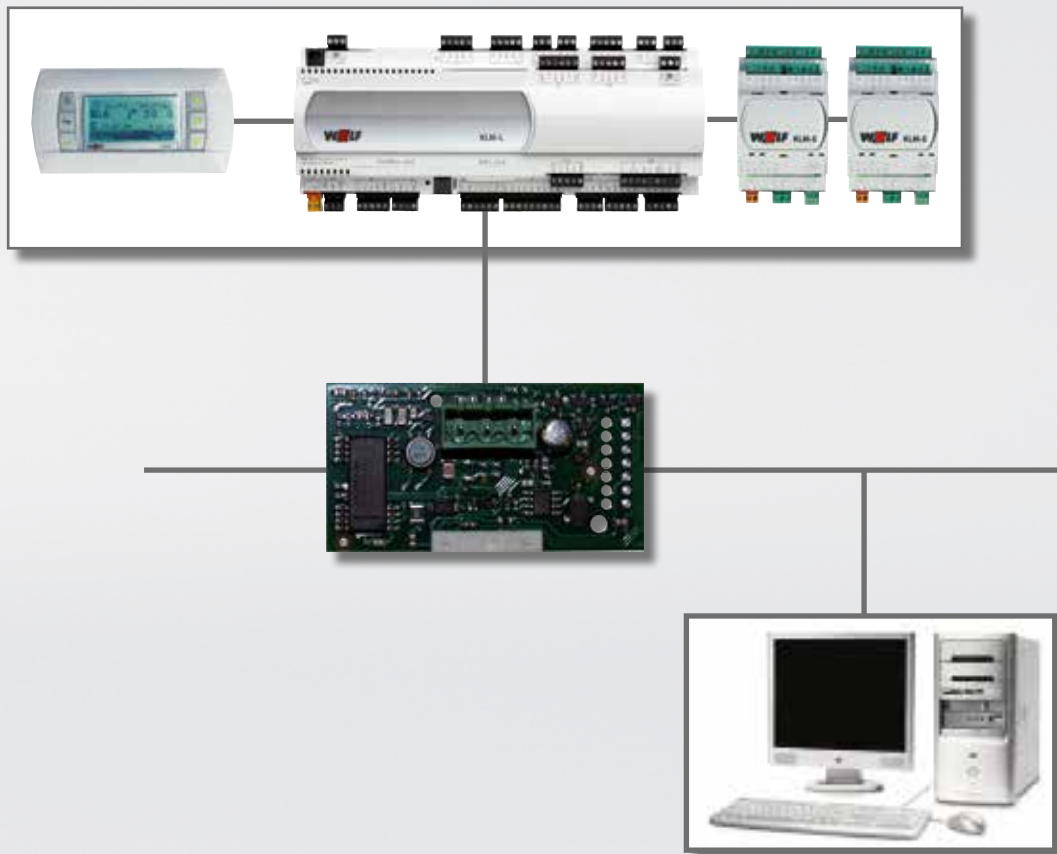


Installation and operating instructions

Modbus interface for WRS-K

(Translation of the original)



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1.1 Other applicable documents

WRS-K installation and operating instructions.

The instructions for all accessory modules and further accessories may also apply.

1.2 Safekeeping of these documents

The system operator or user should ensure the safekeeping of all instruction manuals.

→ Pass on these operating instructions as well as all other applicable manuals.

1.3 Symbols and warnings used

The following symbols are used in conjunction with these important instructions concerning personal safety, as well as operational reliability.



"Safety instructions" are instructions with which you must comply exactly, to prevent risks and injuries to individuals and material losses.



Danger through 'live' electrical components!

Please note: Switch OFF the ON/OFF switch before removing the casing.

Never touch electrical components or contacts when the ON/OFF switch is in the ON position! This results in a risk of electrocution that may lead to injury or death.

Please note

"Please note" indicates technical instructions that you must observe to prevent material losses and equipment malfunctions.

