



Operating Manual

Imperia³

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1 Layout

1.1 Touchscreen and buttons



Fig. 1 – Start (home) page

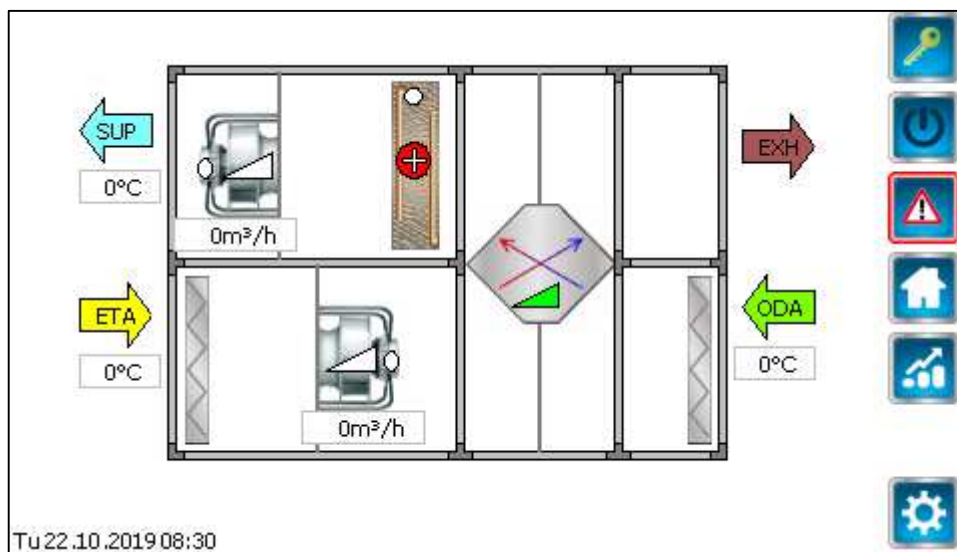


Fig. 2 – Unit

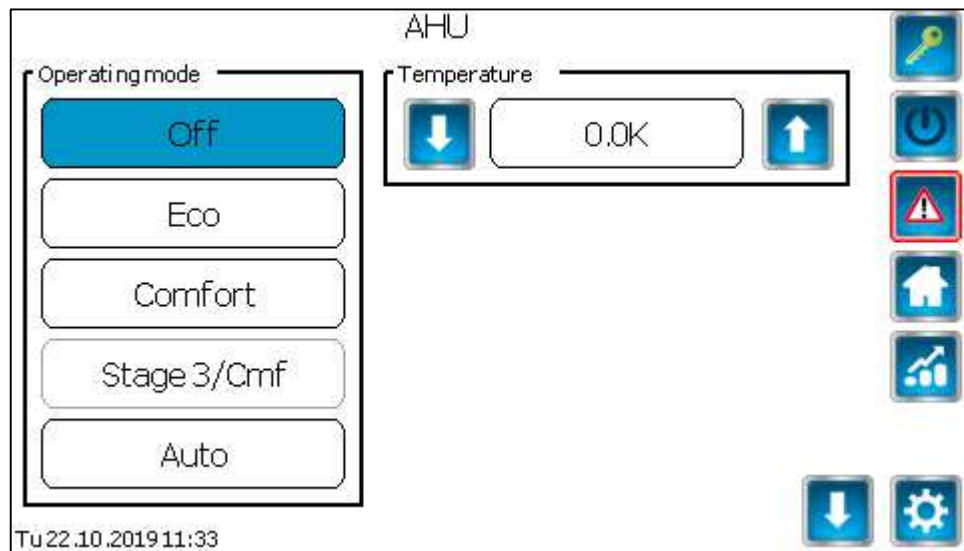


Fig. 3 – Virtual remote switch

The unit is controlled by means of touchscreen buttons shown to the right:



Language Language change button with flag symbol



Login/logout Enter user/password, configuration User
Grey = logged off
Green = logged in



Operation Control pages for various operating modes, fans, temperature, humidity and air quality control
Grey = device off
Green = unit on
Flashing = standby, fan run-on (e-battery)



Alarm Alarm list, alarm history, alarm e-mail



Home Return to home page



Trend Online trend curves and trend configuration



Configuration Configuration of control; accessible from level *Cfg1*



Zones Switch to zone display

Date
Time

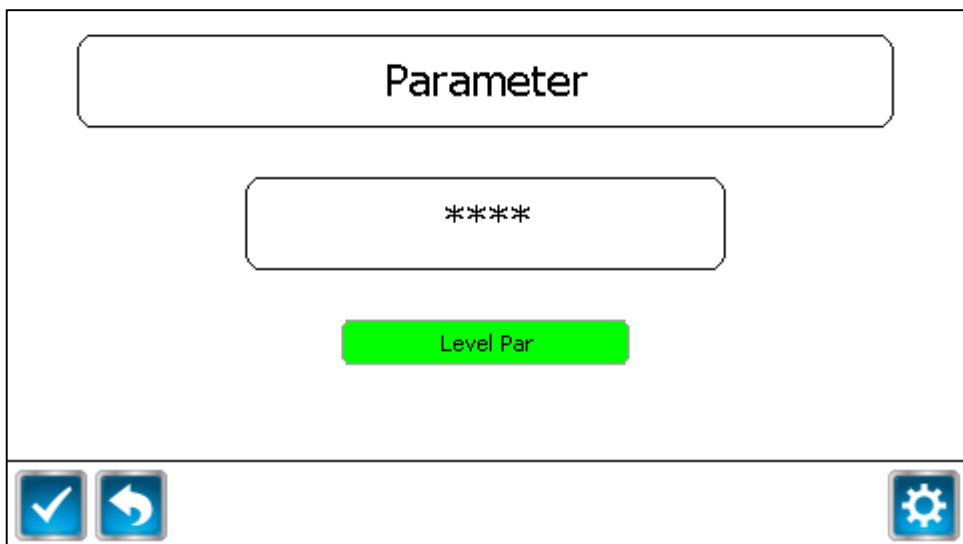
Date/time Setting time and date



Operating mode Operating mode operating pages

	Temperature	Temperature operating pages
	Humidity	Humidity operating pages
	Air quality	Air quality operating pages
	Down	Call page, call next page
	Up	Page up, previous page up
	Esc	Go to previous page, cancel input
	OK	Confirm input
	Copy	Copy timer entries
	Delete	Alarm/Delete history

1.2 User/Password



The diagram shows a login screen with a large rectangular box at the top labeled "Parameter". Below it is a smaller rectangular box containing five asterisks "*****". At the bottom of the main area is a green rectangular button labeled "Level Par". At the very bottom of the screen, there is a horizontal bar containing three icons: a checkmark icon on the left, a circular arrow icon in the middle, and a gear icon on the right.

Fig. 4 – Login

To operate, it is necessary to select a user and enter a password; without valid user/password or with access level 0 (-), only graphics, schematics or the virtual remote switch are displayed. Use the key symbol to make the entry.

If no operation is performed for the configurable logoff time, the controller logs off automatically (default 30 minutes).

If an automatic login is desired, the default user (User 0) must be configured with the password 0 and the desired access level. If the logoff time is configured with 0, logoff no longer takes place.

Default user	Default password	Level	Description
-	0	-	Display unit/zones, virtual remote switch
Not defined		View	Operating pages (display)
Not defined		Ack	Operating pages (additional alarm acknowledgement)
Set	3000	Set	Operating pages (additional setpoint input)
Par	4000	Par	Operating pages (additional parameter input)
Not defined		Par2	Operating pages (additional control strategy)
Not defined		Par3	Operating pages (additional duct pressure)
Not defined		Cfg1	Operation, configuration
Service	***	Cfg2	Operation, configuration (additional online trend visible)
Service2	***	Cfg3	Operation, configuration (additional fire protection disabled)
Master	***	Master	Master, password not configurable

Legend: *** = see service manual

Table 1 – Users/Passwords

1.3 Operation, input of values

To control the unit through the touchscreen, simply touch the respective buttons, tabs, texts and setpoint values. Values that cannot be altered are shown in a grey frame. Values that can be altered are shown in a black frame.

