Single room control system

FSL-CONTROL III

for decentralised ventilation units

TROX® TECHNIK

The art of handling air

Read the instructions prior to performing any task!

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1 Diagnostics menu

1.1 *'Device status ➔ diagnostics'*

Device status

Address	Who	Value	Explanation
13000	Device status	Green	▪ Automatic mode ▪ Device OK
		Grey	▪ Override active ▪ Device OK
		Red	Device inactive (e.g. as a result of frost protection)

Device information

Address	Who
11055	**Display of device type** 1 = Secondary air unit 2 = Supply and secondary air unit with option of changeover to secondary air 3 = Supply air and secondary air unit 4 = Supply air and extract air unit with heat recovery and option of changeover to secondary air 5 = Supply air and extract air unit with heat recovery and secondary air mixture
11009	**Device description** Individual device description
11000	**Serial number** Serial number of the device
11056	**Master / slave** 0 = Slave device 1 = Master device
11036	**Software name** FSL-CONTROL III
11045	**Software version** Display of software version

Operating information

Address	Explanation
11057	**Operating mode** 1 = Off 2 = Automatic 3 = Manual mode
11058	**Operating mode** 0 = No default 1 = Standby 2 = Unoccupied 3 = Occupied

Address	Explanation
11059	**Operating mode override** 0 = No override active 1 = Boost activated 2 = Exercise activated 3 = Night purge activated 4 = Fan force activated
11060	**Operating state** 0 = None 1 = Standby 2 = Control system 3 = Manual mode 6 = Fire emergency stop 7 = Frost alarm 8 = Priming 11 = Night purge
11061	**Setting of operating mode by…** 1 = Control panel 2 = Central BMS 3 = Real time clock 4 = Digital input 5 = Master 6 = PC
11131	**Frost protection** 0 = Frost protection inactive 1 = Frost protection active

Ventilation information

Address	Explanation
11078	**Supply air fan stage** Setting of active fan stage for supply air fan.
11077	**Extract air fan stage** Setting of active fan stage for extract air fan

Address	Explanation
11092	**Type of ventilation** 0 = No ventilation 1 = Secondary air operation 2 = Outdoor air operation
11121	**Specification of the fan stages for TROX control panels** 255 = None (control panel without stage selector) 1 = 0 2 = 1 3 = 2 4 = 3 10 = Automatic

System information

Address	Explanation
11120	**Number of active devices in the system** Display of recognised master-slave devices in the TROX network
9271	**Communication counter master–slave** Used for monitoring communication between the master device and the connected slave devices

Operating information

Address	Explanation
11085	**Operating hours of supply air fan** Display of operating hours of supply air fan
11083	**Operating hours of extract air fan** Display of operating hours of extract air fan.
11087	**Operating hours of secondary air fan** Display of operating hours of secondary air fan (if available)
11089	**Operating hours of filter** Display of operating hours of outdoor air filter.
11062	**Operating hours of device** Display of total operating hours of the ventilation unit.
11248	**Operating hours since the device was last restarted** Display of operating hours since the device was last restarted.

Controller information

Address	Explanation
13004	**SD card** 0 = SD card inactive 1 = SD card active
13003	**Firmware version** Output of the current controller firmware
13002	**Firmware revision** Output of the current controller revision
13005	**Controller type** Output of the controller type

1.2 *'Temperature control ➔ diagnostics'*

Temperature control

Address	Explanation
17305	Output of the configured control strategy 0 = Supply air temperature control (an extract air temperature sensor must be configured for supply air temperature control). 1 = Room temperature control 2 = Extract air temperature control
11104	Output of the current control sequence 1 = Cooling 2 = Cooling with heat recovery 3 = Heating with heat recovery 4 = Heating
11133	Output of current outdoor air temperature
11138	Output of current flow temperature
11137	Output of current return temperature
11124	Output of the temperature offset configured on the control panel

Temperature sensor

If there is no measured value, e.g. no temperature sensor, the value 32767 is output.

Room / supply air temperatures

Address	Who
11095	Upper temperature limit for cooling, comfort temperature range [1/10 °C]*
11096	Lower temperature limit for heating, comfort temperature range [1/10 °C]*
11134	Room temperature actual value [1/10 °C]
11093	Room temperature setpoint value [1/10 °C].

Address	Who
11132	Supply air temperature actual value [1/10 °C]
11097	Supply air temperature setpoint value [1/10°C]
* An upper and lower temperature limit is usually set for Occupied and Unoccupied. For room temperature control to an absolute value, the setpoint value is displayed here. For supply air temperature control, the setpoint value is displayed here.	

Control variables

Address	Who
11140	Actual value of heating valve control [1/10%] *
11141	Actual value of cooling valve control [1/10%] *
11145	Actual value of bypass damper control [1/10%] Bypass or RWT [1/10%] heat recovery*
*Display depends on the device equipment	

1.3 *'Fan control ➔ diagnostics'*

Type of ventilation

Address	Who
11092	**Type of ventilation:** 0 = No ventilation 1 = Secondary air operation 2 = Outdoor air operation
111989	**Outdoor air dampers position** 0 = Closed 1 = Open
11254	Outdoor air automatic 0 = Disabled 1 = Enabled
11078	Output of calculated fan stage supply air
11077	Output of calculated fan stage extract air
11079	Output of calculated fan stage secondary air
11081	Output of supply air fan speed [rpm]
11080	Output of extract air fan speed [rpm]

Fan stages

Address	Who
11106	Fan stage off temperature control
11107	Fan stage off air humidity control
11111	Fan stage off air quality control

Humidity/air quality measured values

Address	Who
11110	Room air humidity [%]
11113	Indoor air quality [ppm]

1.4 'Alarms and filter reset ➔ diagnostics'

Reset filter hours

Address	Who
10006	Reset filter hours: 0 = No default 1 = Reset

A alarm standby

Address	Who
11252	A alarm fan block – device in standby 0 = Inactive 1 = Active

A alarm

Category A alarms can sometimes result in devices being switched off.

The alarm is always output in the form of a consolidated alarm (address 11160) and individually (address 11146 – 11159).

In the case of the consolidated alarm (address 11160), this is a 16-digit bit string made up of all category A alarms. It is output as a decimal number that must be converted to the binary number system. The following alarms are shown depending on the bit used:

Bit 0 = Master – slave version conflict
Bit 1 = No communication with expansion module
Bit 2 = Missing communication CP Type01_Digital
Bit 3 = Currently not in use
Bit 4 = Group alarm of connected slave devices when there is an A alarm
Bit 5 = Supply air fan blockage
Bit 6 = Extract air fan blockage
Bit 7 = Currently not in use
Bit 8 = Currently not in use
Bit 9 = Supply air temperature sensor measured value outside tolerance
Bit 10 = Fire emergency stop
Bit 11 = Indoor air temperature sensor measured value outside tolerance
Bit 12 = Mixed flow air distribution temperature sensor measured value outside tolerance
Bit 13 = Outdoor air temperature sensor measured value outside tolerance
Bit 14 = Currently not in use
Bit 15 = Currently not in use

Examples:

1) **Address 11160** ⇒ 32 (decimal) ⇒ 0000000000**1**0000 (binary)

Bit 5 = 1 ⇒ Supply air fan blockage

2) **Address 11160** ⇒ 8224 (decimal) ⇒ 0000**1**000000**1**0000 (binary)

Bit 5 = 1 ⇒ Supply air fan blockage

Bit 11 = 1 ⇒ Indoor air temperature sensor measured value outside tolerance

The alarms of category A are individually listed below.

Alarm status of the respective alarms

Value 0 - No alarm

Value 1 - Alarm present

A alarm

Address	Who
11160	Alarm A consolidated alarm, see above for description
11146	Master – slave version conflict
11147	No communication with expansion module
11148	Missing communication CP Type01_Digital
11149	Not used
11150	Group alarm A alarms slaves (A1, A2, A3, etc.) > 0)
11151	Supply air fan blockage
11152	Extract air fan blockage
11153	Not used
11154	Not used
11156	Fire protection
11155	Supply air temperature sensor measured value outside tolerance
11157	Indoor air temperature sensor measured value outside tolerance
11158	Mixed air temperature sensor measured value outside tolerance
11159	Outdoor air temperature sensor measured value outside tolerance

B Alarm

If there is an alarm in category B, an alert is issued. The devices continue to run in the current operating mode.

The alarm is always output in the form of a consolidated alarm (address 11173) and individually (address 11161 – 11171). 11173 consolidated alarm.