Warning structure

You will recognise warnings in this manual by a pictogram with a line above and below respectively. These warnings are structured according to the following principle:



Signal word

Type and source of the risk.

Explanation of the risk.

→ Action to prevent the risk.

1.4 Applicability of these instructions

These operating instructions are valid for the Modbus interface for WRS-K.

The components of the Wolf WRS-K control system comply with the following regulations:

EC Directives

- 2006/95/EC Low Voltage Directive
- 2004/108/EC EMC Directive

EN Standards

- EN 55014-1 Emission
- EN 55014-2 Immunity
- EN 55022 Radio disturbance characteristics
- EN 55024 Immunity characteristics
- EN 60730-1 Automatic electrical controls for household and similar use
- EN 60730-2-9 Particular requirements for temperature sensing controls
- EN 61000-6-1 Immunity for residential, commercial and light-industrial environments
- EN 61000-6-2 EMC Immunity for industrial environments
- EN 61000-6-3 EMC Emission standard for residential, commercial and light-industrial environments
- EN 61000-6-4 Emission standard for industrial environments
- EN 61010-1 Safety requirements for electrical equipment for measurement, control and laboratory use

2.1 Installation / commissioning

- In accordance with EN 50110-1, installation and commissioning may only be performed by qualified electricians
- Observe all regulations stipulated by your local power supply utility and all VDE or local regulations
- DIN VDE 0100 Regulations regarding the installation of high voltage systems up to 1000 V
- DIN VDE 0105-100 Operation of electrical installations.

2.2 Warnings



Only operate the system in perfect technical condition. Immediately remove / remedy any faults and damage that may impact on safety.

2.3 Service / repair

Please note

- Regularly check the perfect function of all electrical equipment.
- Only qualified personnel may remove faults or repair damage.
- Only replace faulty components or equipment with original Wolf spare parts.

We accept no liability for any damage or loss resulting from technical modifications to Wolf control units.

2.4 Disposal

Observe the following information regarding the disposal of faulty system components or the system at the end of its service life: Dispose of all components in accordance with applicable regulations, i.e. separate material groups correctly. The aim should be the maximum possible recycling of basic materials with the least environmental impact. Never throw electrical or electronic scrap into the household waste, but recycle it appropriately.

Generally, dispose of materials in the most environmentally responsible manner according to environmental, recycling and disposal standards.

3.1 View

- ① Connection block to the KLM-M or KLM-L control unit
- ② Terminal block for the Modbus network

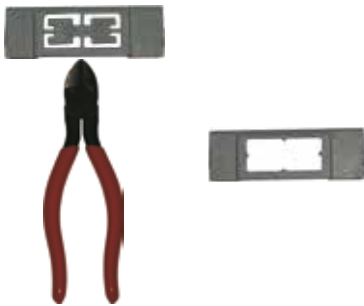
3.2 Installation



The Modbus interface is usually supplied fully assembled with the control unit. If it is retrofitted, please observe the following points:

The Modbus interface is inserted into the (serial card / BMS card) slot on the KLM-M control unit (part no. 2744747) or KLM-L control unit (part no. 2744746). To do this, proceed as follows:

1. Isolate the KLM-M or KLM-L air handling and ventilation module from the power supply.
2. Remove the cover of the (serial card / BMS card) slot using a screwdriver.
3. Remove the inner part of the cover with wire cutters.



4. Insert the Modbus interface into the free slot such that a plug-in connection is made between the connection block of the Modbus interface and the pins of the air handling and ventilation module (connection block clicks into place).



5. Refit the slot cover.
6. Reconnect the power supply.

3.3 Connection

Connection to the Modbus network is made via the pluggable terminal block:

- 1: GND
- 2: RX+/TX+
- 3: RX-/TX-



1 2 3

3.4 Interface configuration

Note If the Modbus interface was supplied fully assembled with the control unit, it is also already configured. No further settings are required.