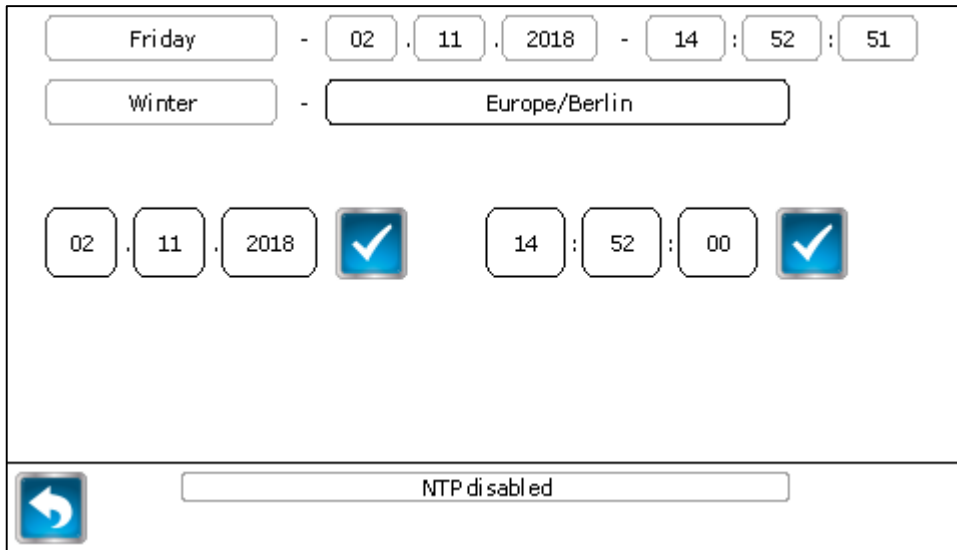
If a button with text (e.g. "Operating mode") is touched, a separate page is displayed, showing the possible options for this field. The currently selected option is highlighted. Tap on the field with the desired setting and confirm by pressing Ok; cancel input by pressing Esc.

The display screens are divided into 3 sections; the upper section shows the index cards for actual values/setpoints/parameters or mode/timer/calendar. In the middle section the values are displayed and the settings are made. The lower section contains keys for page change, special functions and the info line.

The operating pages of the zones can be reached via the small index card with the 3 dots (top right); touching the left index card with the 3 dots takes you back to the operating pages of the unit.

For the zones, the zone is selected by touching the current index card (e.g. index card *Setpoint zone* changes to *Zone 1* when selected, touching opens the list of zones).

Date/Time of the controller can be set by touching Date/Time in the lower left corner. Changeover between summer/winter time is done automatically. If the automatic update of date/time is activated, no more input is possible; the update takes place every half hour, the status is displayed in the info line.



The screen displays the following settings:

- Day: Friday
- Date: 02 . 11 . 2018
- Time: 14 : 52 : 51
- Winter: Europe/Berlin
- Time zone: 02 . 11 . 2018 (checked)
- Time zone: 14 : 52 : 00 (checked)
- Bottom left: A blue square button with a white circular arrow icon.
- Bottom right: A text box containing "NTP disabled".

Fig. 5 – Date/Time

2 Operating mode, timer, calendar, date/time

Touch *Operation* to call up the operating pages. On the *Mode*, *Timer* and *Calendar* tabs, select the required operating mode, set the timer and select the days to be excluded from the calendar.

Operating mode	Description	Selectable	Comment
Off	Device off	X	
Standby	Support mode, switch on automatically	X	Only with room sensor
Night purge	Cooling outside operating hours with cool outside air	X	
Eco	Eco mode	X	
Comfort	Comfort mode	X	
Auto	Use next lower operating level	X	
Preheating	Preheating mode of the heating batteries		Read only
Night purge on	Night purge in operation		Read only

Table 2 – Operating Modes

2.1 Operating mode

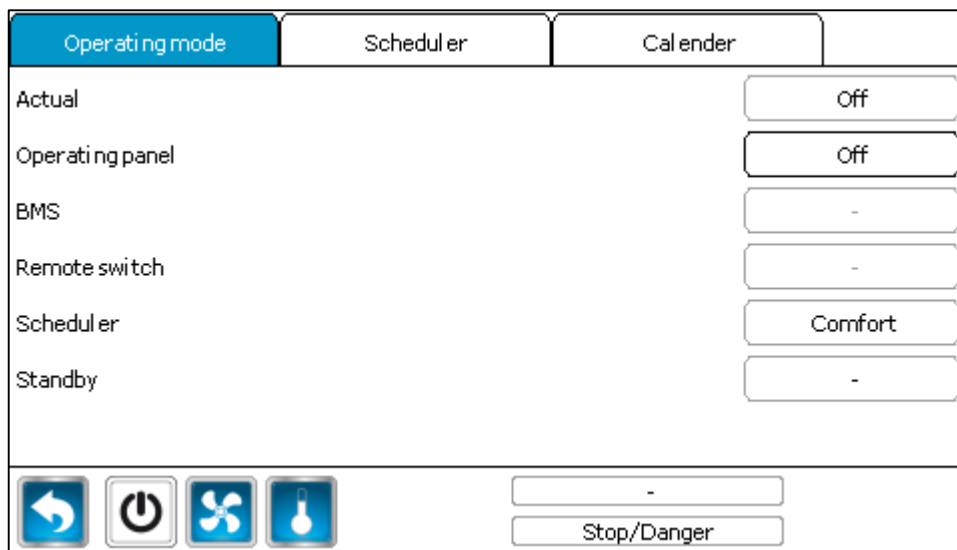


Fig. 6 – Operating mode

The operating mode page shows the current operating mode and the operating modes of the various sources. Each source is assigned a different priority, starting with the highest priority at the top. If a mode is set to *Auto*, the operating mode with the next lower priority is used (line below).

The operating mode of the control device has the highest priority; the unit is switched on and off via this button. In normal operation, this is set to *Auto* to enable operation via the timer.

The operating mode of the control system is determined by a higher-level system (communication via Modbus RTU, Modbus TCP/IP, BACnet ...). This operating mode can be overwritten in access level *Par* (e.g. in case of communication failure)

The operating mode of the remote switch is determined by a physically available remote switch, by the Leonis room unit with touchscreen or by the virtual remote switch (see Fig. 3). When configured as a virtual remote switch, it can be operated on its own screen (see Fig. 3, page 5).

The Zones mode is determined by the configured zones; if a zone switches on a zone, the unit also switches on. Conversely, when the operating mode HMI/control system/remote switch is selected, the zones are positively controlled (HMI zone, control system zone, remote switch zone = Auto).

The operating mode of the timer is determined by the integrated time switch. If BACnet is used as a connection to a control system, the BACnet timer can be used (see configuration).

The standby mode is displayed when the standby function is configured and active; the standby function is used to support heating/cooling, humidifying/dehumidifying and air quality and is only possible when a room sensor is used.

The status line (bottom line) shows the current priority or indicates why the unit is not running.

Priority	Description
Code protection	Code protection enables (release code incorrect)
Init/start	Unit in start-up phase (30s)
Fire dampers	Open fire dampers (yes after configuration, default max. 120s)
Stop/danger	Priority A alarm stops unit (fire, frost, etc.)
Control device	Mode is set by control device
Guidance system	Mode is set by master control system
Remote control	Mode is set by remote switch (remote switch, Leonis, virtual)
Zones	Mode is set by zones
Timer	Mode is set by timer

Table 3 – Operating Modes

2.2 Timer

Operating mode			Scheduler		Calender		Zone	
Mo	Tu	We	1:	7 : 00	Comfort			
Th	Fr	Sa	2:	19 : 00	Off			
Su	Calender		3:	0 : 00	-			
			4:	0 : 00	-			
			5:	0 : 00	-			
			6:	0 : 00	-			











Fig. 7 – Timer

Mo	Tu	We
Th	Fr	Sa
Su	Calender	

➔

Mo	Tu	We
Th	Fr	Sa
Su	Calender	





6: 0 : 00 -











Fig. 8 – Copy timer entries

The timer offers a separate program for each day of the week, including a separate program for the exception days set in the calendar. Each weekday has 12 switching points; the change is made via the *Down* key. The switching points can be programmed in any order, i.e. if there is an additional switching point between the already programmed times, this can also be added at the end (e.g. 7:00 Comfort, 19:00 Off, 18:00 Eco).

