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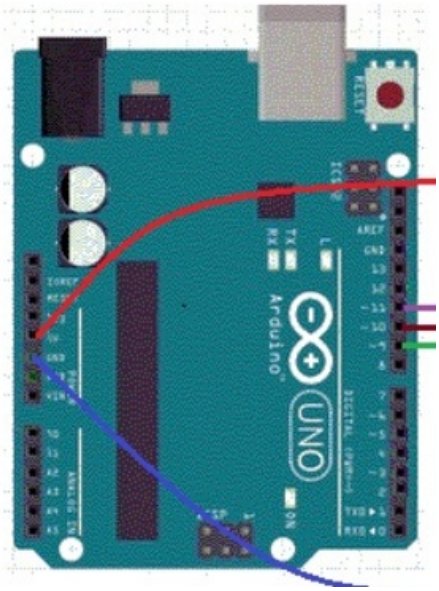
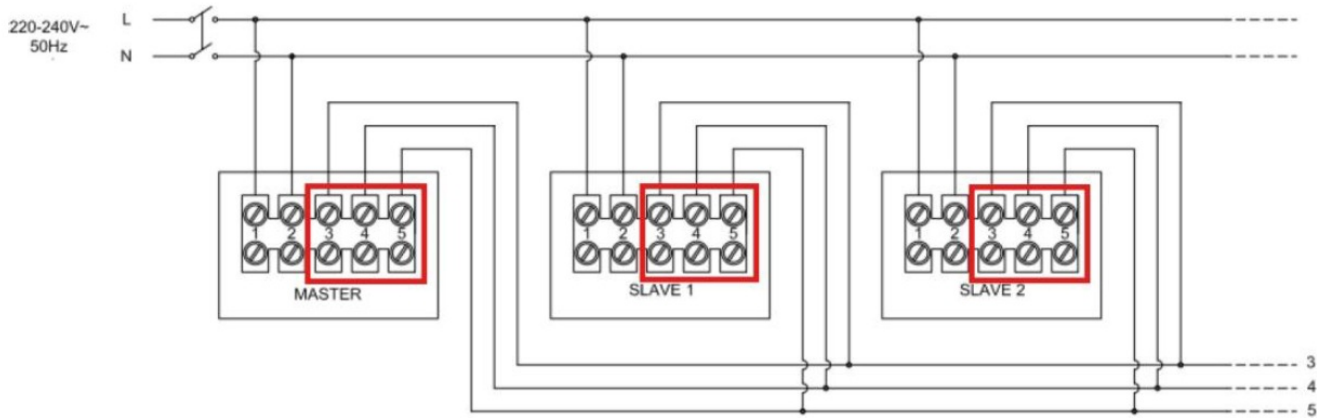
Ambientika RS485 Programming Sud wind



Wiring

In installations connecting several ventilation units, serial communication occurs via an RS485 interface. The connection occurs via the differential signal lines A, B and a common earth line (GND). The units are connected to each other in a bus topology. It is mandatory to connect a terminating resistor of 120 ohms between line A and line B on the last physical unit of the bus line, to ensure the signal quality.



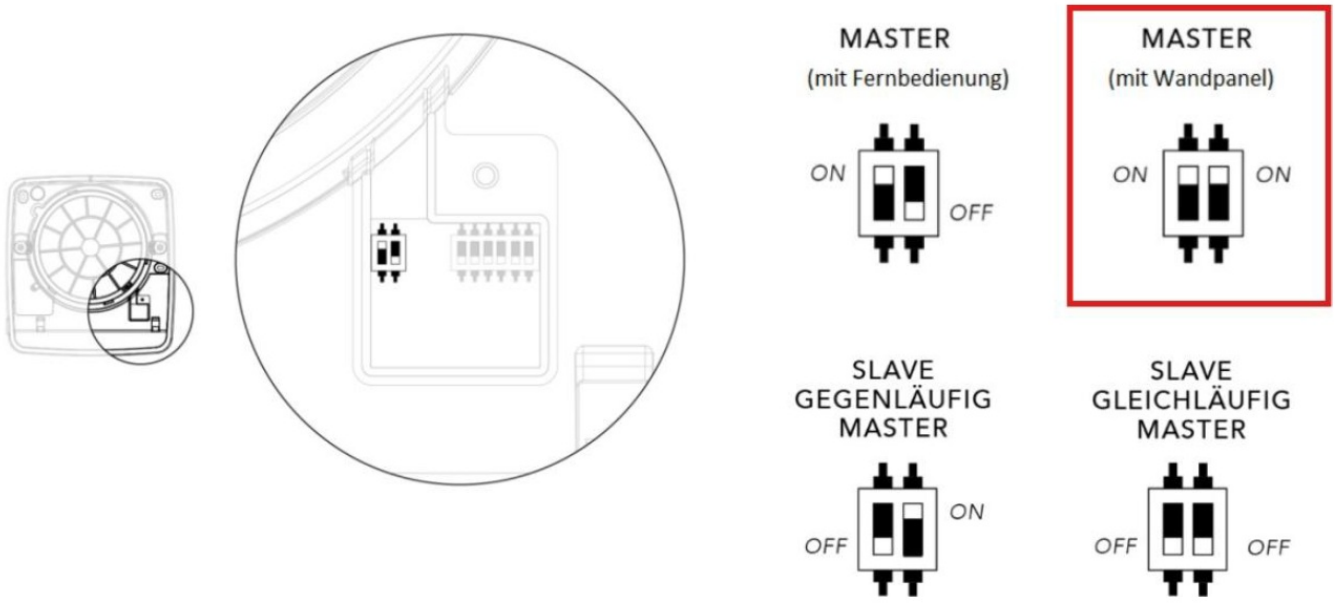
Terminal 3: B
Terminal 4: A
Terminal 5: GND