If the interface is retrofitted, it can be configured as follows:

1. Navigate to the main menu with the Esc key on the BMK programming module.
2. Select menu item **Heating contractor** with Enter.
3. Enter password "**1234**" and confirm with Enter.
4. Select menu item **Other...** with Enter.
5. Navigate to menu item BMS-Protocol with the up/down arrows.
6. Use Enter to highlight the BMS-Protocol and the up/down arrows to select protocol type Modbus Slave Standard.
The transfer rate is then automatically set to 19200 and the BMS address to 001.
7. Confirm these entries with Enter.
8. Use Esc to complete the entry and exit the menu item.

Note The precise procedure for operating the BMK programming module can be found in the WRS-K installation and operating instructions.

| | |
|------------------------|------------------|
| Other... | S-04 |
| BMS-Protocol | |
| >MODBUS Slave Standard | |
| Transfer rate | |
| >19200 (SOLO RS485) | |
| BMS-Address: | 001 |
| ↕VALUE | ←SAVE Esc CANCEL |

3.5 Portal connection (optional)

A transfer rate of 9600 and 8N1 (no parity, 1 stopbit) is required for communication with "Wolf Link pro".

The data described under "Data point list, BMS connection" are of no further relevance in this case. The "Wolf Link pro" recognises the control unit and automatically connects all available data points which can be viewed and/or adjusted via the Wolf portal <http://www.wolf-smartset.de>.

4. Connection to a Modbus network

Via the Modbus interface, it is possible to gain read and write access to the air handling control unit.

4.1 Read access

With read access, actual and set values can be checked, subject to operating mode, via a Modbus network.

The values can be selected with function code 1 (read coils) or function code 3 (read holding register).

4.1.1 Operating data read access

The following data is available for read access:

| Description | Unit | Factor | Type | Index |
|--|-------|--------|----------|-------|
| Central fault | - | - | Coil | 1 |
| External system enable | - | - | Coil | 2 |
| Hygrostat humidity | - | - | Coil | 3 |
| Humidifier enable | - | - | Coil | 4 |
| System status | - | - | Coil | 5 |
| Operating status ¹⁾ | - | - | Coil | 117 |
| Pump, hot water | - | - | Coil | 60 |
| Pump, cold water | - | - | Coil | 18 |
| Heat source demand | - | - | Coil | 61 |
| Enable or pump HR | - | - | Coil | 62 |
| Outside/supply air damper | - | - | Coil | 63 |
| Exhaust/extract air damper | - | - | Coil | 64 |
| Enable gas valve | - | - | Coil | 65 |
| Enable or pump, adiabatic cooling | - | - | Coil | 87 |
| Enable convector heater (WO) | - | - | Coil | 89 |
| Thermostat, convector heater (WO) | - | - | Coil | 90 |
| Water supply line drain valve, adiabatic cooling, open | - | - | Coil | 91 |
| Pan drain valve, adiabatic cooling, open | - | - | Coil | 92 |
| Inlet valve, adiabatic cooling, open | - | - | Coil | 94 |
| Supply air temperature | °C | 0.1 | Register | 1 |
| Outside temperature | °C | 0.1 | Register | 2 |
| Room temperature | °C | 0.1 | Register | 3 |
| Extract air temperature | °C | 0.1 | Register | 4 |
| Air quality (mixed gas) | V | 0.1 | Register | 5 |
| Set room transducer | °C | 0.1 | Register | 6 |
| Indoor air humidity | %r.h. | 0.1 | Register | 7 |
| Relative humidity, extract air | %r.h. | 0.1 | Register | 8 |
| Relative humidity, supply air | %r.h. | 0.1 | Register | 9 |
| Current set value, supply air temperature | °C | 0.1 | Register | 10 |
| Current set temperature | °C | 0.1 | Register | 11 |
| Current set value, fresh air proportion | % | 1 | Register | 12 |
| Current set speed, supply air fan | % | 0.1 | Register | 13 |
| Current set speed, extract air fan | % | 0.1 | Register | 14 |
| Current set value, relative humidity | %r.h. | 0.1 | Register | 23 |
| Current set value, absolute humidity | g/kg | 0.1 | Register | 24 |
| Icing-up sensor | °C | 0.1 | Register | 27 |
| Actuating signal, heating | % | 0.1 | Register | 28 |
| Actuating signal, cooling | % | 0.1 | Register | 29 |
| Actuating signal, HR | % | 0.1 | Register | 30 |
| Actuating signal, humidifier | % | 0.1 | Register | 31 |
| Extract air temperature after humidifier for adiabatic cooling | °C | 0.1 | Register | 32 |
| Actuation signal reheating ¹⁾ | % | 0.1 | Register | 33 |