If only one switching point is programmed, the unit is run until 24:00 hours in this mode. If several switching points are programmed with the same time, the last one (with the highest line number) is valid.

The *Copy* key can be used to transfer the setting of any weekday to several weekdays; to do this, select the source weekday on the left, the target weekdays on the right and press the *Copy* key.

2.3 Exception calendar

Operating mode			Scheduler	Calendar		
0	00	00	-	0	00	00
0	00	00	-	0	00	00
0	00	00	-	0	00	00
0	00	00	-	0	00	00
0	00	00	-	0	00	00






Fig. 9 – Exception calendar

The Exception calendar can be used to program individual days or periods on which the timer program of the *calendar* is used. This enables operators to preset the mode of the unit for normal operating times or during holidays (i.e. unit off).

2.4 Zones mode

The operating mode, timer and exception calendar of the zones are identical to those of the unit; the individual zones are selected by touching the current file card (which bears the name of the zone).

2.5 Leonis room unit

The Leonis room unit consists of a colour display and 14 touch-sensitive keys which are used for operation. The configuration is done at the controller.

Without operation, the display changes to the idle (pin not configured) or login screen (pin configured) after the login time has elapsed or by pressing the ESC key for 3 seconds. After pressing one of the 8 keys left/right of the display or entering the configured PIN, the room unit can be used again for operation.

Symbol/key	Function
Main screen	
Key 1 + 5	Switch operating mode
Key 2, 3, 4	Decrease offset <i>Temperature, humidity, air quality, proportion of circulating air, volume</i>
Key 6, 7, 8	Increase offset <i>Temperature, humidity, air quality, proportion of circulating air, volume</i>
-  +	No function
-/+	Set overtime/party time (Off – 1h – 2h – 3h)
ENTER	Alarm acknowledgement
ESC	Hibernate/Login screen (press and hold for 3 seconds)
Alarm icon	Current alarm status Red = A/hazard, orange=B/alarm, yellow=C/warning, grey=no alarm
Party icon	Overtime function, with digits 1..3 = 1..3h <i>Displayed when configured</i>
Temp/humidity	Display temperature/humidity of room unit sensor <i>Displayed when configured</i>
Operating mode	Display current mode
Date/time	Set date/time of controller
Login screen:	
Key 1..8	Pin input
-  +, ESC, -/+, ENTER	No function
Idle screen (from V8.00.07):	
Any key	Call up the operation screen

Table 4 – Leonis Keys/Symbols

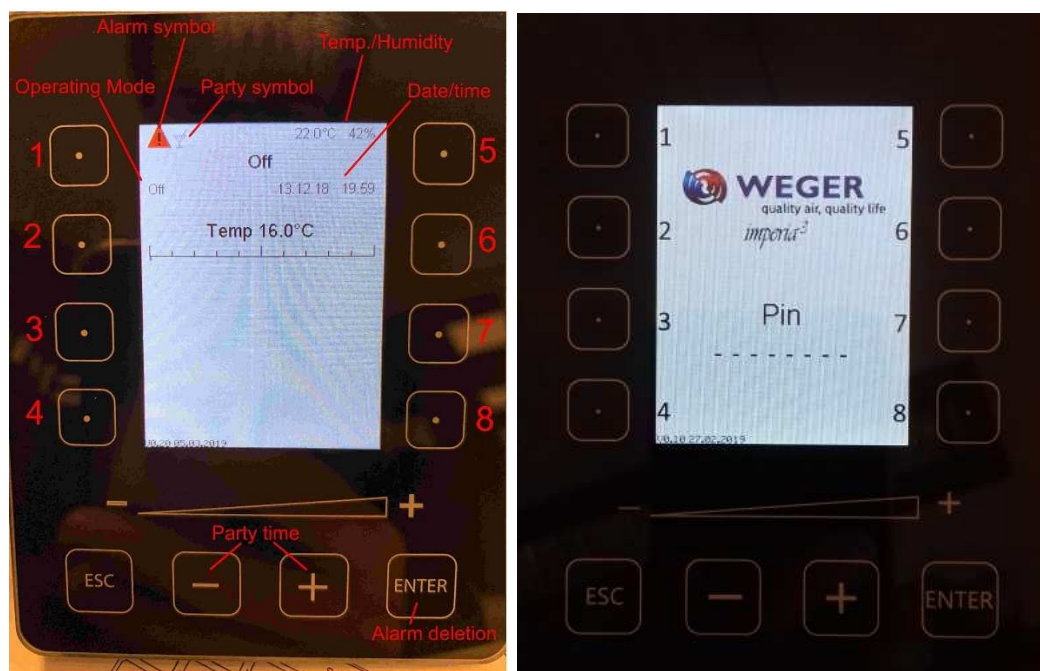


Fig. 10 – Leonis room unit – main screen (left) and login screen (right)
 Idle screen without pin and key labels

3 Fan, zone dampers

Touch the *Fan* button to call up the pages of the fan and zone damper control.

3.1 Fan control

Depending on the configuration, the volume flow, duct pressure, speed or level is displayed on the *Actual* tab and set on the *Target* tab.

3.1.1 Control strategy

This is permanently preset and cannot be changed during operation.

Control	Setpoints	Comment
Fan speed	Speed setpoint	
Volume	Volume setpoints	Fan regulates to set value
Duct pressure	Duct pressure settings	No Offset remote switch No air quality/humidity control Duct pressure adjustable from access level <i>Par3</i>
Master	Master regulates to duct pressure	No Offset remote switch No air quality/humidity control Duct pressure adjustable from access level <i>Par3</i>
Slave	Slave controls to volume flow, volume setpoint is actual volume value from master	Master/Slave offset
Stages	Stage specification	
Zones	Volume setpoints as sum of the zone dampers	e.g. for zone dampers open/closed
Custom	Special solution	

Table 5 – Fan Control Mode

3.1.2 Actual/setpoint values

Actual	Setpoints	Parameters	
Supply / Extract		0 m³/h	0 m³/h
		-	-
Supply fan		Off	0%
Exhaust fan		Off	0%
			

Fig. 11 – Fan actual values

Actual	Setpoints	Parameters	
Supply / Extract Eco		2200 m³/h	2200 m³/h
Supply / Extract Comfort		4400 m³/h	4400 m³/h
Supply / Extract stage 3		-	-
Supply / Extract night purge		4400 m³/h	4400 m³/h
Remote switch offset supply / extract		-	-
Supply / Extract active		0 m³/h	0 m³/h
			

Fig. 12 – Fan setpoints

If the air quality control is activated via the volume, the volume flow can be increased to the nominal volume in case of poor air quality.

If dehumidification is activated via the volume, the volume flow can be increased to the nominal volume in case of high humidity.

3.1.3 Parameters

Actual	Setpoints	Parameters
Flow rate offset master/slave		- -
   		

Fig. 13 – Fan parameters

The volume difference between master and slave can be set on the *Parameter* tab; it can be accessed from *Par* access level.

3.2 Zone dampers

3.2.1 Actual/setpoint values

AHU	Actual zone	Zone setpoints
Zone 1:	Supply / Extract damper	- -
     		

Fig. 14 – Zone dampers actual values

AHU	Actual zone	Zone 1
Supply / Extract Eco		-
Supply / Extract Comfort		-
Supply / Extract stage 3		-
Supply / Extract night purge		-
Remote switch offset supply / extract		-
Supply / Extract active		-








Fig. 15 – Zone dampers setpoints

Depending on the configuration, the zone dampers are set to *Modulating* or *Open/Closed*, either separately for supply and exhaust air or for both together.