In the case of the consolidated alarm (address 11173), This is a 16-digit bit string made up of all category B alarms. It is output as a decimal number that must be converted to the binary number system. The following alarms are shown depending on the bit used:

Bit 0 = No heat transfer fluid / coolant
Bit 1 = Filter change / filter pressure monitoring triggered

Bit 2 = Frost return temperature
Bit 3 = Frost outdoor air temperature
Bit 4 = Frost indoor / extract air temperature
Bit 5 = Frost 1 supply air temperature (< 12°C)
Bit 6 = Frost 2 supply air temperature (< 8°C)
Bit 7 = Extract air temperature sensor measured value outside tolerance
Bit 8 = Return air temperature sensor measured value outside tolerance
Bit 9 = Flow temperature sensor measured value outside tolerance
Bit 10 = Humidity sensor measured value outside tolerance
Bit 11 = Air quality sensor measured value outside tolerance
Bit 12 = Currently not in use
Bit 13 = Currently not in use
Bit 14 = Currently not in use
Bit 15 = Currently not in use

Examples

1) **Address 11173** ⇒ 32 (decimal) ⇒ 0000000000**1**0000 (binary)

Bit 5 = 1 ⇒Frost 1 supply air temperature

2) **Address 11173** ⇒ 8224 (decimal) ⇒ 0000**1**0000**1**0000 (binary)

Bit 5 = 1 ⇒ Frost 1 supply air temperature

Bit 11 = 1 ⇒ Air quality sensor measured value outside tolerance

B Alarm

Address	Who
11173	Alarm B consolidated alarm
11161	No heat transfer fluid / coolant
11162	Filter change reached or pressure monitoring triggered
11163	Frost return temperature
11164	Frost outdoor temperature
11165	Frost indoor / extract air temperature
11166	Frost supply air temperature 1 (limit 12°C)
11167	Frost supply air temperature 2 (limit 8°C)
11168	Extract air temperature sensor measured value outside tolerance
11169	Return air temperature sensor measured value outside tolerance
11170	Flow temperature sensor measured value outside tolerance
11172	Humidity sensor measured value outside tolerance
11171	Air quality sensor measured value outside tolerance

1.5 'Diagnostics ➔ Remaining run times*+'

This page provides an overview of all running timers.

Reset times

In this way, all timers can be reset to "0".
If the device is in frost protection mode, for example, because the outdoor temperature was missing and this temperature is now present, the waiting time can be shortened. Use only for commissioning!

Operating mode overrides

Address	Who
11227	Display of the remaining time in the Boost operating mode override
11228	Display of the remaining time in the Exercise operating mode override
11229	Display of the remaining time after activation of overtime
11230	Display of the minimum run time in the Night Purge operating mode override

Fan

Address	Who
11231	Display of remaining running time when switching from SEK to AUL or AUL to SEK
11233	Display of the start-up delay of the supply air fan when the shut-off dampers open and the fan was previously switched off.
11234	Display of the start-up delay of the extract air fan when the shut-off dampers open and the fan was previously switched off.
11232	Display of the remaining run time when switching the fan stages.

Frost mode

Address	Who
11235	Display until the renewed check as to whether the supply air temperature is still < 12°C.
11236	Display until the renewed check as to whether the supply air temperature is still < 8°C.

Address	Who
11237	Display until the renewed check as to whether the condition for room temperature frost (default: 8°C) is still present. Room temperature frost is also displayed if there is no information about the extract air temperature even though the value is required (supply air or extract air temperature control is active).
11238	Display until the renewed check as to whether the condition for outdoor temperature frost (default: -20°C) is still present.
11238	Display until the renewed check as to whether the condition for outdoor temperature frost (default: -20°C) is still present.
11239	Display until the renewed check as to whether the condition for return temperature frost (default: 8°C) is still present. Currently in use.
11240	Display until the renewed check as to whether the condition for HRU temperature frost is still present. Different temperatures are stored for the different heat recovery units: **Cross-flow HRU:** -6°C (If the outdoor temperature is lower than -6°C, the bypass is switched or, if active, the secondary air cycle is executed). **Cross-counterflow:** -4°C (If the outdoor temperature is lower than -6°C, the bypass is switched or, if active, the secondary air cycle is executed). **Rotary HRU:** -20 °C (This switches off the HRU temperature frost, as rotors cannot ice up).
11241	Display of run time in outdoor air mode with the secondary air cycle activated
11242	Display of run time in secondary air mode with the secondary air cycle activated
11244	Display of the remaining duration of the pre-purge process

Filter

Address	Who
11243	Display of the minimum duration until the filter change is displayed for filter pressure monitoring. Filter pressure monitoring is only active on the master units of the *-HE and *-HV variants.

1.6 *'Diagnostics ➔ IO connections*+'*

This page gives an overview of the status of all analogue and digital inputs and outputs.

For all non-configured inputs and outputs, "0" or "32767" is displayed.
The designations refer to the standard wiring of the unit type ZAB.
The wiring of the ZAS devices deviates from this standard wiring; in this case, please always check the wiring diagrams.

AO

Address	Who
11175	Heating valve control signal
11176	Bypass damper control signal / rotary heat recovery unit
11177	Supply air fan control signal
11178	Extract air fan control signal
11179	Control input signal of LED control panel
11180	Cooling valve control signal
11181	Secondary air damper/fan control signal
11182	Free

AI

Address	Who
11185	Actual supply air temperature
11186	Current outdoor air temperature
11187	Current air quality
11188	Current humidity
11189	Current resistance setpoint value adjuster
11190	Current resistance button (only CP Type02) If CP Type03 is configured, then *'32767'* At the press of the button = *'0'*
11191	Current room air temperature
11192	Current extract air temperature (temperature sensor = NTC10k)
11193	Current return temperature
11194	Current flow temperature
11195	Current flow sensor measured value
11196	Current extract air temperature (temperature sensor = 0…10 VDC)

DO

Address	Who
11199	Condition of the shut-off dampers
11200	A alarm output
11201	B alarm output
11202	"In operation" signal output 1 = Occupied / Unoccupied 0 = Standby
11203	Reheater enable (currently not in use)
11204	Heat transfer fluid request Use only in case of changeover!
11205	Coolant request Use only in case of changeover!
11206	Humidification request (currently not in use)
11207	Preheater enable (currently not in use)
11208	Heating ceiling enable (room related!)
11209	Chilled ceiling enable (room related!)

DI

The wiring status is basically displayed here.
1 = Wired
0 = Not wired

Address	Who
11211	Supply air fan speed signal
11212	Extract air fan speed signal
11213	Secondary air speed signal For ZAS devices with a separate SEK fan, the speed signal is not detected. For SEK devices, the speed signal is output as a supply air fan speed signal.
11214	Presence switch 1 = Occupied (override of RTC, CP, central BMS) 0 = Occupied / Unoccupied control via CP, RTC or central BMS
11215	Window contact 1 = Contact closed, device functioning 0 = Contact open, operating mode = OFF
11216	Fire protection 1 = Contact closed, device functioning 0 = Contact open, operating mode = OFF, operating status = fire
11217	Release 1 = Contact closed, device functioning 0 = Contact open, operating mode = OFF
11218	Changeover 1 = Cooling 0 = Heating
11219	Frost protection sensor Not supported.
11220	Filter monitoring 1 = Triggered (time and/or pressure) 0 = Not triggered
11221	Night purge Not supported.
11222	Fume cupboard switch 1 = Fan force active 0 = Fan force inactive Note: The fan force function must be activated via fan control*+, address 17472.

1.7 *'Diagnostics ➔ Secondary air addition*+'*

Mixed air temperature control

Address	Who
11136	Current mixed air temperature Output when mixed air temperature sensor is configured.
11098	Setpoint value of mixed air temperature 0 = No mixed air temperature control active
11144	Output signal for SEK damper 0 = No mixed air temperature control active
11091	Increase of the control voltage for ZUL-Vent with SEK addition if condensate prevention is active.

Ventilation

Address	Who
11092	Type of ventilation 0 = Off 1 = Secondary air operation 2 = Outdoor air operation
11078	Calculated fan stage ZUL, depending on temperature and air quality
11077	Calculated fan stage ABL, depending on temperature and air quality
11078	Calculated fan stage SEK, depending on temperature and air quality

Measured values for condensate prevention

Address	Who
11110	Humidity (measured at the ABL)
11135	Current extract air temperature (measured at the humidity + temperature combination sensor)

Help information for fan control

Address	Who
11251	Fan control To check which control function is currently being performed. A flow chart is required for interpretation!