4. Connection to a Modbus network

| Description | Unit | Factor | Type | Index |
|---|-------------------|--------|----------|-------|
| Air quality (CO ₂) | ppm | 0.1 | Register | 209 |
| Supply air pressure | Pa | 1 | Register | 210 |
| Extract air pressure | Pa | 1 | Register | 211 |
| Flow rate, supply air | m ³ /h | 10 | Register | 212 |
| Flow rate, extract air | m ³ /h | 10 | Register | 213 |
| Operating mode | - | - | Register | 214 |
| Current set value, fan stage | - | - | Register | 215 |
| Current set pressure, supply air | Pa | 1 | Register | 216 |
| Current set pressure, extract air | Pa | 1 | Register | 217 |
| Current set flow rate, supply air | m ³ /h | 10 | Register | 218 |
| Current set flow rate, extract air | m ³ /h | 10 | Register | 219 |
| Cooling source demand, stage 1/2 | - | - | Register | 220 |
| Electric heater bank stage | - | - | Register | 232 |
| Direct evaporator stage | - | - | Register | 233 |
| Operating mode, heat pump ¹⁾ | - | - | Register | 255 |

¹⁾ Available WRS-K software version 3.0.000 or higher

Values with a factor = 0.1 have a decimal place. Multiply the transferred value by the factor 0.1.

Example: Transferred value for supply air temperature = 243 -> actual value = 24.3 °C.

For values with a factor = 1, the transferred value equals the actual value (no decimal place).

Example: Transferred value for fresh air proportion = 45 -> actual value = 45 %.

For values with a factor = 10, the transferred value needs to be multiplied by 10.

Example: Transferred value for supply air flow rate = 125 -> actual value = 1250 m³/h

Codes

| Description | Value | Explanation |
|------------------------------|-------|--|
| Current set value, fan stage | 0 | Fans OFF |
| | 1 | Fans ON (single stage and variable fans) Fans stage 1 on (multi stage fans) |
| | 2 | Fans stage 2 ON |
| | 3 | Fans stage 3 ON |
| Operating mode | 0 | Manual mode |
| | 1 | 7-day program |
| | 2 | BMS mode |
| System status | 0 | Standby |
| | 1 | Ready for operation |
| Operating status | 0 | System not in use |
| | 1 | System in use |
| Operating mode, heat pump | 0 | Not enabled |
| | 1 | Enable heating |
| | 2 | Enable cooling |

4.1.2 Special operating modes

Any special operating modes which are enabled will be transferred as described below. Function descriptions of the special operating modes can be found in the WRS-K installation and operating instructions.

| Description | Type | Index |
|-------------------------------|------|-------|
| Holiday program | Coil | 6 |
| Filter check | Coil | 7 |
| Preheat program | Coil | 8 |
| Night ventilation | Coil | 9 |
| Backup mode | Coil | 10 |
| Extension of utilisation time | Coil | 11 |
| Peak ventilation | Coil | 12 |
| Natural cooling | Coil | 13 |
| Hygostat function | Coil | 14 |
| Air quality control | Coil | 15 |
| External demand | Coil | 16 |
| Run-on | Coil | 17 |
| HR Ice guard | Coil | 92 |
| HR Ice guard | Coil | 101 |
| Speed reduction | Coil | 102 |
| Setback mode ¹⁾ | Coil | 112 |
| Winter start HR ¹⁾ | Coil | 113 |
| Quick heating ²⁾ | Coil | 129 |

¹⁾ Available WRS-K software version 3.0.000 or higher

²⁾ Included in WRS-K software version 5.3.000 or higher

Explanation

| Value | Explanation |
|-------|------------------------------------|
| 0 | Special operating mode not enabled |
| 1 | Special operating mode enabled |

Note: Several special operating modes can be enabled at the same time.