With modulating dampers, the control signal is displayed in percent, the setpoint is entered in m³/h. Correct configuration is necessary since the control signal is calculated from the max. volume and setpoint.

With open/closed dampers, the display and setpoint are identical; a setpoint entry is not necessary as the damper is opened as soon as the zone is in operation.

4 Temperature control

Touch the *Temperature* button to call up the pages for temperature control.

4.1 Actual/setpoint values

Actual	Setpoints	Parameters	
Fresh air / Supply / Return	0.0 °C	0.0 °C	0.0 °C
Room / Outdoor / Exhaust	-	-	-
Heat recovery			100.0 %
Heating coil 1	On		100.0 %






Fig. 16 – Temperature actual values

Actual	Setpoints	Parameters	
Heating / Cooling Eco	19.0 °C	-	
Heating / Cooling Comfort	21.0 °C	-	
Remote offset / Outdoor compensation	-	0.0 K	
Heating / Cooling active	19.0 °C	-	
Supply heating / cooling	19.0 °C	-	






Fig. 17 – Temperature setpoints

Depending on the configuration (number of batteries), the *Actual* page shows on one or more pages the current temperatures, pump requirements, valve positions and operating stages (e-battery, DX-battery).

Depending on the configuration, the *Target* page shows heating and cooling setpoints, offset of remote

switch, winter and summer compensation, the current setpoints and, for cascade control, the calculated supply air setpoints (last line).

4.2 Parameters

Actual	Setpoints	Parameters
Control mode		Cascade
Supply min. / max.	16.0 °C	35.0 °C
Supply/Extract difference min. / max.	-50.0 K	50.0 K
Setpoint night purge		20.0 °C
Winter comp.start / end / offset	0.0 °C	-10.0 °C
Summer comp.start / end / offset	25.0 °C	30.0 °C
Dew point temperature / Offset	-	-








Actual	Setpoints	Parameters
Recirculation damper Eco / Comfort		-
Recirculation / Heating / Cooling	-	-
Set preheating battery		-
Standby heating on / off	-	-
Standby cooling on / off	-	-








Fig. 18 – Temperature parameter

The *Parameters* page shows various special settings; access from access level *Par*.

4.2.1 Control strategy

The temperature control strategy can be configured as required according to the following table.

Control strategy	Control variable	Comment
-		No temperature control
Supply air	Supply air	Direct setting of the supply air temperature Battery regulates to supply air temperature
Cascade	Exhaust air	Calculation of the supply air setpoints from the difference between exhaust air and setpoint Battery regulates to supply air setpoint
Exhaust air	Exhaust air	Direct setting of the exhaust air temperature Battery regulates to exhaust air temperature
Space cascade	Room	Calculation of the supply air setpoints from the difference between room and setpoint Battery regulates to supply air setpoint
Room	Room	Direct setting of the supply air temperature Battery regulates to supply air temperature

Table 6 – Temperature Control Strategy

4.2.2 Supply air temperature limitation

The limitation of the supply air temperature is absolute and relative to the exhaust air temperature.

The absolute limitation is set via the *Supply air min./max.* setting; these limit values cannot be exceeded by the relative limitation.

In order to avoid draft effects, the maximum difference between supply air and exhaust air temperature is set via *Difference supply/exhaust air min./max.* A setting of -3K/+10K means that with an exhaust air temperature of 22°C, the supply air temperature is limited to a minimum of 19°C and a maximum of 32°C. The supply air temperature is set to -3K/+10K.

4.2.3 Night purge

The desired exhaust air or room temperature in night purge mode is set via the Night purge setpoint; the room is cooled down with cool outside air during the night hours (timer setting). If no room sensor is present, the temperatures are checked cyclically and if all conditions are fulfilled, the unit continues to run.

Parameters	Condition
Outdoor temperature	At least 12°C 5K below current exhaust air or room temperature
Exhaust air/room temperature	Via Night purge setpoint
Test cycle	If no room and outdoor sensor available then every hour for 5 minutes
Operating time	If conditions are met, min. 30 minutes, max. 12 hours

Table 7 – Night Purge

4.2.4 Winter/summer compensation

Winter compensation shifts the heating setpoint at low outside temperatures, e.g. to compensate for losses. Summer compensation shifts the cooling setpoint at high outside temperatures, e.g. to save cooling energy or reduce the difference between room air and outside air. Both compensations are always active and have an effect on the heating and cooling setpoint.

4.2.5 Eco/Comfort recirculation damper

Setting of a fixed position for the opening of the recirculation damper depending on the operating mode; this setting is used if no temperature, humidity or air quality control is carried out via the recirculation damper.

Attention: with a setting of less than 100%, the fresh air proportion is kept higher than necessary with humidity/air quality control via the recirculation damper (e.g. 30% means that the recirculation damper is a maximum of 30% open, i.e. at least 70% fresh air).

4.2.6 Standby

The standby function can only be used with a configured room sensor and is used for standby operation, i.e. when the temperature falls below the setting Heating on or exceeds the Cooling on, the unit starts in the selected operating mode in order to reach the room conditions again (e.g. frost protection with min. 10°C room temperature). If the heating off setting is exceeded or the cooling off setting is undershot, the unit switches off again.

Attention: if the heating setpoint is lower than Standby heating on, the switch-off value is no longer reached because the heating is insufficient. This also applies analogously to cooling.

4.2.7 Target preheating coil, mixed air, saturation setpoint/offset

The preheating register setpoint is a fixed setpoint for the preheating battery (before recovery).

The mixed air setpoint controls the recirculation damper to the set mixed air temperature (only with configured sensor). The recirculation damper regulates independently of recovery, heating and cooling batteries.

The saturation setpoint and offset are used with the saturation sensor configured to control recovery, heater battery 1 and cooler battery 1. At the same time, the heating and cooling setpoint is reduced to the saturation setpoint during dehumidification. The function of the night heating battery can be influenced by the offset (always heat slightly in case of negative offset, only heat with dehumidification in case of positive offset).

4.3 Zones

The temperature control of the zones is identical to that of the unit; some parameters are not available.

AHU	Zone 1	Zone setpoints	Zone parameters
Supply / Return / Room		-	-
Heating coil (Z1)			0.0 %
Cooling coil (Z1)			0.0 %
     			

Fig. 19 – Zones temperature actual values

AHU	Actual zone	Zone 4	Zone parameters
Heating / Cooling Eco		19.0 °C	-
Heating / Cooling Comfort		21.0 °C	-
Remote offset / Outdoor compensation		-	0.0 K
Heating / Cooling active		19.0 °C	-
Supply heating / cooling		-	-
   			

Fig. 20 – Temperature Set Points Zones

AHU	Actual zone	Zone setpoints	Zone 4
Control mode		-	
Supply min. / max.		16.0 °C	35.0 °C
Supply/Extract difference min. / max.		-50.0 K	50.0 K
Standby heating on / off		-	-
Standby cooling on / off		-	-
   			

Fig. 21 – Temperature Parameter Zones

5 Humidity control

Touch the *Humidity* button to access the humidity control pages.

5.1 Actual/setpoint values

Actual	Setpoints	Parameters
Fresh air / Supply / Return	-	0.0 % 0.0 g/m³
Room		-
Humidifier	-	-
Dehumidification request		0 %







Fig. 22 – Humidity actual values

Actual	Setpoints	Parameters
Humidification / Dehumidification Eco	-	45 %
Humidification / Dehumidification Comfort	-	45 %
Remote switch offset		-
Actual humidification / dehumidification	-	45 %







Fig. 23 – Humidity setpoints

The *Actual* page shows both relative and absolute humidity (absolute in g/m³ instead of g/kg). Depending on the configuration, the control signal for a humidifier and the dehumidification request are displayed.