In addition to the correct wiring of the RS485 lines, a manufacturer-specific interface module is required for integration into various automation systems: for KNX-based systems, an RS485 extension (e.g. as a KNX-TP/RS485 gateway) is available, which converts the levels and protocols between the KNX bus and the RS485 devices. In Loxone systems, the official Loxone RS485 extension is used instead, which is integrated directly into the Loxone Miniserver environment.

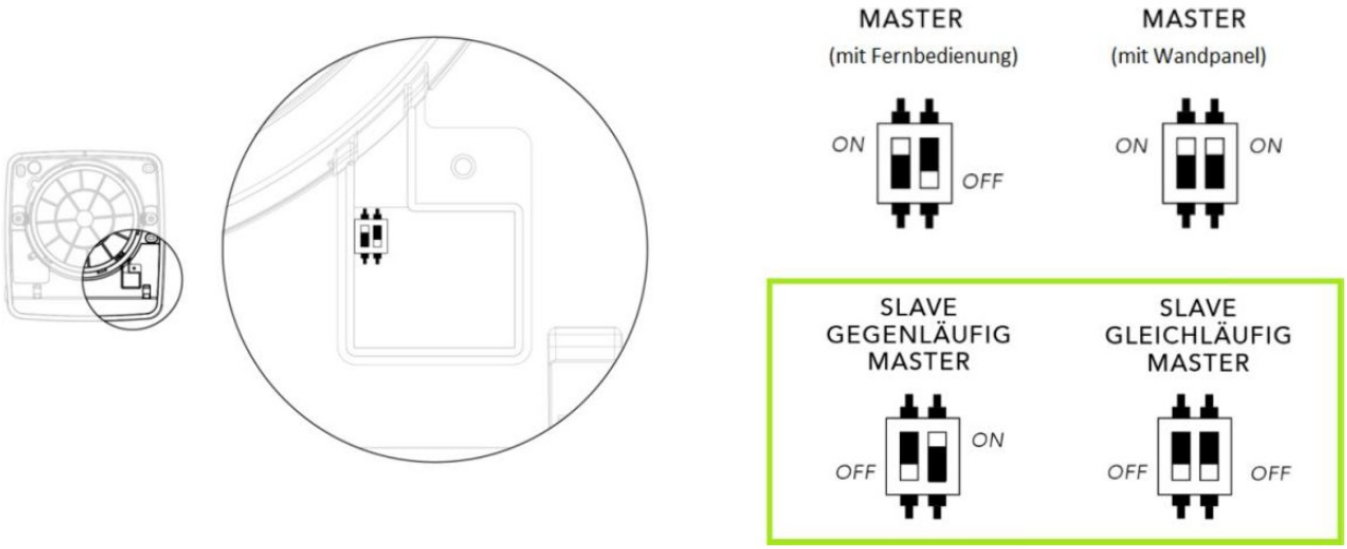
When selecting the appropriate interface, it is particularly important to make sure that it is not a Modbus RS485 gateway, but a transparent, serial RS485 gateway. Südwind uses proprietary protocols that do not match with the Modbus standard.

DIP switch settings

As the central control occurs via KNX or Loxone, the system completely takes over the tasks of the wall panel. The main unit is configured as a master with wall panel.



All other units in the system are set as slaves via DIP switches. Depending on the application, for example as supply and exhaust air systems, the slave units can be operated either synchronously or asynchronously.



Master mit Fernbedienung = Master with remote control
Master mit Wandpanel = Master with wall panel

Slave gegenläufig Master = Slave – Master operate asynchronously
Slave gleichläufig Master = Slave -Master operate synchronously

Parametrization

Serial communication parameters to be configured in the RS485 extension:

- baud rate 9600 [bit/s]
- 8 data bits
- 1 stop bit
- no parity

Messages are sent from the central control to all connected units at intervals of 500 ms. These messages consist of a sequence of bytes in hexadecimal numbering (hex-numbers). Each element, such as \x02 or \x30, represents a single byte in hexadecimal format.

Status enquiry

The status enquiry is sent from the central control and evaluated by the Master unit. While sending this enquiry, the central control stops sending messages for 3 seconds, to make sure the line is available.

Status	**Command**
Status enquiry	\x02\x30\x32\x30\x32\x03

If there is no active sensor or status, the Master unit replies with a 11 bytes long message in the following hexadecimal format: \x02\x30\x30\x30\x30\x30\x30\x30\x30\x30\x30\x03.