4.1.3 Alarms

Any enabled alarms will be transferred as described below. Descriptions of the causes and possible solutions can be found in the WRS-K installation and operating instructions.

| Description | Type | Index |
|--|------|-------|
| Fault, inverter, supply air fan | Coil | 19 |
| Motor temperature too high, supply air fan | Coil | 20 |
| Isolator switch, supply air fan | Coil | 21 |
| Air flow monitor, supply air | Coil | 22 |
| Fault, inverter, extract air fan | Coil | 23 |
| Motor temperature too high, extract air fan | Coil | 24 |
| Isolator switch, extract air fan | Coil | 25 |
| Air flow monitor, extract air | Coil | 26 |
| Outdoor air filter contaminated | Coil | 27 |
| Supply air filter contaminated | Coil | 28 |
| Extract air filter contaminated | Coil | 29 |
| Pump fault, DHW bank | Coil | 30 |
| Frost stat has responded | Coil | 31 |
| Frost protection temperature, supply air not reached | Coil | 32 |
| Temperature limiter, electric heater bank | Coil | 33 |
| High limit safety cut-out, electric heater bank | Coil | 34 |
| Fault, pump, cold water bank | Coil | 35 |
| Central fault, external refrigeration unit | Coil | 36 |
| Alarm, fire alarm system | Coil | 37 |
| Supply air temperature sensor faulty or not connected | Coil | 38 |
| Supply air humidity sensor faulty or not connected | Coil | 39 |
| Room temperature sensor faulty or not connected | Coil | 40 |
| Indoor air humidity sensor faulty or not connected | Coil | 41 |
| Extract air temperature sensor faulty or not connected | Coil | 42 |
| Extract air humidity sensor faulty or not connected | Coil | 43 |
| Outside temperature sensor faulty or not connected | Coil | 44 |
| Outside humidity sensor faulty or not connected | Coil | 45 |
| Icing-up sensor HR faulty or not connected | Coil | 46 |
| Fire damper responded | Coil | 47 |
| Fault, EC motor, supply air fan | Coil | 48 |
| Fault, EC motor, extract air fan | Coil | 49 |
| Databus fault, extension modules | Coil | 50 |
| Remote control not connected or databus fault | Coil | 51 |
| Service required | Coil | 52 |
| Icing-up temperature HR below set value ²⁾ | Coil | 53 |
| Fault, heat recovery | Coil | 54 |
| Service message, humidifier | Coil | 55 |
| Fault, humidifier | Coil | 56 |
| External fault | Coil | 57 |
| Smoke detector responded | Coil | 58 |
| Set value transducer not or incorrectly connected | Coil | 59 |
| Fire damper 1 responded | Coil | 66 |
| Fire damper 2 responded | Coil | 67 |
| Fire damper 3 responded | Coil | 68 |
| Fire damper 4 responded | Coil | 69 |
| Fire damper 5 responded | Coil | 70 |
| Fire damper 6 responded | Coil | 71 |
| Fire damper 7 responded | Coil | 72 |
| Fire damper 8 responded | Coil | 73 |
| Fire damper 9 responded | Coil | 74 |
| Fire damper 10 responded | Coil | 75 |
| Fire damper 11 responded | Coil | 76 |