Depending on the configuration, the dehumidification requirement is then divided between the cooling battery, circulating air damper and fan control (e.g. dehumidification via circulating air and volume).

Depending on the configuration, the *Target* page shows the target values for humidification and dehumidification.

5.2 Parameters

Actual	Setpoints	Parameters
Control mode		Return
Supply limitation (humidifier)		-
Max. recirculation / fan flow (dehumidification)	-	-
Outdoor/Indoor difference (dehumidification)		-1.0 g/m³
Standby humidification on / off	-	-
Standby dehumidification on / off	-	-









Actual	Setpoints	Parameters
Pool dehumidification		-
Recirculation / Fan flow (DX on)	-	-









Fig. 24 – Humidity parameters

The *Parameters* page shows various special settings; access from access level *Par*.

5.2.1 Control strategy

Humidity control uses the supply air, return air or room humidity as the controlled variable; the supply air humidity is always used as a limit for a humidifier.

5.2.2 Max. recirculating air/volume (dehumidification)

If the recirculation damper is configured, the maximum proportion of recirculation air at low humidity and thus the minimum proportion of fresh air (100% setting) can be set.

With dehumidification via the volume, the increase can be set to ...% of the nominal volume (e.g. 80%, 10000m³/h results in 8000m³/h); if the current setpoint value is already higher, the volume is no longer increased.

5.2.3 Difference outside/inside (dehumidification)

If the fresh air humidity sensor is configured, dehumidification via the recirculation damper or the volume is only possible (enabled) if the absolute humidity of the outside air is lower than the exhaust air or room humidity by the set value.

If, for example, the fresh air humidity is 10g/m³ and the exhaust air humidity is 12g/m³, the volume for dehumidifying the room can be increased; if the outside air is more humid, however, then dehumidification is blocked in order not to increase the room humidity even further.

Dehumidification via the cooling battery with reheating is always possible.

5.2.4 Standby

The standby function can only be used when the room sensor is configured and is used for support operation, i.e. if the 'Humidify on' setting is undershot or the 'Dehumidify on' setting is exceeded, the unit starts in the selected operating mode in order to return to room conditions (e.g. swimming pool with ventilation switched off at night and thus automatic start). If the "Humidification off" setting is exceeded or the "Humidification off" setting is undershot, the unit switches off again.

Attention: with a dehumidification setpoint higher than standby dehumidification on, the switch-off value is no longer reached as dehumidification is insufficient. This also applies analogously to humidification.

5.2.5 Swimming pool dehumidification

Setting for swimming pool unit with dehumidification via circulating air/DX cooling.

Selection of the operating mode of dehumidification, fresh air, DX-cooling or car, i.e. automatic change between fresh air or DX-cooling depending on the difference between outside and exhaust air/room humidity.

When operating the DX cooling, the recirculation damper and the volume (recirculation air/volume DX operation) are set to a fixed setting.

5.3 Zones

The humidity control of the zones is identical to that of the unit; humidification is not possible.

AHU	Zone 1	Zone setpoints	Zone parameters
Supply / Return / Room		-	-
Dehumidification request		0 %	

Fig. 25 – Humidity actual values zones

AHU	Actual zone	Zone 1	Zone parameters
Dehumidification Eco / Comfort		-	-
Remote switch offset		-	
Actual dehumidification		70 %	

Fig. 26 – Humidity setpoints zones

AHU	Actual zone	Zone setpoints	Zone 1
Control mode		-	
Standby dehumidification on / off		-	-

Fig. 27 – Parameter Humidity Zones

6 Air quality control

Touch the *CO2/VOC* button to access the air quality control pages.

6.1 Actual/setpoint values

Actual	Setpoints	Parameters
Air quality		0 ppm
Recirculation/Fan request		-
     		

Fig. 28 – Air quality Actual values

Actual	Setpoints	Parameters
Air quality Eco / Comfort		-
		1200 ppm
Remote switch offset		800 ppm
Actual setpoint		-
		1200 ppm
     		

Fig. 29 – Air quality setpoints

The *Actual* page shows both the CO2 value and the VOC value. The requirement for recirculation dampers and fans to improve air quality is also shown.

The *Target* page shows the target values for CO2 and VOC.

Both sensor types can also be used simultaneously. The VOC sensor displays the concentration of organic compounds in % (100% = concentration corresponds to the calibration gas).

6.2 Parameters

Actual	Setpoints	Parameters
Max. recirculation / fan flow		-
Standby VOC on / off	-	-
Standby VOC on / off	1500 ppm	1300 ppm







VOC
CO2

Fig. 30 – Air quality parameter

The *Parameters* page shows various special settings; access from access level *Par*.

6.2.1 Max. circulating air

If the recirculation damper is configured, the maximum proportion of recirculation air can be set with good air quality and thus the minimum proportion of fresh air (100% setting).

With dehumidification via the volume, the increase can be set to ...% of the nominal volume (e.g. 80%, 10000m³/h results in 8000m³/h); if the current setpoint value is already higher, the volume is no longer increased.

6.2.2 Standby

The standby function can only be used with an existing room sensor and is used for backup operation, i.e. if the VOC/CO₂ on setting is exceeded, the unit starts in the selected operating mode in order to reach the room conditions again. If the value falls below the setting VOC/CO₂ off, the unit switches off again.

Attention: with a setpoint higher than Standby VOC/CO₂ on, the switch-off value is no longer reached because there is insufficient ventilation.

6.3 Zones

The air quality control of the zones is identical to that of the unit.

AHU	Zone 1	Zone setpoints	Zone parameters
Air quality			-
Request VAV			-
     			

Fig. 31 – Air quality actual values zone

AHU	Actual zone	Zone 1	Zone parameters
Air quality Eco / Comfort		-	-
Remote switch offset		-	
Actual setpoint		-	
     			

Fig. 32 – Air quality setpoints zone

AHU	Actual zone	Zone setpoints	Zone 1
Standby CO2 on / off		-	-
     			

Fig. 33 – Air quality parameter zone

7 Alarms

7.1 Alarm handling

Alarms can be triggered by external contacts, sensors (faults) or internal events as well as exceedances of limit values. If an alarm occurs, it is shown in the alarm list and the alarm symbol on the start page changes from grey to red/yellow.

Each alarm is assigned one of 3 priorities; priority C (low, warning) has no further effects, priority B (high, alarm) has a deactivating effect on the assigned system parts (e.g. heating battery) and priority A (danger) causes the ventilation unit to be switched off.

System alarms [PLC] are counted separately and do not trigger the alarm contact.

Alarms need to be acknowledged: When the cause behind the problem that has triggered the alarm has been eliminated, the alarm is still displayed (in column "Going"). After pressing the *Delete* button, the alarm is properly acknowledged and the ventilation unit is restarted. Alternatively, you can configure your unit for automatic acknowledgement (3 times or continuous), so that the alarm is automatically acknowledged the moment the problem that has triggered it is eliminated. (e.g. fire alarm control panel is acknowledged directly, roof unit with access via ladder).

7.1.1 Alarm list

Touch the *Alarm* button on the start page to call up the alarm list.

Alarms		History	Mail
	On	Off	Message
1	09:41:07-22.10.19		Code protect after 48h [PLC]
2	09:41:04-22.10.19		Fire control unit [A]
3	09:41:03-22.10.19		AKM.730.11 ID21h [A]
4	09:41:03-22.10.19		AKM.730.11 ID20h [A]
5	09:41:03-22.10.19		DKM.730.20 ID10h [A]
6	09:41:02-22.10.19		Heating coil 1/Freeze [A]
7	09:40:47-22.10.19		Configuration initialized [PLC]
8			
9			
10			


A: 5 B: 0 C: 0 PLC: 2 H: 0


A=Danger B=high C=low H=Manual

Fig. 34 – Alarm list

The alarm list shows the current alarms with date of occurrence and the alarm text; a maximum of 50 alarms are displayed. The *Coming* column indicates when the alarm has occurred, the *Going* column indicates when the alarm has gone, but it has not yet been acknowledged.