2 Configuration menu

2.1 'Configuration ➔ Device description'

Address	Who
17009	Entry of project-specific device description (max.16 characters)

2.2 'Configuration ➔ Temperature control'

Temperature setpoint values

Entry of temperature setpoint values for heating and cooling for Occupied and Unoccupied modes. The range between the setpoint value for heating and the setpoint value for cooling is the comfort temperature range.

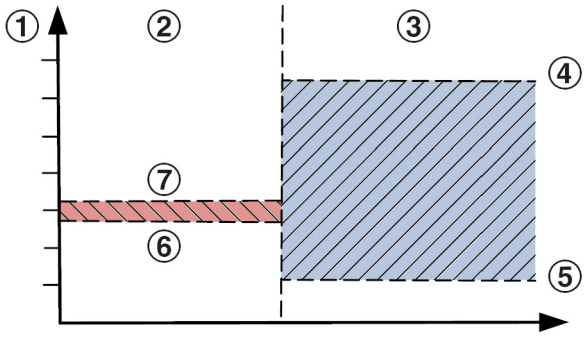

Fig. 1: Comfort temperature range

Red Comfort temperature range for Occupied
blue Comfort temperature range for Unoccupied
1 Room temperature setpoint value
2 Occupied
3 Unoccupied
4 Cooling setpoint value for Unoccupied
5 Heating setpoint value Unoccupied
6 Heating setpoint value for Occupied
7 Cooling setpoint value for Occupied

Address	Who
17322	Cooling temperature setpoint value for Occupied
17323	Heating temperature setpoint value for Occupied
17324	Cooling temperature setpoint value for Unoccupied
17325	Heating temperature setpoint value for Unoccupied

For values marked with [1/10 °C], the values are always entered with a factor of 10.

***Example:** 17322 cooling temperature setpoint value for Occupied = 26 °C*

***Entry** : 260*

Supply air temperature limits

Entry of minimum and maximum supply air temperature for Occupied and Unoccupied modes.

Address	Who
17311	Supply air temperature upper limit for Unoccupied
17309	Supply air temperature lower limit for Unoccupied
17310	Supply air temperature upper limit for Occupied
17308	Supply air temperature lower limit for Occupied

Winter compensation

Entry of parameters for the winter compensation function.

Address	Who
11478	Activation of winter compensation 0 = Winter compensation inactive 1 = Winter compensation active
17479	Entry of start temperature
17480	Entry of end temperature
17481	Entry of maximum setpoint value increase

Temperature sensor offset

The temperature sensor offset is used as a corrective value when there are temperature deviations.

The entered value is a constant and always has the same effect.

Recommendation: Offset = 0

Address	Who
17273	Entry of supply air temperature sensor correction
17276	Entry of room temperature sensor correction

2.3 'Configuration ➔ Clock and timer'

Current date and time on the device

Display of the date and time saved on the FSL-CONTROL III controller.

Set internal clock

Decentralised ventilation unit from TROX can be delivered from the factory with the pre-set date and time. However, it can be necessary to change settings or correct deviations.

Address	Who
10008	Default current date
10010	Default current time
10007	Set date and time 0 = No takeover 1 = Transfer to the controller
18077	Summertime setting 0 = Inactive 1 = Active

Number format

Date: ddmmyy [6 digits without separators]

Time: hhmmss [6 digits without separators]

The data is taken over by entering "1" and Return in the input field (address 10007).

Weekly program

An individual profile can be selected for each weekday.

Address	Who
18000	Profile for Monday
18001	Profile for Tuesday
18002	Profile for Wednesday
18003	Profile for Thursday
18004	Profile for Friday
18005	Profile for Saturday
18006	Profile for Sunday

Profile 1 – 7

For each profile, 10 different switching points can be freely selected.

The following operating modes and overrides are available:

1 - Standby

2 - Unoccupied

3 - Occupied

4 - Boost

5 - Exercise

6 - Night ventilation

7 - Fan force

Address	Who
18007	Switching point 1
18008	Switching point 2
18009	Switching point 3
18010	Switching point 4
18011	Switching point 5
18012	Switching point 6
18013	Switching point 7
18014	Switching point 8
18015	Switching point 9
18016	Switching point 10

Always start the profile entry at 00:00 in 'Unoccupied' mode,

We recommend separate profiles for weekdays, weekends and holidays.

For supply air temperature control, please replace the operating mode 'Unoccupied' with 'Standby'. The switching points are always active until the following switching point is reached.

Entry is always a combination of time and operating mode or override.

Prefixed zeros are not displayed after entry.

***Example 1**: entry of Unoccupied at 00:00*

Entry = 00002 Display = 2

***Example 2:** Entry of Night purge at 02:00*

Entry = 2006 Display = 2006

Example for office

Office hours: 8:00 am – 5:00 pm

12:00 am	-	Start Unoccupied ⇒ 2
2:00 am	-	Start Night purge ⇒ 2006
5:00 am	-	End Night purge (Unoccupied) ⇒ 5002
7:00 am	-	Pre-tempering (Occupied) ⇒ 7003
7:45 am	-	Flush with fresh air (Boost) ⇒ 7454
8:00 am	-	Normal operation (Occupied) ⇒ 8003
12:30 pm	-	Lunch (Unoccupied) ⇒ 12302
1:30 pm	-	Normal operation (Occupied) ⇒ 13303
5:00 pm	-	Unoccupied ⇒ 17002
9:00 pm	-	Rep. Unoccupied ⇒ 21002

Further information

2.4 'Configuration ➔ Fan control'

Air quality control (optional)

Air quality control means that the outdoor air flow rate is controlled based on the room air quality.

This type of control is only possible with an air quality sensor (optional equipment or by others). The internal sensor optionally detects the CO_2 concentration or the VOC content of the extract air. Air quality control is always active in the *'Occupied'* operating mode. In the *'Unoccupied'* operating mode, air quality control is inactive.

Activation of the function in the *'Unoccupied'* operating mode in address line 17378.

The switching thresholds apply for both *'Occupied'* and *'Unoccupied'* operating modes. If a switching threshold is exceeded, the configured fan stage is activated.

Secondary air function

For devices with secondary air switching, secondary operation is active until the first switching threshold is reached. If the air quality measured value exceeds the first switching threshold, supply air and extract air operation is activated. When the other switching thresholds are reached, the fan speed is increased.

Address	Who
17378	Enable air quality control in Unoccupied 0 = Inactive 1 = Active
17380	First switching threshold for air quality 0..2000 ppm
17381	Second switching threshold for air quality 0..2000 ppm
17382	Third switching threshold for air quality 0..2000 ppm
17383	Fourth switching threshold for air quality 0..2000 ppm
17384	Fifth switching threshold for air quality 0..2000 ppm

Recommended

Limit value for first fan stage: 500 ppm

Limit value for second fan stage: 750 ppm

Limit value for third fan stage: 900 ppm

Limit value for fourth fan stage: 2100 ppm

Limit value for fifth fan stage: 2100 ppm

Humidity control

Humidity control is currently not supported.

2.5 'Configuration ➔ Interfaces'

Address	Who
10003	Device restart 0 = No default 1 = Restart

Device restart

To change some settings, the controller will need to be restarted. To restart, enter 1 in the input field for address 10003 and confirm with Return.

Slave devices

Address	Who
17048	Entry of the number (!) of connected devices For master in combination with one slave = 1, for several slaves = number of slaves. For slave devices, the value corresponds to the number of following slave devices.

Settings SL1 connection X1 serial bus

The connection SL1 / terminal X1 is used in master devices to connect devices to the central building management system.

1 – 127 is available as the address range. A serial bus string can consist of max. 32 subscribers. With slave devices, the master device is connected at connections SL1 / terminal X1.

Factory-set Modbus address

Modbus address 2 is entered in the factory. In the case of connection from a master device to exactly 1 slave device, no settings are required. If several slave devices are connected to a master device: for every slave device connected, the Modbus address is incremented by "1".