| Description | Type | Index |
|---|------|-------|
| Fire damper 12 responded | Coil | 77 |
| Fire damper 13 responded | Coil | 78 |
| Fire damper 14 responded | Coil | 79 |
| Fire damper 15 responded | Coil | 80 |
| Fire damper 16 responded | Coil | 81 |
| Fire damper 17 responded | Coil | 82 |
| Fire damper 18 responded | Coil | 83 |
| Fire damper 19 responded | Coil | 84 |
| Fire damper 20 responded | Coil | 85 |
| Fire damper 21 responded | Coil | 86 |
| Scaling, freshwater contact humidifier, adiabatic cooling | Coil | 88 |
| Fault, convector heater (WO) burner | Coil | 95 |
| Fault, humidifier for adiabatic cooling | Coil | 96 |
| No adiabatic cooling | Coil | 97 |
| Humidifier for adiabatic cooling at risk of icing up | Coil | 98 |
| Extract air temperature sensor downstream of humidifier for adiabatic cooling faulty or not connected | Coil | 99 |
| Service message, humidifier for adiabatic cooling | Coil | 100 |
| Fault, heat pump ¹⁾ | Coil | 114 |
| Pump fault, reheater bank ¹⁾ | Coil | 115 |
| Frost thermostat responded, reheater bank ¹⁾ | Coil | 116 |
| Databus fault, cooling controller ³⁾ | Coil | 120 |
| Databus fault, KVS control unit ³⁾ | Coil | 121 |
| KVS control unit switched off (standby) ³⁾ | Coil | 122 |
| BMS outside temperature implausible ³⁾ | Coil | 128 |

¹⁾ Available WRS-K software version 3.0.000 or higher

²⁾ Available up to WRS-K software version 2.1.031

³⁾ Included in WRS-K software version 5.3.000 or higher

Explanation

| Value | Explanation |
|-------|----------------|
| 0 | Alarm disabled |
| 1 | Alarm enabled |

Note: Several alarms can be enabled at the same time.
An alarm remains enabled until it is acknowledged at the BMK programming module.

4.2 Write access

With write access, set values can be specified or adjusted, subject to operating mode, via a Modbus network. In addition, the system can be switched on or off and the operating mode specified.

For safety reasons, all variables that are available for BMS write access are monitored regarding their min./max. limits. If a value outside the valid value range is sent, the value is rejected and the original value is retained.

These values can be written with function code 6 (write single register) or function code 16 (write multiple register).

4.2.1 Operating data write access

The following data is available for write access:

| Description | Unit | Factor | Type | Index |
|--|-------|--------|----------|-------|
| Set temperature from BMS | °C | 0.1 | Register | 15 |
| Set speed, supply air fan from BMS | % | 0.1 | Register | 16 |
| Set speed, extract air fan from BMS | % | 0.1 | Register | 17 |
| Set value, fresh air proportion from BMS | % | 1 | Register | 221 |
| Set pressure, supply air from BMS | Pa | 1 | Register | 223 |
| Set pressure, extract air from BMS | Pa | 1 | Register | 224 |
| Set flow rate, supply air from BMS | m³/h | 10 | Register | 225 |
| Set flow rate, extract air from BMS | m³/h | 10 | Register | 226 |
| Set value, fan mode (stage or ON/OFF) from BMS | - | - | Register | 222 |
| Set value, relative humidity from BMS | %r.h. | 0.1 | Register | 25 |
| Set value, absolute humidity from BMS | g/kg | 0.1 | Register | 26 |
| Offset set temperature | K | 0.1 | Register | 18 |
| Offset set speed, supply air fan | % | 0.1 | Register | 19 |
| Offset set speed, extract air fan | % | 0.1 | Register | 20 |
| Offset set value, fresh air proportion | % | 1 | Register | 227 |
| Offset set pressure, supply air | Pa | 1 | Register | 228 |
| Offset set pressure, extract air | Pa | 1 | Register | 229 |
| Offset set value, relative humidity | %r.h. | 0.1 | Register | 21 |
| Offset set value, absolute humidity | g/kg | 0.1 | Register | 22 |
| Offset set flow rate, supply air | m³/h | 10 | Register | 230 |
| Offset set flow rate, extract air | m³/h | 10 | Register | 231 |
| Operating mode | - | - | Register | 214 |
| Outside temperature from BMS | °C | 0.1 | Register | 37 |

Values with a factor = 0.1 are transferred with a decimal place. The required value equals the specified value times 0.1.