The priority of the alarm is displayed at the end of the alarm text; [A] for Danger, [B] for High/Alarm, [C] for Low/Warning. The status line at the bottom of the screen displays the number of alarms for each priority, the number of system alarms (battery, code protection, ...) and the number of manual positions.

Manual positions can be deliberately selected or necessary settings and can only be activated/deactivated in the configuration level; all inputs and outputs can be in manual mode.

Touch the *Delete* key to acknowledge the alarms with an entry in the *Going* column, and use the arrow keys to scroll through the list.

7.1.2 Alarm history

Alarms		History	Mail
	State	Time/Date	Message
1	On	09:41:07 22.10.19	Code protect after 48h [PLC]
2	On	09:41:04 22.10.19	Fire control unit [A]
3	On	09:41:03 22.10.19	AKM.730.11 ID21h [A]
4	On	09:41:03 22.10.19	AKM.730.11 ID20h [A]
5	On	09:41:03 22.10.19	DKM.730.20 ID10h [A]
6	On	09:41:02 22.10.19	Heating coil 1/Freeze [A]
7	On	09:40:47 22.10.19	Neustart Controller
8	On	09:40:47 22.10.19	Configuration initialized [PLC]
9			
10			






Fig. 35 – Alarm history

Touch the *History* tab to call up the alarm history. The alarm history contains a list of the last 100 alarm events. Touch the *Delete* button to delete the entire list. Touch the arrow buttons to scroll through the list.

The alarm list is retained in the event of a power failure.

7.1.3 E-mail

Alarms	History	Mail
Enable / Test / Delay		- - 60 s
Subject		Alarmstatus Lüftung
Destination		
CC-Destination		
 Server ..		

Fig. 36 – Alarm e-mail

Touch the *Mail* tab to display the configuration page for sending e-mails; it can be accessed from *Par* access level.

The correct configuration of the parameters is necessary for sending the alarm message by e-mail; the system administrator can give you some parameters.

Parameters	Description
Release	Activate/deactivate email dispatch of alarms
Send now	Test transmission
Pause transmission	Pause between e-mails when changing the number of alarms
Subject	Subject in e-mail
Recipients	Recipient address; separate several addresses with ; (max. 80 characters)
CC recipient	CC recipient address
Info line	Status and error message of e-mail dispatch

Table 8 – Alarm E-mail

7.1.4 Alarm logging

All alarms are recorded in a file in Flash; one file is generated per month; after 12 months the file is overwritten again. Contact your service technician to download the file.

7.2 Alarm entries

The list below shows the possible alarm messages and their elements:

- Unit part or inlet
- Alarm type for analogue inputs (hardware failures, Low, High)
- Alarm priority (A, B, C, PLC)

Message	Description
Outdoor air temp.	Outdoor air temperature sensor defective Call technician to replace sensor
Fresh air temp.	Fresh air temperature sensor defective Call technician to replace sensor
Supply air temperature to Supply air temperature to (Zn)	Supply air temperature sensor defective; ventilation unit stopped Call technician to replace sensor
Outlet air temp. Outlet air temp. (Zn)	Outlet air temperature sensor defective; ventilation unit stopped Call technician to replace sensor
Dewpoint temperature	Sensor dew point temperature defective; ventilation unit is stopped Call technician to replace sensor
Room temp. Room air temp. (Zn)	Room temperature sensor defective; ventilation unit stopped Call technician to replace sensor

Message	Description
Recirculation damper/circulating air temp.	Sensor mixed air temperature defective; ventilation unit is stopped Call technician to replace sensor
WHR/Temp.	WHR temperature sensor defective; ventilation unit is stopped (glycol circuit combined cycle system, fresh air, supply air and exhaust air WHR) Call technician to replace sensor
WHR/supply air temp.	Sensor WHR supply air temperature defective; ventilation unit is stopped Call technician to replace sensor
WHR/Alarm	Alarm signal from heat recovery system Check recovery system; check supply voltage and dampers Call repair technician
WHR/icing	Recovery system shut down; bypass of plate exchanger opened Check recovery system for ice; adjust alarm priority, if appropriate
Heating battery <i>n</i> /RL-Temp. Heating battery (Zn)/RL-Temp.	Sensor return temperature heating battery defective; ventilation unit is stopped Call technician to replace sensor
Heating battery <i>n</i> /Frost temp. Heating battery (Zn)/Frost temp.	Sensor frost protection (temperature) heating battery defective; ventilation unit is stopped Call technician to replace sensor
Heating battery <i>n</i> /Frost protection Heating battery (Zn)/Antifreeze	Frost protection heating battery tripped Check warm water supply, valves and pumps If alarm occurs repeatedly, call technician
Heating battery <i>n</i> /Alarm Heating battery (Zn)/Alarm	Alarm heating battery triggered (e.g. heat pump) Check message If alarm occurs repeatedly, call technician
Cooling battery <i>n</i> /Alarm Cooling battery (Zn)/Alarm	Cooling battery alarm triggered (e.g. heat pump) Check message If alarm occurs repeatedly, call technician
Fresh air humidity	Fresh air humidity sensor defective Call technician to replace sensor
Supply air humidity Supply air humidity (Zn)	Supply air humidity sensor defective Call technician to replace sensor
Exhaust air humidity Exhaust air humidity (Zn)	Outlet air humidity sensor defective Call technician to replace sensor
Room humidity Room humidity (Zn)	Room air humidity sensor defective Call technician to replace sensor
Supply air volume <i>n</i>	Volume flow sensor <i>n</i> of supply air fan is defective; ventilation unit is stopped Call technician to replace sensor
Exhaust air volume <i>n</i>	Volume flow sensor <i>n</i> of exhaust air fan is defective; ventilation unit is stopped Call technician to replace sensor
Supply air duct pressure	Pressure sensor in supply air duct is defective; ventilation unit is stopped Call technician to replace sensor
Exhaust air duct pressure	Pressure sensor in exhaust air duct is defective; ventilation unit is stopped Call technician to replace sensor

Message	Description
Air quality (VOC)	VOC sensor defective Call technician to replace sensor
Air quality (CO ₂) Air quality (Zn)	CO ₂ sensor defective Call technician to replace sensor
Alarm MB-Module/CAN-Module	No communication to Modbus or CAN IO module Call repair technician
Leonis alarm	No communication with the Leonis room unit Call repair technician
Supply air fan/alarm <i>n</i>	Fault message supply air fan Check circuit breaker (automatic circuit breaker 3-phase) Call repair technician
Supply air fan/operation <i>n</i>	Supply air fan alarm feedback Check fuse protection/feedback (automatic 3-pin) Call repair technician
Exhaust fan/alarm <i>n</i>	Fault message exhaust fan Check circuit breaker (automatic circuit breaker 3-phase) Call repair technician
Exhaust fan/operation <i>n</i>	Alarm feedback exhaust fan Check fuse protection/feedback (automatic 3-pin) Call repair technician
Fire protection	Fire protection triggered (fire alarm control panel) Check fire protection
Supply air smoke detector	Smoke detector in Supply air duct triggered Check smoke detector
Outlet air smoke detector	Smoke detector in outlet air duct triggered Check smoke detector
Smoke exhaustion	Smoke exhaustion active; supply air fan switched off, exhaust air fan 100%
Forced ventilation	Forced ventilation active; supply/exhaust air fan 100%
Fire damper <i>n</i>	Fire damper <i>n</i> has not reached end position after configured opening time Check fire damper
E-battery <i>n</i> /alarm E-battery (Zn)/alarm	E-battery alarm message Check automat/control unit If alarm occurs repeatedly, call technician
E-battery <i>n</i> /Thermostat E-battery (Zn)Thermostat	E-battery safety thermostat triggered Checking the safety thermostat If alarm occurs repeatedly, call technician
Humidifier/Alarm	Error signal from humidifier Read error message on humidifier Change alarm priority/reset, if appropriate If alarm occurs repeatedly, call technician
Fresh air filter <i>n</i> Supply air filter <i>n</i> Exhaust air filter <i>n</i>	Fresh air, supply air or exhaust air filter dirty; clean/replace Check filter, clean or replace
Compressor <i>n</i> /operation	Operating message compressor <i>n</i> missing Check circuit breaker, contactor, etc.