Example slave 1 = Modbus address terminal X1 = 2

Slave 2 = Modbus address terminal X1 = 3

Slave n = Modbus address terminal X1 = n + 1

Addr.	Who	Explanation
16124	Entry of Modbus address terminal X1	
16125	Serial protocol type 3 = Modbus RTU 4 = BACnet MS/TP	
16129	Baud rate X1 (RS485-1) 0 = 9600 1 = 19200 2 = 38400 3 = 57600 4 = 76800 baud	For master devices that correspond to the serial bus system provided by others For slave devices, the baud rate is exclusively 38400 baud (value = 2).
16126	Data bits X1 (RS485-1)	For master devices that correspond to the serial bus system provided by others For slave devices, the number of data bits is exclusively 8 (value = 8).
16127	Stop bits X1 (RS485-1)	For master devices that correspond to the serial bus system provided by others For slave devices, the number of stop bits is exclusively 1 (value = 1).
16128	Parity X1 (RS485-1) 0 = Neutral 1 = Odd 2 = Even	For master devices that correspond to the serial bus system provided by others For slave devices, the parity is exclusively Even (value = 2)

Settings SL2 connection X2 serial bus

The connection SL 2 / terminal X2 is used for master devices to connect the first slave devices

The Modbus address SL 2 / terminal X2 is always 1, no settings are needed.

Address	Who
15774	Address

IP address

The input fields are used to set the IP address of the FSL-CONTROL III controller. For the entry, the IP address is divided into four address blocks (points).

Entry of IP address

IP-Adresse: 10.2.100.242

IP-Adressblock: 1 2 3 4

IP address factory setting

Master devices - 10.2.100.242

Slave devices - 10.2.100.243

Address	Who
15798	IP address block 1
15799	IP address block 2
15800	IP address block 3
15801	IP address block 4

Access with PC and web browser

Connect the ventilation unit and PC with a patch cable and enter the IP address into the address line of the web browser to get access to the ventilation unit. Here, conditions can be checked, values can be read out and settings can be configured.

Accepting network settings

Address	Who
10023	To accept changes to the factory preset IP address, IP gateway and IP network mask, please confirm with "1" and Return.

IP gateway

The address of the IP gateway is entered in the input fields. The input syntax follows the IP address; see *'IP address' on page 16*.

Address	Who
15802	IP gateway block 1
15803	IP gateway block 2
15804	IP gateway block 3
15805	IP gateway block 4

IP network mask

The address of the IP network mask is entered in the input fields. The input syntax follows the IP address; see *'IP address' on page 16*.

Address	Who
15802	IP network mask block 1
15803	IP network mask block 2
15804	IP network mask block 3
15805	IP network mask block 4

BACnet

In BACnet, the instance number is displayed as the sum of BACnet identifier + 65536.
The BACnet ObjectName describes the device name in BACnet.

In addition, the BACnet identifier and BACnet Object_Name can be used for their own settings. Please ensure uniqueness in the network.

Address	Who
17565	Enter the BACnet identifier as an integer. In BACnet, the identifier is displayed as the instance number according to the logic "65536" + BACnet identifier. E.g.: Address 17565 = 7, instance = 65536 + 7 = 65543.
17570	The BACnet Object Name is displayed as the device name.

2.6 'Configuration ➔ Temperature control*+'

Basic settings

Address	Who
17305	Control strategy 0 = Supply air temperature control For isothermal introduction of the supply air. Devices only cover the ventilation heat loss. It is important that the integrated extract air temperature sensor is activated, otherwise room air/extract air frost is active. 1 = Room temperature control In connection with room temperature via CP or central BMS. 2 = Extract air temperature control In conjunction with integrated extract air temperature sensor.
17306	Register type 0 = No register 1 = Changeover In Changeover mode, the device requires information about the medium via DI or the central BMS. If no information is available, the valves are not controlled. 2 = 2-pipe heating Also enter for isothermal supply air intake. 3 = 2-pipe cooling 4 = 4-pipe heat exchanger 5 = Electric heating register only for SCHOOLAIR-V-HV-EH.
17327	Minimum outdoor temperature to enable the active cooling sequence presetting: 10°C]
17328	Delay in switchover between heating and cooling presetting: 1 min.
17110	Room / extract air temperature deviation for max. fan speed presetting: 3 K. This means that, if the deviation is > 3 K, the devices switch to the third fan stage. All other stages according to the resulting characteristic curve.

Temperature setpoint values

Address	Who
17322 – 17325	↳ *'Temperature setpoint values' on page 13*
17318	Hysteresis threshold for supply air temperature presetting: 0.2 K; i.e., the supply air temperature may deviate from the specified supply air temperature by this value.

Master controller

The master controller affects the deviation between the setpoint and actual room temperature.

The valves are not affected at this point. Settings of the valves via addresses 17312, 17313, 17315, 17316.

Address	Who
17319	Cascade control proportionality coefficient presetting: 15
17320	Cascade control integration time presetting: 400

Supply air temperature limits

Address	Who
17311	Entry of the supply air temperature upper limit for Unoccupied
17309	Entry of the supply air temperature lower limit for Unoccupied
17310	Entry of the supply air temperature upper limit for Occupied
17308	Entry of the supply air temperature lower limit for Occupied

Winter compensation

Address	Who
17478	Winter compensation enable 0 = inactive 1 = active (default) Entry of the parameters for winter compensation via addresses 17479, 17480 and 17481.

Cooling coil

Address	Who
17312 – 17330	No changes to the presettings are required.

Heat recovery

Address	Who
17336	HRU type 1 = Plate-type HRU Setting for the following unit types: ■ All FSL units ■ SCHOOLAIR-B ■ SCHOOLAIR-B-HE ■ SCHOOLAIR-V-0-2L / -4L ■ SCHOOLAIR-V-1800 ■ SCHOOLAIR-V-HE ■ SCHOOLAIR-D-0-2L / -4L 2 = Rotary heat recovery unit Setting for the following unit types: ■ SCHOOLAIR-B-HV ■ SCHOOLAIR-V-HV ■ SCHOOLAIR-V-HV-EH ■ SCHOOLAIR-D-HV
17337	HRU proportionality coefficient No changes to the presettings are required.
17338	HRU integration time: No changes to the presettings are required.
17339	HRU throughout the year 0 = inactive For all devices with a plate-type heat recovery unit and without a condensate drain. Condensate is avoided because the bypass opens when the outdoor temperature is too cold and the air goes directly to the heat exchanger. The available water-side output must cover the entire ventilation heat loss. 1“ = Active Basically for all *-HV unit variants, as the rotary heat recovery unit does not generate any condensate to the outside. A condensate connection is mandatory for devices with plate-type heat recovery units. In addition, the frost protection cycle (Configuration -> Frost protection*+) must be activated.
17340	Minimum setpoint value of HRU: No changes to the presettings are required.
17341	Maximum setpoint value of HRU: No changes to the presettings are required.
17344	Heat recovery rate of HRU Settings as follows: 60% ■ All FSL units ■ SCHOOLAIR-B-0-2L / -4L ■ SCHOOLAIR-V-0-2L /- 4L ■ SCHOOLAIR-V-1800 ■ SCHOOLAIR-D-0-2L / 4L 84% ■ SCHOOLAIR-B-HE ■ SCHOOLAIR-V-HE 75% ■ SCHOOLAIR-B-HV ■ SCHOOLAIR-V-HV ■ SCHOOLAIR-D-HV
17342	Minimum temperature difference: No changes to the presettings are required.
17343	Waiting time if there are favourable temperature conditions

Heating coil

Address	Who
17315 – 17316 17331 – 17332	No changes to the presettings are required.

Electric heating register

Address	Who
17378	Electric heating register Dynamic enable Dynamic influences the maximum heating capacity of the electric heating register depending on the outdoor air temperature and the fan stage. 0 = inactive 1 = Active Only for SCHOOLAIR-V-HV-EH.
17579	Electric heating register proportion Dynamic Information on proportion Dynamic.

Temperature sensor offset

For the correction of various temperature sensors. Please make sure that the offset affects the entire temperature range.

Address	Who
17273	Supply air temperature offset
17274	Outdoor air temperature offset
17276	Room air temperature offset Insofar as a correction of the measurement must be made in the control panel. Please check the installation location of the control panel.
17277	Extract air temperature offset Input AI8 is used here, which is always used for extract air temperature if the extract air temperature sensor is an NTC 10k, i.e., for all CO2 / temperature combination sensors.
17278	Return temperature offset
17279	Flow temperature offset
17280	Extract air temperature Input AI12 is used here, which is always used for the extract air temperature if the extract air temperature sensor emits a 0...10 VDC signal, i.e., for all CO2 / humidity / temperature combination sensors. Primarily in FSL-U-ZAS.