Example: Required value for set temperature = 24.3 °C -> value to be specified = 243.

For values with a factor = 1, the value to be specified equals the required value (no decimal place).

Example: Required value for set fresh air proportion = 45 % -> value to be specified = 45.

For values with a factor = 10, the required value equals the value to be specified multiplied by 10.

Example:

Required value for set flow rate, supply air = 1300 m³/h -> value to be specified = 130.

Note: Subject to the implementation of the MODBUS connection, it may be necessary to add the value of 1 to the index.

4.2.2 Operating mode selection

If a Modbus interface is installed, the system can be operated in 3 different operating modes:

- Manual mode
- 7-day program
- BMS mode

Manual mode

The system runs with the set values specified for manual mode via the BMK programming module. The set values can be adjusted via offsets using the Modbus interface.

7-day program

The system runs with the times and set values specified in the 7-day program. The set values can be adjusted via offsets using the Modbus interface.

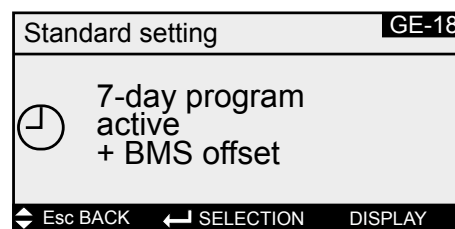
BMS mode

The system runs with the set values specified via the Modbus interface. The system is switched on and off via the Modbus interface.

The operating mode can be changed via the BMK programming module or the Modbus interface.

- Selecting the operating mode via the BMK programming module:

1. Navigate to the main menu with the Esc key on the BMK programming module.
2. Select menu item **Standard settings** with Enter.
3. Navigate to the operating mode with the up/down arrows.
4. Highlight the operating mode with Enter.
5. Select the required operating mode with the up/down arrows and confirm with Enter.



6. Use Esc to complete the entry and exit the menu item.

- Selecting the operating mode via Modbus interface:

The system operating mode can be specified via Modbus:

| Value | Explanation |
|-------|---------------|
| 0 | Manual mode |
| 1 | 7-day program |
| 2 | BMS mode |

4.2.3 Manual mode / 7-day program

In manual mode or with a 7-day program enabled, the set values can be adjusted via the offset variables. The system runs as specified by manual mode or the 7-day program.

The following variables are effective:

- Offset set temperature (adjusting the set temperature)
- Offset set speed, supply air fan (adjusting the set speed for the supply air fan)
- Offset set speed, extract air fan (adjusting the set speed for the extract air fan)
- Offset set value, fresh air proportion (adjusting the fresh air proportion)
- Offset set pressure, supply air (adjusting the set pressure for the supply air fan)
- Offset set pressure, extract air (adjusting the set pressure for the extract air fan)
- Offset set flow rate, supply air (adjusting the set flow rate for the supply air)
- Offset set flow rate, extract air (adjusting the set flow rate for the extract air)
- Offset set value, relative humidity (adjusting the set value for relative humidity)
- Offset set value, absolute humidity (adj. the set value for absolute humidity)
- Operating mode

Please note

Any adjustment of the set values is always relative to the set values selected for manual mode or the 7-day program.

Systems with BMK-F remote control:

Adjusting the set temperature:

If the set value is adjusted via the Modbus interface, after the set value has been altered via the remote control, a changeover is made to the set value for manual mode or the 7-day program, plus offset, via the Modbus interface.

Example:

Set value for manual mode = **21 °C**; set value adjusted via BMK-F to **23 °C**. If an offset = **-1 K** is then specified, a new set value of **20 °C** ($21\text{ °C} - 1\text{ K}$) is enabled.