The first byte \x02 sets the beginning of the message (start frame) and is followed by two bytes \x30\x30 representing the „status message“ (\x30 corresponds to “0” in ASCII-characters).
The following 8 bytes represent the single status registers. Each of these bytes corresponds to a specific message. Only the first four registers are used: The first register stands for the twilight sensor, the second and the third for the filter change alarm and the fourth one for the humidity alarm. A received byte \x30 corresponds to “0” in ASCII code. That means, that the relevant sensor or status is not active. \X31 corresponds to “1” and indicates an active status.

The message ends with the byte \x03 which is a stop bit (end frame) and sets the end of

the transmission.
The filter change alarm can be reset with a command.

Messages

In the following paragraph the single commands and their relevant functions are explained. As mentioned above, the commands need to be sent from the central control unit to all connected units at an interval of 500 ms.

Mode	**Command**
Motor off, panel closed	\x02\x30\x31\x30\x30\x30\x30\x30\x31\x03
Motor in pause, panel open	\x02\x30\x31\x32\x30\x30\x30\x32\x31\x03
Motor off, reset filter change	\x02\x30\x31\x30\x30\x30\x31\x30\x30\x03

The direction of rotation – for example when switching from intake to extraction – can be changed only if the motor has been switched off before. If the motor is on, the command “motor pause” must be executed to avoid a power supply damage.
Manual mode: the Slave sets the direction of rotation via DIP-switches according to the predetermined configuration.

Manual mode, humidity level 1	**Command**
Extraction Master level 0	\x02\x30\x31\x32\x34\x30\x30\x32\x35\x03
Extraction Master level 1	\x02\x30\x31\x32\x35\x30\x30\x32\x34\x03
Extraction Master level 2	\x02\x30\x31\x32\x36\x30\x30\x32\x37\x03
Extraction Master level 3	\x02\x30\x31\x32\x37\x30\x30\x32\x36\x03
Intake Master level 0	\x02\x30\x31\x32\x38\x30\x30\x32\x39\x03
Intake Master level 1	\x02\x30\x31\x32\x39\x30\x30\x32\x38\x03
Intake Master level 2	\x02\x30\x31\x32\x41\x30\x30\x32\x42\x03

Intake Master level 3	\x02\x30\x31\x32\x42\x30\x30\x32\x41\x03

Mode for Master and Slave intake or extraction: the Slave sets the direction of rotation via DIP-switches opposite to the predetermined configuration.

Extraction / Intake, humidity level 1	**Command**
Extraction Master & Slave level 0	\x02\x30\x31\x33\x34\x30\x30\x33\x35\x03
Extraction Master & Slave level 1	\x02\x30\x31\x33\x35\x30\x30\x33\x34\x03
Extraction Master & Slave level 2	\x02\x30\x31\x33\x36\x30\x30\x33\x37\x03
Extraction Master & Slave level 3	\x02\x30\x31\x33\x37\x30\x30\x33\x36\x03
Intake Master & Slave level 0	\x02\x30\x31\x33\x38\x30\x30\x33\x39\x03
Intake Master & Slave level 1	\x02\x30\x31\x33\x39\x30\x30\x33\x38\x03
Intake Master & Slave level 2	\x02\x30\x31\x33\x41\x30\x30\x33\x42\x03
Intake Master & Slave level 3	\x02\x30\x31\x33\x42\x30\x30\x33\x41\x03

Automatic mode: the Slave sets the direction of rotation via DIP-switches according to the predetermined configuration.

Automatic Mode, humidity level 2	**Command**
Extraction Master night mode	\x02\x30\x31\x36\x34\x30\x30\x36\x35\x03
Extraction Master day mode	\x02\x30\x31\x36\x36\x30\x30\x36\x37\x03
Intake Master night mode	\x02\x30\x31\x36\x38\x30\x30\x36\x39\x03
Intake Master day mode	\x02\x30\x31\x36\x41\x30\x30\x36\x42\x03

Automatic Mode, humidity level 3	Command
Extraction Master night mode	\x02\x30\x31\x41\x34\x30\x30\x41\x35\x03
Extraction Master day mode	\x02\x30\x31\x41\x36\x30\x30\x41\x37\x03
Intake Master night mode	\x02\x30\x31\x41\x38\x30\x30\x41\x39\x03
Intake Master day mode	\x02\x30\x31\x41\x41\x30\x30\x41\x42\x03

Programming hints

The unit should change the direction of rotation at a specific interval, to obtain the best possible heat recovery: 60 seconds intake followed by 10 seconds pause.
Then 60 seconds extraction followed by another 10 seconds pause. This cycle guarantees an efficient air exchange along with heat recovery. At dusk the integrated twilight sensor allows to switch automatically to the night mode.

Troubleshooting

If no communication is set up, the switch of channel A and channel B (A/B lines on the RS485) can help. Moreover, check that the terminating resistor is correctly set in place, especially on the last station in the bus, in order to avoid signal reflections and communication interference

Documents / Resources

	Ambientika RS485 Programming Sud wind [pdf] Installation Guide RS485-ambientika-June-25, RS485 Programming Sud wind, RS485, Programming Sud wind, Sud wind

References

- User Manual

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