2.7 *'Configuration ➔ Air control*+'*

Air quality control

Address	Who
17290	Type of sensor 0 = None, for all slaves. For master devices, if the integrated CO2 sensor is not used. 1 = IAQ2000 Not included in delivery. 2 = Titec CO2 The devices are supplied with a CO2 sensor as standard. 3 = Titec VOC
17376	Air quality control enable 0 = Inactive For master devices without an internal sensor or on-site sensor, including transmission via the central BMS. 1 = Active For master devices with integrated sensors and for master devices without internal sensors with simultaneous transmission of measured values via the on-site central BMS. The master decides itself which fan stage is active based on the measured values.
17377	Enable air quality control enable in Occupied 0 = Inactive during Occupied 1 = Active during Occupied (= default setting)
17378	Enable air quality control in Unoccupied 0 = Inactive during Unoccupied (= default setting) 1 = Active during Unoccupied
17111	Outdoor air automatic 0 = Inactive If the measured value for the indoor air quality is below the first threshold value, the device ventilates with secondary air in Occupied. 1 = Active Regardless of the indoor air quality, the device always ventilates with outside air when it is present.
17380	First switching threshold for air quality If the measured value is below the first switching threshold, the device ventilates with secondary air, provided that outdoor air automatic = 0. If the measured value is above the first switching threshold, the device ventilates with outdoor air. Fan stage = Stage 1.
17381	Second switching threshold air quality If the measured value is above the second switching threshold, the device ventilates with outdoor air in the second stage.
17382	Third switching threshold air quality If the measured value is above the third switching threshold, the device ventilates with outdoor air in the third stage.
17383	Fourth switching threshold air quality If the measured value is above the fourth switching threshold, the device ventilates with outdoor air in the fourth stage.
17384	Fifth switching threshold air quality If the measured value is above the fifth switching threshold, the device ventilates with outdoor air in the fifth stage.

Humidity control

Humidity control is not currently supported.

Fan stages

Address	Who
17072	Minimum fan stage during Occupied 1 = Default setting, fans always run during Occupied.
17074	Maximum fan stage during Occupied 3 = Default setting; this setting limits the available fan stages to 3 stages during Occupied.

Address	Who
17071	Minimum fan stage during Unoccupied 0 = Default setting, the fans can be switched off provided that the room temperature is within the set point range.
17073	Maximum fan stage during Unoccupied 4 = Default setting; this setting limits the available fan stages to 4 stages during Unoccupied. The fourth fan stage is activated during Night Purge.
17112	Reduction in fan stage temperature without cooling If the devices are not cooling (2-pipe - heating), this parameter can be used to reduce the fan stage so that the rooms are not heated up too much when the outdoor temperatures are too high.

Operating mode override settings

Address	Who
17462	Boost enable 0 = inactive 1 = Active
17463	Fan level during Boost; entry of the active fan stage for Boost mode. Default stage = stage 4. During Boost, ventilation always uses with outdoor air.
17467	Exercise enable 0 = inactive 1 = Active
17468	Fan level during Exercise; entry of the active fan stage for Exercise mode. Default stage = stage 2. During Exercise, ventilation always uses with outdoor air.
17450	Night Purge enable 0 = inactive 1 = Active
17456	Fan level during Night Purge; entry of the active fan stage for Night Purge mode. Default stage = stage 4. During Exercise, ventilation always uses with outdoor air. Activation via RTC or central BMS required.
17472	Enable Fan Force mode operation For combination with fume cupboards or separate, time-limited extract air. 0 = inactive 1 = Active Activation is always via DI or central BMS.
17473	Fan stage, Fan Force mode, supply air, entry of fan stage for supply air fan.
17474	Fan stage, Fan Force mode, extract air, entry of fan stage for extract air fan. The stage should always be > 0.

Electric heating register

Address	Who
17105	Minimum time in current fan stage To prevent the device from jumping too quickly between different stages.
17061	Outside damper running time The fans are only put into operation after this time has elapsed. No change required.
17359	Locking time secondary air - fresh air changeover The device can only switch from outdoor air mode to secondary air mode, or vice versa, after this locking time has elapsed.

2.8 *'Configuration ➔ Secondary air addition damper* +'*

These settings are only necessary for the FSL-U-ZAS.

Secondary air damper

Address	Who
17345	Secondary air damper enable 0 = inactive 1 = Active Secondary air damper must be active.
17352	Minimum resting time in current direction of action No changes possible.

Condensate prevention

The FSL-U-ZAS does not require a condensate drain, as condensate forming is prevented by the temperature control. For this purpose, the air temperature upstream of the heat recovery unit is raised by mixing in secondary air to such an extent that no condensate is formed.

Address	Who
17346	Prevention of condensation - minimum temperature difference (between extract air and outdoor air temperature) for activation Default setting = 5 K. No change required. The outdoor air must be at least 5 K cooler than the extract air temperature.
17347	Prevention of condensation - temperature offset with regard to the calculated minimum mixed air temperature Default setting = 2 K. For safety, the mixing air temperature to be achieved is raised by 2 K and therefore more secondary air is added.
17349	Maximum total control input signal of supply air fan For mixing, the control voltage of the supply air fan is increased so that it draws in more air in total. This value limits the maximum possible control voltage for acoustic reasons.

Mixed air temperature control

Address	Who
17330 – 17351	No change required.

Fan stages

These settings affect the fan stages in regard to air quality.

Address	Who
17106	Minimum outdoor air stage Default setting = 1 The device always ventilates with outdoor air at stage 1 during Occupied mode. This means that pure secondary air operation is not possible during Occupied.
17107	Maximum outdoor air stage Default setting = 3 For limiting the fan stage with outdoor air. If further fan stages are permitted, the difference is covered by secondary air.
17109	Maximum supply air - extract air Default setting = 3

2.9 *'Configuration ➔ Secondary air addition fan*+'*

These settings are only necessary for the FSL-B-ZAB +SEK.

Secondary air fan

Address	Who
17354	Secondary air fan enable 0 = inactive 1 = Active The secondary air fan must be activated.

Fan stages

Address	Who
17355	Minimum secondary air stage Default setting = 1. This means that the secondary air fan always runs at stage 1 so that the supply air is not forced back by the secondary air fan.
17356	Maximum secondary air stage Setting according to the number of fan stages. .
17108	Minimum supply/extract air stage To ensure the minimum outdoor air volume. Usually stage 1
17109	Maximum supply/extract air stage Setting according to the number of fan stages. If a maximum outdoor air volume has been defined in the project, this volume can be set here.

2.10 *'Configuration ➔ Characteristics*+'*

Control input signal fan supply air

Address	Who
17080 – 17084	For entering the control voltage of the supply air fan for up to 5 stages. Stage 1 – 3 represent normal operation, Stage 4 for Boost and Night Purge. Control voltages according to table, *'Control voltages ' on page 24 .*

Volume flow rate fan supply air

Address	Who
17075 – 17079	For entering the volume flow rate in the individual fan stages for supply air. This value is output to the central BMS.

Control input signal fan control extract air

Address	Who
17090 – 17094	For entering the control voltage of the extract air fan for up to 5 stages. Stage 1 – 3 represent normal operation, Stage 4 for Boost and Night Purge. Control voltages according to table, *'Control voltages ' on page 24 .*

Volume flow rate fan extract air

Address	Who
17075 – 17079	For entering the volume flow rate in the individual fan stages for extract air. This value is output to the central BMS.

Control input signal fan secondary air

Address	Who
17095 – 17099	For entering the control voltage of the secondary air fan for up to 5 stages.

Control voltages

SCHOOLAIR-B control voltages [V]

Volume flow rate		SA-B-0		SA-B-HE		SA-B-HV	
(m³/h)	[l/s]	ZUL (SUP)	FOL (EHA)	ZUL (SUP)	FOL (EHA)	ZUL (SUP)	FOL (EHA)
150	42	42	40	26	29	26	29
200	56	52	50	32	37	30	33
250	69	62	60	39	44	34	37
300	83	72	70	45	52	38	41
320	89	76	74	47	56	39	43
350	97			51	60	42	45
400	111			58	68	46	49
450	125			64	76	49	54
500	139					53	58
550	153					57	62
600	167					61	66

SCHOOLAIR-V control voltages [V]

Volume flow rate		SA-V-0-2L / -4L		SA-V-1800-2L / -4L		SA-V-HE-2L / -4L		SA-V-HV-2L / -4L		SA-V-HV-EH	
(m³/h)	[l/s]	ZUL (SUP)	FOL (EHA)	ZUL (SUP)	FOL (EHA)	ZUL (SUP)	FOL (EHA)	ZUL (SUP)	FOL (EHA)	ZUL (SUP)	FOL (EHA)
150	42	44	44	40	43	27	25	29	26	29	26
200	56	56	56	50	53	35	32	33	30	33	30
230	64	64	64	56	59	39	37	36	33	36	33
240	67	66	66	58	61	41	38	37	34	37	34
250	69	68	68	60	63	42	40	38	34	38	34
280	78	76	76	66	69	47	44	40	37	40	37
300	83	80	80	70	73	50	47	42	38	42	38
320	89	85	85	74	77	52	50	44	40	44	40
350	97			80	83	57	55	46	42	46	42
360	100					58	56	47	43	47	43
400	111							51	46	51	46
450	125							55	50	55	50
500	139							60	54	60	54
550	153							64	58	64	58
600	167							68	62	68	62