Message	Description
Compressor <i>n</i> /alarm	Compressor alarm message <i>n</i> Check circuit breaker, contactor, etc.
Compressor <i>n</i> /PTC	PTC compressor <i>n</i> tripped Call refrigeration technician
Compressor <i>n</i> /low pressure	Compressor low-pressure pressure control <i>n</i> is tripped Call refrigeration technician
Compressor <i>n</i> /high pressure	Compressor high pressure pressostat <i>n</i> is tripped Call refrigeration technician
Alarm DX module	External alarm message of cooling module (e.g. expansion controller) Check alarm source according to circuit diagram and call technician
Restart controller	Only in the history; restart after power failure
...	Special alarm signals and messages, depending on unit model

Table 9 – Alarm Messages

Sensor alarm type	Description
HW error	No sensor detected/connected
High	Measured value too high; e.g. humidity too high
Low	Measured value too low; e.g. temperature too low
[A]	Alarm priority: danger, device stops
[B]	Alarm priority: high/alarm, plant section stops
[C]	Alarm priority: low/warning

Table 10 – Additional Text in Alarm Messages

8 Trend

There are 2 types of trends, the online trend and the offline trend. The online trend consists of 5 selectable values (measured values, valve positions, fan speed, ...) which are shown on the display for an adjustable period of time. Values outside the display range can no longer be displayed.

The offline trend is logging the trend data; this is done on the FTP drive *b* of the controller as a CSV file (Excel). The offline trend is not shown on the display, but can be copied via FTP/USB and analysed on a PC.

8.1 Online trend

Touch the *Trend* button to display the online trend on the home page. The symbol is only displayed when enabled in the configuration or from access level *Cfg2*. The display can be configured by tapping the configuration icon.

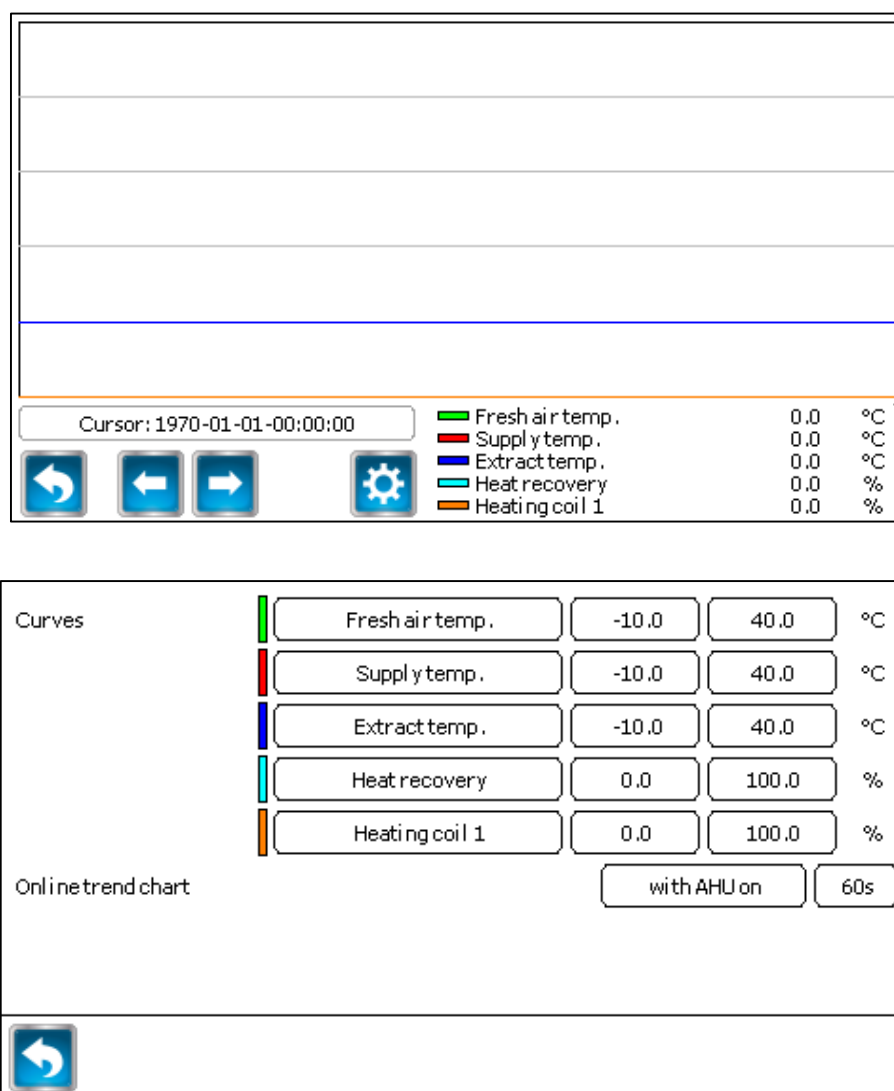


Fig. 37 – Trend display and configuration

Parameters	Description
Curves	Selection of the trend curve and min./max. Screen section
Online trend display	During operation Trend is only recorded during ventilation operation Continuous Trend is recorded continuously ...s Interval between records (from 5 seconds)

Table 11 – Trend Configuration

9 WebHMI (web visualization)

Web visualization offers the possibility to visualize the unit on a PC, tablet, smartphone or WebPanel. Depending on the device used, a software/app must be installed. The visualization (HTML file) is always uploaded by the controller. The operation is identical to that of the controller itself.

9.1 PC

For visualization on a PC, a browser must be used which can run *Java Runtime* and *Java Runtime* must be installed. Currently, *Java Runtime* is only supported by *Microsoft Internet Explorer*; alternatively, use an older browser version of Mozilla Firefox (up to version 51.0.1).

The visualization can be called via the link *http://IP-ADRESSE:8080/webvisu.htm*. For quick access, place a shortcut on your desktop or add the page to your bookmarks/favourites. The IP address of the controller must be known and is displayed on the controller display on the start page; if necessary, press the *Home* button.

The IP address of the controller must be entered in the Java configuration in the exception list, since the certificate of the Java library expires after one year.

If the Java application is blocked, this is due to a missing *Java Runtime*, missing entry in the exception list or unsuitable browser. Please contact your network administrator for the assignment of the necessary IP address, the connection to the network and the installation of *Java Runtime*.