Adjustment of set speed / pressure / flow rate:

The set values for speed or pressure can be adjusted via the remote control in 3 stages (see WRS-K installation and operating instructions). Here, the set value is altered according to the values specified in the standard settings for supply air and extract air.

If, after altering a set value via the remote control, a set value is adjusted via the Modbus interface for supply air **or** extract air, a changeover is made to the set values for manual mode or the 7-day program, plus offset, via the Modbus interface for supply air **and** extract air.

Example:

Set speed for supply air in manual mode = **50 %**; set speed for extract air in manual mode = **45 %**; set speeds changed via BMK-F to **60 %** (supply air) and **55 %** (extract air).

If an offset for the supply air speed of **30 %** is then specified, but no offset for the extract air fan is set, new set values of **80 %** ($50\% + 30\%$) for the supply air fan and **45 %** (= set value for manual mode) for the extract air fan are enabled.

Adjusting the set value for fresh air proportion:

If the set value is adjusted via the Modbus interface, after the set value has been altered via the remote control, a changeover is made to the set value for manual mode or the 7-day program, plus offset, via the Modbus interface.

Example:

Set value for manual mode = **40 %**; set value adjusted via BMK-F to **50 %**. If an offset = **-10 %** is then specified, a new set value of **30 %** ($40\% - 10\%$) is enabled.

4.2.4 BMS mode

In BMS mode, all set values are specified via the Modbus interface. The system is also switched on and off via the Modbus interface.

The following variables are effective:

- Set temperature from BMS
- Set speed, supply air fan from BMS
- Set speed, extract air fan from BMS
- Set value, fresh air proportion from BMS
- Set pressure, supply air from BMS
- Set pressure, extract air from BMS
- Set flow rate, supply air from BMS
- Set flow rate, extract air from BMS
- Set value, fan mode from BMS
- Set value, relative humidity from BMS
- Set value, absolute humidity from BMS
- Operating mode

Via set value, fan mode from BMS, the fans are switched on and the system is enabled with the set values specified via the Modbus interface:

For single stage and variable speed fans:

| Value | Explanation |
|-------|-------------|
| 0 | System OFF |
| 1 | System ON |

For multi stage fans (2- or 3-stage):

| Value | Explanation |
|-------|----------------------------|
| 0 | System OFF |
| 1 | System ON with fan stage 1 |
| 2 | System ON with fan stage 2 |
| 3 | System ON with fan stage 3 |

Outside temperature specification via BMS:

If the option "Outside temperature BMS" is enabled via the contractor menu, the outside temperature value can be specified via the BMS (Temperature_Outside_BMS).

Systems with BMK-F remote control:

Set temperature:

If the set value has been altered via the remote control, a new set value specification is accepted via the Modbus interface when the value of set temperature from BMS is **changed**.

Set speed / pressure:

If the set value has been altered via the remote control, a new set value specification is accepted via the Modbus interface when the value of set speed, supply air fan from BMS or set speed, extract air fan from BMS (or set pressure, supply air from BMS, or set pressure, extract air from BMS) is **changed**. As soon as a new set value for supply air **or** extract air is specified, the set values specified via the Modbus interface for supply air **and** extract air are enabled.

If the set value for the supply air speed or supply air pressure is set to 0, the set value for the extract air speed is also set to 0.

Set value for fresh air proportion:

If the set value has been altered via the remote control, a new set value specification is accepted via the Modbus interface when the value of the set value, fresh air proportion from BMS is **changed**.

5. Specification

| | |
|----------------------|---|
| Operating conditions | -10-60 °C, 20-80 % r.H. not condensing |
| Storage conditions | -20-70 °C, 20-80 % r.H. not condensing |
| Protocol | Modbus Slave RTU, 8 databits, 2 stopbits, no parity |
| Maximum baud rate | 38400 |
| Power supply | Via KLM control unit |
| Cable | AWG 20/22 screened |
| Maximum cable length | 1000 m |

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