SCHOOLAIR-D control voltages [V]

Volume flow rate		SA-D-0		SA-D-HV	
(m³/h)	[l/s]	ZUL (SUP)	FOL (EHA)	ZUL (SUP)	FOL (EHA)
150	42	49	53		
200	56	63	66		
250	69	76	80	21	18
300	83	90	94	25	22
320	89	95	100	26	23
400	111			32	29
500	139			38	36
600	167			45	43
700	194			52	51
800	222			59	58
900	250			66	65
1000	278			73	72
1100	306			79	79

FSL device control voltages [V]

Volume flow rate		FSL-U-ZAS		FSL-B-ZAB+SEK		
(m³/h)	[l/s]	ZUL (SUP)	FOL (EHA)	ZUL (SUP)	FOL (EHA)	SEK
60	17	28	30	19	21	31
90	25	39	40	31	32	39
120	33	49	51	43	44	47
150	42	59	61			

Heating valve characteristic

The settings depend on the valve-valve drive combination used.

Actuator	Valve					
	Siemens			Frese		
Möhlenhoff, thermoelectric	X			X		
Siemens SSP 61, electromotorised		X			X	
Möhlenhoff, electromotorised			X			X
Address 17229	100	0	100	0	100	0
Address 17230	13	100	0	100	0	100

Characteristic bypass/rotary heat exchangers

The settings depend on the design implementation in the device.

Please note the following table:

Rotary HRU (SCHOOLAIR-B / -V / -D – HV)

Address	Who
17231	AO2 characteristic min. = 22
17232	AO2 characteristic max. = 100

Plate-type HRU (all other device variants)

Address	SA-B-2L/4L	SA-V-2L/4L	SA-V-1800-2L/4L	SA-V-HE-2L/4L	SA-D-2L/4L
17231	100	100	0	100	0
17232	0	0	100	0	100

Note

During the function test (service tool), the control input signal of the heat recovery unit has the following meaning:

100% - 100% bypass / 0% HRU

0% - 0% bypass / 100% HRU

Special case SCHOOLAIR-V-0-2L / -4L: Damper open = 100% heat recovery!

Cooling valve characteristics

Address	Who
17239 – 17340	Usually, the same settings must be made here as for the heating valve.

Characteristic secondary air damper on AO5

Please note that the LED for the CP is connected to AO5, exception: FSL-U-ZAS.

Address	Who
17237	AO5 characteristic min. = 0
17238	AO5 characteristic max. = 60 Limitation to 6 VDC, as the LED at the CP is operated with 5 VDC.

Characteristic secondary air damper on AO7

Address	Who
17241	AO7 characteristic min. = 0
17242	AO7 characteristic max. = 100

2.11 *'Configuration ➔ IO connections*+'*

The configuration described below represents the standard wiring of decentralised ventilation units. Deviations are documented with the wiring diagrams.

Occupancy analogue inputs

Address	Who
17177	Occupancy AI1 = 1 (Supply air temperature, NTC 10k)
17178	Occupancy AI2 = 2 (Outdoor air temperature, NTC 10k)
17179	Occupancy AI3 = 8 (CO2 sensor, 0 … 10 VDC signal)
17180	Occupancy AI4 = 9 (Humidity sensor, 0 … 10 VDC signal)
17181	Occupancy AI5 = 12 (Analogue control panel setpoint value adjuster, 5k)

Address	Who
17182	Occupancy AI6 = 13 (Analogue control panel fan stage selector or push button)
17183	Occupancy AI7 = 14 (Analogue CP, room temperature, NTC 10k or 20k)
17184	Occupancy AI8 = 6 (Extract air temperature, NTC 10k)
17185	Occupancy AI9 = 5 (Return temperature, NTC 10k)
17186	Occupancy AI10 = 4 (Flow temperature, NTC 10k)
17187	Occupancy AI11 = Currently not in use
17188	Occupancy AI12 = 7 (Extract air temperature, 0 … 10 VDC signal, FSL-U-ZAS!)
17189	Occupancy AI13 = 3 (Mixed air temperature, NTC 10k, FSL-U-ZAS)
17190	Occupancy AI14 = Currently not in use

Occupancy analogue outputs

Address	Who
17219	Occupancy AO1 = 1 (Heating valve, 0 … 10 VDC)
17220	Occupancy AO2 = 5 / 7 (Bypass damper / rotary HRU)
17221	Occupancy AO3 = 3 (Fan supply air, 0 … 10 VDC)
17222	Occupancy AO4 = 4 (Fan extract air, 0 … 10 VDC)
17223	Occupancy AO5 = 14 (LED control panel, 0 … 10 VDC)
17224	Occupancy AO6 = 2 (Cooling valve, 0 … 10 VDC)
17225	Occupancy AO7 = 6 (Fan secondary air, 0 … 10 V)
17226	Occupancy AO8 = 1 (Output volume flow rate, 0 … 10 VDC)
17227	Occupancy AO9 = Currently not in use
17228	Occupancy AO10 = Currently not in use

Occupancy digital inputs

Address	Who
17116	Occupancy DI1 = 1 (Speed signal fan supply air)
17117	Occupancy DI2 = 2 (Speed signal fan extract air)
17118	Occupancy DI3 = Currently not in use
17119	Occupancy DI4 = 10 (occupancy push button) Wiring: Open = valid operating mode (RTC, DI, central BMS) Closed = Occupied

Occupied

Address	Who
17120	Occupancy DI5 = 5 (window contact) Wiring: Open = Device OFF, Closed = Automatic
17121	Occupancy DI6 = 6 (fire emergency stop) Wiring: Open = Device OFF, Closed = Automatic
17122	Occupancy DI7 = 7 (external enable) Wiring: Open = Device OFF, Closed = Automatic
17123	Occupancy DI8 = 8 (changeover) Wiring: Open = Heating, Closed = Cooling
17124	Occupancy DI9 = 9 (frost protection monitors)
17125	Occupancy DI10 = 4 (filter pressure monitoring)
17126	Occupancy DI11 = 11 (Night Purge)
17127	Occupancy DI12 = 12 (Fan Force) Wiring: Open = Inactive Closed = Active
17128	Occupancy DI13 = 2 (currently not in use)
17129	Occupancy DI14 = 2 (currently not in use)
17130	Occupancy DI15 = 2 (currently not in use)
17131	Occupancy DI16 = 2 (currently not in use)

DI

NC-NO contacts

Normally Closed - 0

Normally Open - 1

To perform the functions correctly, the DIs must be configured as follows.

Address	Who
17132	DI1 switch type = 1
17133	DI2 switch type = 1
17134	DI3 switch type = 1
17135	DI4 switch type = 1
17136	DI5 switch type = 0
17137	DI6 switch type = 0
17138	DI7 switch type = 1
17139	DI8 switch type = 0
17140	DI9 switch type = 1
17141	DI10 switch type = 1
17142	DI11 switch type = 1
17143	DI12 switch type = 1
17144	DI13 switch type = 1
17145	DI14 switch type = 1
17146	DI15 switch type = 1
17147	DI16 switch type = 1

Occupancy digital outputs

Address	Who
17153	Occupancy DO1 = 1 (shut-off dampers)
17154	Occupancy DO2 = 2 (A alarm) Wiring: Open = Inactive Closed = A alarm present
17155	Occupancy DO3 = 3 (B alarm) Wiring: Open = Inactive Closed = B alarm present
17156	Occupancy DO4 = 4 (operational readiness) Wiring: Open = Inactive Closed = Device active
17157	Occupancy DO5 = Currently not in use
17158	Occupancy DO6 = 7 (heating request, related to the valve)
17159	Occupancy DO7 = 8 (cooling request, related to the valve)
17160	Occupancy DO8 = Currently not in use
17161	Occupancy DO9 = Currently not in use
17162	Occupancy DO10 = 11 (heating request/ enable, related to the room) Wiring: Open = Inactive Closed = Enable for external heat transfer fluid
17163	Occupancy DO11 = 12 (cooling request/ enable, related to the room) Wiring: Open = Inactive Closed = Enable for external coolant
17164	Occupancy DO12 = Currently not in use

DO occupancy digital outputs

NC-NO contacts

Normally Closed - 0

Normally Open - 1

To perform the functions correctly, the DOs must be configured as follows.