Fig. 38 – WebHMI – Javan application blocked

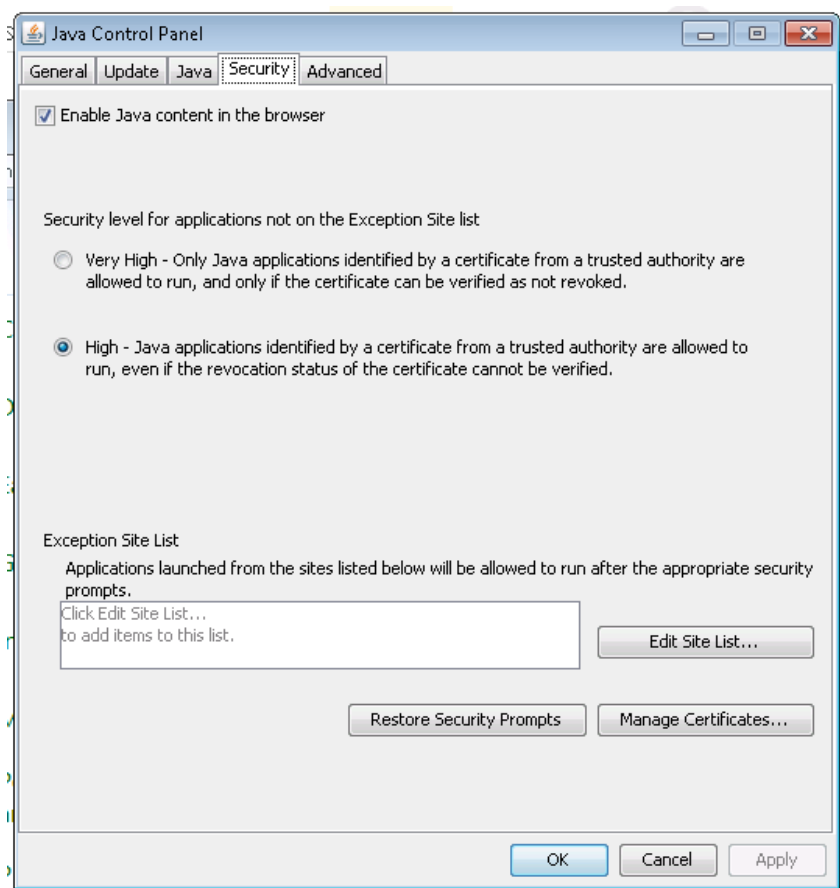


Fig. 39 – WebHMI – Java configuration, security

The first time the web visualization is called, several security warnings are issued, which must be answered accordingly, otherwise they reappear the next time the web visualization is called. Answer the question about the execution of the Java code with Yes and activate under Options "Always trust this user..." or similar. Select "Do not block" to execute the Java code.

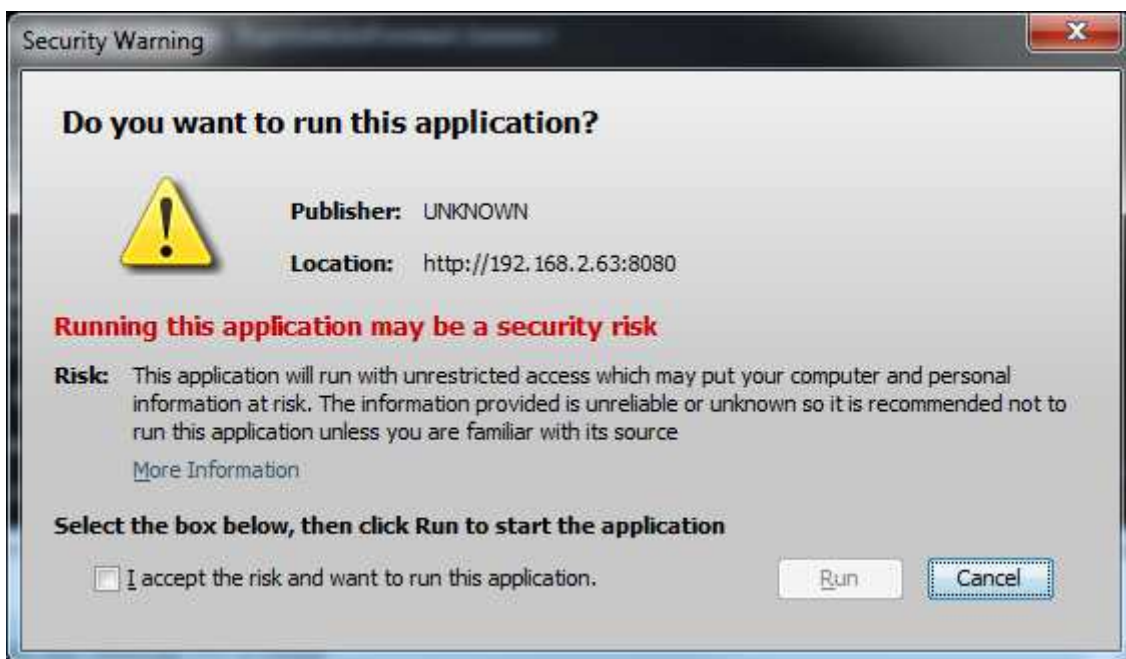


Fig. 40 – WebHMI – Execution of release application

9.2 Tablet/Smartphone

IniNet Microbrowser is required for visualization on the tablet or smartphone. It can be obtained from the *Google Play Store* or *iOS App Store*.

There are 2 versions available, a full version with which 10 IP addresses including designation can be stored (for 10 systems, e.g. heating, ventilation, sauna, ...) and a Lite version with which only one IP address can be stored.

After installing the app, configure the IP address and select a name (e.g. Dining Room Ventilation) and press and Start.

Use the menu key to configure the display (full screen, scaling, pan&zoom, keyboard). Activating pan&zoom on a smartphone can be useful.

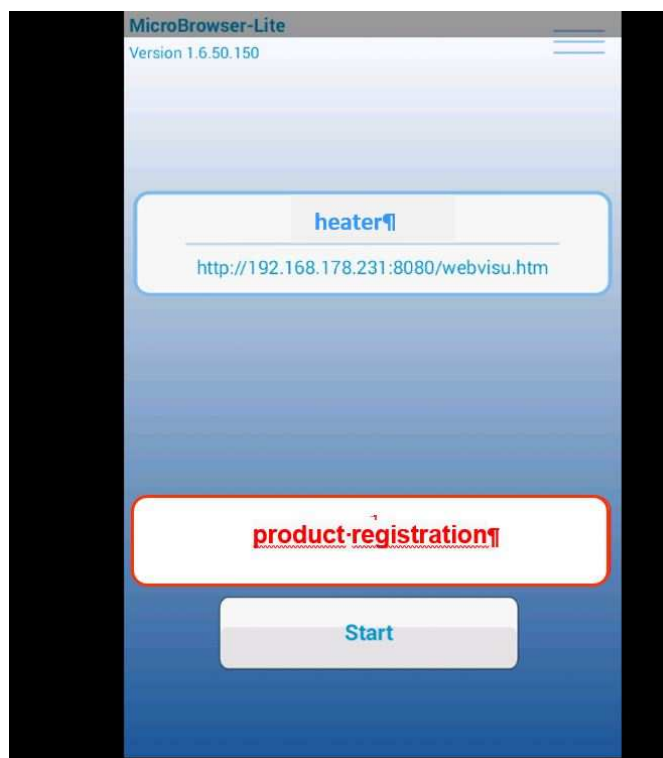


Fig. 41 – IniNet Microbrowser (Lite version)

9.3 Web panel

A *web panel* functions similar to a tablet, but is permanently installed and is therefore suitable for remote mounting of an operator terminal.

It is mounted either in a door cutout or by using a Vesa bracket. The device is connected to the power supply and ventilation unit via separate cables for network and power supply or only via the network cable (PoE, Power over Ethernet).

If you use a Web Panel, please contact your service partner/distributor as we test the interaction of WebVisu and *Web Panel* and the use of any device can lead to unwanted display problems. For the assignment of the necessary IP addresses and the connection to the network, please contact your network administrator.

10 Maintenance

The control system requires regular maintenance, just like the ventilation unit.

- Clean the surface of the display/controller only with a damp cloth (do not use cleaning agents or abrasive cloths), avoid direct sunlight and low temperatures
- The battery of the controller has a service life of at least **2 years**. If the battery is empty or if the battery is replaced, the date/time/configuration is buffered for 2h; afterwards date/time/configuration is lost
- If the configuration is lost, the unit is configured with the factory settings on delivery; since the controller automatically creates a monthly backup of the entire configuration, it can be restored. The last configuration is always the file *config01.bin*
- Check the filters in the ventilation grilles of the control cabinet regularly as these are necessary for a sufficient supply of cooling air. Clean, replace the filters; do not remove the filters, otherwise the degree of protection will no longer be maintained
- Regularly check all electrical connections for corrosion, moisture, insulation damage, etc.
- Check the control cabinet for condensation, dust/particles/vermin
- Have both the ventilation unit and the control system checked regularly (dampers, drives, valves, safety devices, settings/setpoints for plausibility, ...)

11 Changes

Date	Version	Change
14.12.2018	V8.00.00	First version
28.02.2019	V8.00.07	Room unit, separate idle/login screen

Table 12 – Documentation of Changes

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