
54	Integral temperature sensor			Switch parameter to „OFF“.
55	Temperature sensor at the top of the cylinder			Switch parameter to „OFF“.
56	Sensor in the second DHW cylinder		The sensor is faulty.	If there is a second cylinder installed, replace the sensor.
			The fault can occur if the parameter "2ND DHW CYLINDER" is wrongly enabled.	Check the parameter.
57	Sensor to measure the oil sump temperature			Replace the sensor.
58	Differential pressure sensor	The appliance only defrosts under time control or when triggered by the low pressure sensor. The appliance continues to run.	The differential pressure switch has captured a value outside the permissible range. The differential pressure sensor measures the differential pressure across the evaporator. The differential pressure switch is responsible for defrost recognition.	Notify your qualified contractor.
59	Differential pressure sensor, fan control		The differential pressure switch has captured a value outside the permissible range. The differential pressure sensor measures the differential pressure in the extract air. The differential pressure sensor is responsible for air flow rate control if the "Fan control" parameter is set to "Differential pressure".	
60	Inverter fault			You can call up the fault numbers in the programming unit menu.

Note
Faults 43 to 48 are triggered by Safety Operation Area (SOA) intrusion. The SOA limits the speed of the compressor in certain operating ranges in order to safeguard service life and ensure efficient operation.

Comfort through Technology

STIEBEL ELTRON International GmbH
Dr.-Stiebel-Straße 33 | 37603 Holzminden | Germany
info@stiebel-eltron.com | www.stiebel-eltron.com

4 017213 389163

22
PAP

A 338916-45679-9862
B 337705-45679-9862