Address	Who
17165	DO1 switch type = 1
17166	DO2 switch type = 1
17167	DO3 switch type = 1
17168	DO4 switch type = 1
17169	DO5 switch type = 1
17170	DO6 switch type = 1
17171	DO7 switch type = 1
17172	DO8 switch type = 1
17173	DO9 switch type = 1
17174	DO10 switch type = 1
17175	DO11 switch type = 1
17176	DO12 switch type = 1

To implement the wiring of the DI / DO according to the wiring documents:

X3	Function	Open	Closed	Cable breakage resistance	Physical address controller	Used for		DI switch type	
						Address		Address	
1	Fume cupboard switch	Inactive	Active		DI 12	17127	12	17143	1
2	Changeover	Heating	Cooling	Yes	DI 8	17123	8	17139	0
3	Operating enable	Off	Automatic		DI 7	17122	7	17138	1
4	Fire emergency stop	Off	Automatic	Yes	DI 6	17121	6	17137	0
5	Window contact	Off	Automatic	Yes	DI 5	17120	5	17136	0
6	PIR sensor	Valid operating mode	Occupied		DI 4	17125	10	17141	1

X5	Function	Open	Closed	Cable breakage resistance	Physical address controller	Used for		DI switch type	
						Address		Address	
1	Coolant request	Inactive	Active		DO7	17159	7	17171	0
2	Heat transfer fluid request	Inactive	Active		DO6	17158	6	17170	0
3	Operational readiness	Device inactive	Device active		DO4	17156	4	17168	0
4	B Alarm	No alarm	Alarm		DO3	17155	3	17167	1
5	A alarm	No alarm	Alarm		DO2	17154	2	17166	1
6	Enable of heating function, room-related	No release	Release		DO10	17162	11	17174	0
6	Enable of cooling function, room-related	No release	Release		DO11	17163	12	17175	0

2.12 *'Configuration ➔ Device configuration*+'*

Please restart the controller after making any changes!

Address	Who
17036	FSL-CONTROL III device type 1 = Secondary air units (e.g. FSL-U-SEK) 2 = Supply and secondary air unit with separate secondary air fan (currently not available) 3 = Supply and secondary air unit (SEK via mixing damper), (e.g. FSL-U-ZUS) 4 = Supply and extract air unit (almost all FSL and SCHOOLAIR devices) 5 = Supply and extract air unit with admixture of secondary air (e.g. FSL-U-ZAS, FSL-B-ZAB+SEK)
17042	Master enable This setting determines whether the device is a master (1) or a slave (0) device.

Address	Who
	1 = Master 0 = Slave
17358	Secondary air changeover enable 1 = Active 0 = inactive Usually activated
17046	Control panel type 0 = No CP All master devices without a control panel. Often in case of connection to the central BMS. Instead of room temperature control, extract air temperature can also be activated. Fundamentally for all slave devices 1 = Digital control panel 2 = Analogue control panel with 20k temperature sensor - All CPs are surface-mounted CPs with selector switch - All CPs for flush mounting 3 = Analogue control panel with 10k temperature sensor - Schneider STR504
17044	Start operating mode Refers to the behaviour of the devices after restarting the controller. 1 = Off 2 = Automatic 3 = Manual Only "2" is permitted here.
17045	Start operating mode Refers to the behaviour of the devices after restarting the controller. 1 = Standby 2 = Unoccupied 3 = Occupied "3" must be selected here.
17047	Number of IO modules Currently only applies to FSL-U-ZAS and FSL-B-ZAB+SEK with 4-pipe heat exchanger and control panel connection. In this case, the IOs on the controller are not sufficient and an additional module is required. Only then is a "1" to be entered here. Default setting = 0.

2.13 *'Configuration ➔ Functions*+'*

Night purge

Please note: Night Purge must be additionally activated by either the RTC or the central BMS.

Address	Who
17450	Night Purge enable 0 = Night Purge inactive 1 = Night Purge active
17451	Start month To determine the period during which Night Purge may be carried out at all.
17452	End month To determine the period during which Night Purge may be carried out at all.
17453	Minimum outdoor temperature Setting of the lower limit of the outdoor temperature.
17454	Start delta outdoor temperature cooling setpoint value The outdoor temperature must be lower than the cooling setpoint value for Occupied by this amount.
17455	Stop delta outdoor temperature room temperature If the difference between the outdoor temperature and the room temperature is smaller than the set value, Night Purge is terminated.
17456	Fan stage Setting of the fan stage during Night Purge. Usually stage 4.
17458	Minimum time for Night Purge Setting of the minimum duration of Night Purge. Usually 30 minutes.

Filter monitoring

Address	Who
17494	Filter monitoring enable 0 = No filter monitoring 1 = Filter monitoring active No distinction is made here about the type of filter monitoring, but filter monitoring is activated in principle.
17495	Time monitoring of filter change interval Setting of the time span after which the filter change is displayed. Usually 2,500 h.

Address	Who
17496	Pressure monitoring Affects all unit types: - HE, HV and HV-EH must be activated. In addition, filter monitoring (4) must be set for DI10 and Normally Closed must be selected as the switch type.
17497	Pressure monitoring message delay Enter the duration for which the pressure monitoring must have been triggered before the message is sent. Usually 30 minutes. For preventing gusts of wind from causing triggering.

Priming

Address	Who
17422	First month for priming Determination of the months in which priming is carried out.
17423	Last month for priming Determination of the months in which priming is carried out. Please note that priming is always (!) carried out within this period. We therefore do not use this function, but only the temperature-controlled activation of the priming process.
17415	Minimum outdoor temperature Specifies the outdoor temperature at which the priming process is activated, i.e. priming takes place if the temperature falls below the entered value.
17416	Max. priming time Setting of the duration of the priming process. Usually 3 minutes (180 sec.).
17418	Heating valve setting at the end of the process The valve is set to this value after priming so that the supply air temperature setpoint value is reached more quickly.
17419	Holding tie for heating valve setting After the priming process, the valve is moved to the setpoint value (17418) and held for the duration of the value specified here. Regulation of the supply air temperature does not take place during this period.
17414	Minimum priming duration with return temperature monitoring Currently not in use.
17421	Minimum return temperature for termination Currently not in use.

Logging

The devices permanently log all existing data. E.g. sensor values, operating status, central BMS.

Address	Who
17558	Logging enable 0 = inactive 1 = Active = Default setting
17562	Number of files 31, i.e., a separate file is created for each day of the month. Thus, the last 31 days are always logged.
17559	Logging interval 20, i.e., data is written every 20 seconds. Please do not make any changes, as the resulting amount of data can still be processed very well.
17561	Lines per file 4320, corresponds to logging every 20 sec within 24 hours.
17560	Lines per write process 10 so that the SD card is not accessed too often.

FTP

Address	Who
17564	Enable FTP access to the controller 1, the controller can be accessed via the service tool, e.g. for software updates.
16138	FTP volume enable 0 = Flash memory 1 = SD card To read the data from the SD card, "1" must be entered here.

2.14 *'Configuration ➔ Alarms*+'*

Individual alarm messages can be suppressed here. No settings are necessary.

0 - The alarm is not output

1 - The alarm is output

2.15 'Configuration ➔ Frost protection*+'

Supply air frost protection

Address	Who
17403	Supply air frost protection start temperature Entry of the minimum supply air temperature. The frost protection function is carried out if the temperature falls below this value. Default value = 8°C
17389	Duration Duration of the frost protection function caused by supply air frost. Default value = 360 seconds
17390	Restart frost protection delta supply air Enter the temperature at which frost protection is exited. Default value = 1K.

Room frost protection

Address	Who
17391	Room frost protection start temperature Entry of the minimum room temperature. The frost protection function is carried out if the temperature falls below this value. Default value = 8°C
17392	Duration Duration of the frost protection function caused by room frost. Default value = 360 seconds
17393	Restart frost protection delta room Enter the temperature at which frost protection is exited. Default value = 1K.

Outdoor temperature frost protection

Address	Who
17394	Outdoor temperature frost protection Start temperature Enter the minimum outdoor air temperature. The frost protection function is carried out if the temperature falls below this value. Default value = -20°C
17395	Duration Duration of the frost protection function caused by supply air frost. Default value = 900 seconds
17396	Restart frost protection delta outdoor temperature Enter the temperature at which frost protection is exited. Default value = 2K.

Heat recovery unit frost protection

Address	Who
17397	HRU frost protection start temperature Entry of the minimum outdoor air temperature: If the value falls below this value, the bypass is opened or the frost protection cycle is carried out (with year-round heat recovery in conjunction with plate-type heat recovery unit). Different values must be set for the different heat recovery systems: Cross-flow HRU = -6°C Cross counterflow HRU = -4°C Rotary HRU = -20°C (rotor does not produce condensate that has to be discharged!)
17399	Duration Duration of the frost protection function caused by HRU frost. Default value = 360 seconds
17398	Delta temperature close bypass Enter the temperature at which the bypass is closed. Default value = 1K.

HRU frost protection cycle

Address	Who
17409	Frost protection cycle enable This function enables year-round heat recovery with plate-type heat recovery units. Please note that this function generates condensate and the devices must (!) have a condensate connection. 0 = inactive 1 = Active
17410	Secondary air operating time The secondary air is used to defrost the heat recovery unit if necessary. Default value = 20 minutes.
17411	Outdoor air operating time Definition of the maximum duration in supply air and extract air mode until switching to secondary air. Default value = 180 min. (i.e. switching takes place every 3 h at the latest).

2.16 'Configuration ➔ Control panel*+'

Setpoint value adjuster / push button / selector switch The settings can be found in the following table:

Address	Honeywell, 5-stage M546FB8	Schneider STR504 M536BA4	Titec RTF3-NTC20k-P5k-T-L Axx59067	Titec RTF3-NTC10k Axx59069	Thermokon, WRF06-TD-20k Axx81503	Titec BS1-NTC20k-P5k-T-L Axx74476	Thermokon WRF07 PTD NTC20k BTyp6 5k-gn Axx79778 Axx79779 Axx81579
	Value	Value	Value	Value	Value	Value	Value
17425	1	1	1	0	0	1	1
17434	30	30	30	0	30	30	30
17433	-30	-30	-30	0	-30	-30	-30
17436	5500	5500	2650	0	2500	2160	2500
17437	4785	4785	3050	0	3000	2600	3000
17435	100	100	100	0	100	100	100
17426	1	1	1	0	1	1	1
17427	1	1	1	0	1	1	1
17428	1	1	1	0	1	1	1
17424	1	0	1	0	1	1	1

Times

Address	Who
17439	Run time of overtime operation Determination of the duration for overtime. Function must be activated, see address 17426 Default value = 60 minutes.
17464	Boost run time Default value = 15 minutes.
17469	Exercise run time Default value = 60 minutes.

2.17 'Configuration ➔ Options*+'

For activating / deactivating the internal clock for executing the timers or for enabling the Modbus or BACnet interface to the central BMS. Please ensure that only one interface to the central BMS is active at any one time, provided the devices are connected to a central BMS. These options are chargeable and therefore protected from access with separate passwords.

2.17.1 'Configuration ➔ Overall configuration*+'

After commissioning, a protocol with all settings can be generated here. Using the Print command in the browser and the selection of a *pdf printer, a *.pdf can be generated and transferred to the customer with the protocol for the commissioning.

3 Manual control menu

3.1 *'Manual control ➔ commands'*

Operating mode

Address	Who
10000	Operating mode 0 = No default 1 = **Off:** At off, the device is completely off, frost protection continues to be active! 2 = **Auto:** Corresponds to normal operation 3 = **Manual operation:** For the functional test
10003	Device restart 0 = No default 1 = **Restart:** Some settings within the configuration require a restart.

Reset filter hours

Address	Who
10006	Reset filter operating hours 0 = No default 1 = **Reset:** The hours until the next filter change are reset to the pre-set value. ↳ *Configuration of functions*+ filter monitoring address 17495* . It does not matter whether the filter change was initiated on the basis of time or pressure.

Actuator variables

For the functional test of devices
Requirement: Manual operation, see operating mode address 10000 = "3"

Address	Who
10012	Bypass / rotary heat exchanger Entry of 0…100 % With plate rotary hear exchangers, the percentage figure refers to the bypass! This means that 100% corresponds to 0% heat recovery, as 100% of the air flows through the bypass. With rotary heat exchangers, the entry refers to the heat recovery itself, i.e. 100% corresponds to max. heat recovery = highest speed.
10013	Outside damper Entry of 0 or 100 % 100% = dampers open
10015	Heating valve Entry of 0…100 % The characteristic of the valves is adjusted here: ↳ *address 17229 + 17230*
10016	Cooling valve Entry of 0…100 % The characteristic of the valves is adjusted here: ↳ *address 17239 + 17240*
10017	Supply air fan Entry as: Level 0…5 or voltage 0.6 – 10 VDC = 6…100% The fans only start up from approx. 1.7 VDC
10018	Extract air fan Entry as: Level 0…5 or voltage 0.6 – 10 VDC = 6…100% The fans only start up from approx. 1.7 VDC
10019	Secondary air fan Entry as: Level 0…5 or voltage 0.6 – 10 VDC = 6…100% The fans only start up from approx. 1.7 VDC

3.2 *'Manual control ➔ commands*+'*

Operating mode

Address	Who
10000	Operating mode 0 = No default 1 = **Off:** At off, the device is completely off, no frost protection! 2 = **Auto:** Corresponds to normal operation 3 = **Manual operation:** For the functional test
10003	Device restart 0 = No default 1 = **Restart:** Some settings within the configuration require a restart.

Operating mode

Address	Who
10001	Operating mode 1 = **Standby:** To switch off the devices, frost protection active, no temperature maintenance. 2 = **Unoccupied:** Temperature maintenance active, no air quality 3 = **Occupied:** Temperature maintenance active, air quality active
10002	Operating mode override 1 = **Boost:** Boost ventilation mode 2 = **Exercise:** For quiet operation 3 = **Night purge** 4 = **Fume cupboard switch**

Reset operating hours

Address	Who
10006	Reset filter operating hours 0 = No default 1 = **Reset:** The hours until the next filter change are reset to the pre-set value. ↳ *Configuration of functions*+ filter monitoring address 17495* . It does not matter whether the filter change was initiated on the basis of time or pressure.
10005	Reset fan operating hours 0 = No default 1 = **Reset:** Reset fan operating hours
10004	Reset device operating hours 0 = No default 1 = **Reset:** Reset device operating hours

Actuator variables

For the functional test of devices
Requirement: Manual operation, see operating mode address 10000 = "3"

Address	Who
10012	Bypass / rotary heat exchanger Entry of 0…100 % With plate rotary hear exchangers, the percentage figure refers to the bypass! This means that 100% corresponds to 0% heat recovery, as 100% of the air flows through the bypass. With rotary heat exchangers, the entry refers to the heat recovery itself, i.e. 100% corresponds to max. heat recovery = highest speed.
10013	Outside damper Entry of 0 or 100 % 100% = dampers open
10015	Heating valve Entry of 0…100 % The characteristic of the valves is adjusted here: ↳ *Heating valve characteristic Address 17229 + 17230*
10016	Cooling valve Entry of 0…100 % The characteristic of the valves is adjusted here: ↳ *Cooling valve characteristics Address 17239 + 17240*
10017	Supply air fan Entry as: Level 0…5 or voltage 0.6 – 10 VDC = 6… 100% The fans only start up from approx. 1.7 VDC
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10019	Secondary air fan Entry as: Level 0…5 or voltage 0.6 – 10 VDC = 6… 100% The fans only start up from approx. 1.7 VDC

4 Menu for connection to central BMS

Display of values, only if the interfaces Modbus or BACnet are active. Display of "32767" = no central BMS connection active. Description of all data points, see installation and configuration manual. BACnet: Interface is not certified. Up to and including software version 6.x, max. three slaves are supported.

4.1 *'Connection to central BMS ➔ device => central BMS'*

Display of all data points that are sent from the device to the central BMS.

4.2 *'Connection to central BMS ➔ central BMS => device'*

Display of all data points sent from the central BMS to the devices.
With a Modbus connection, the central BMS can be simulated via entries.

If BACnet is active, the entries are directly overwritten by the BACnet-variables.

BACnet: For the BACnet communication, the values coming from the central BMS are written to a buffer memory, processed but not deleted. For this reason, for some data points, the central BMS must send an "invalid".
Affects AV12 → fInPvOperatingTypeOverriding (specifies operating mode overwrite) MV1 → eInOperating-Type (specifies operating mode

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