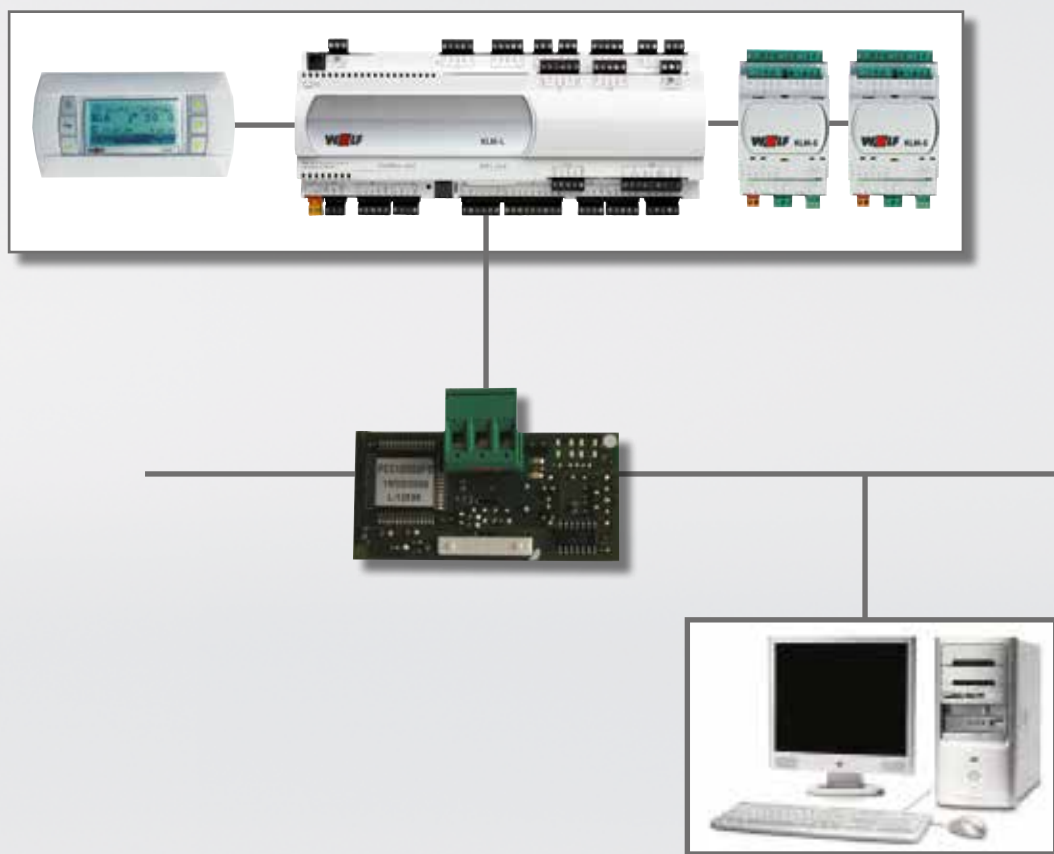


## Installation and operating instructions

# LON interface for WRS-K

(Translation of the original)



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### 2.1 Other applicable documents

WRS-K installation and operating instructions.

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

### 2.2 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.

### 2.3 Symbols and warnings used

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



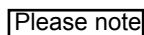
"Safety instructions" are instructions with which you must comply exactly, to prevent risks and injuries to individuals and material losses.



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" 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.

### 2.4 Applicability of these instructions

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

## 3. Standards and directives

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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

### 3.1 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

### 3.2 Warnings



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

### 3.3 Service / repair

Please note

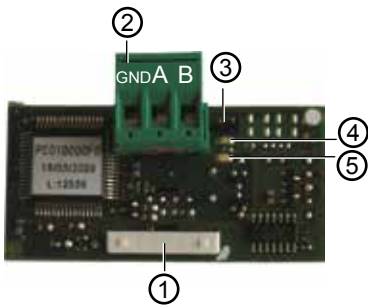
- Regularly check the perfect function of all electrical equipment.
- Only qualified personnel may remove faults or repair damage.
- Only replace faulty components or equipment with original Wolf spare parts. We accept no liability for any damage or loss resulting from technical modifications to Wolf control units.

### 3.4 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.

### 4.1 View



- ① Connection block to the KLM-M or KLM-L control unit
- ② Terminal block for the LON-Works network
- ③ Service pin
- ④ Green service LED
- ⑤ Red fault LED

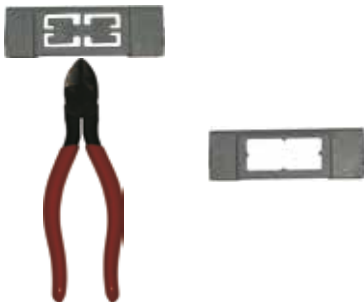
### 4.2 Installation



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

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

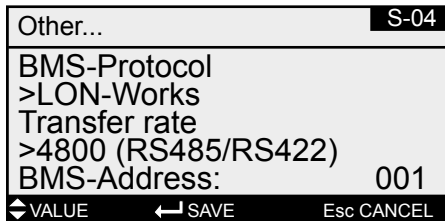


5. Refit the slot cover.
6. Reconnect the power supply.

### 4.3. Interface configuration

**Note**

If the LON 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 LON-Works.  
The transfer rate is then automatically set to 4800 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.

**5.1 Connection**

Connection to the LON-Works network is made via the pluggable terminal block:

A: Signal A  
B: Signal B  
GND: Signal earth

**5.2 Service pin**

Via the service pin, the LON interface can be connected to a LON-Works network. For this, briefly short-circuit the two contacts of the service pin using a screwdriver or similar tool while installing the node. All data required to identify the interface is transmitted to the LON-Works network as a broadcast.

The precise connection procedure depends on the LON-Works management tool used. Please consult the relevant instruction manual.

**5.3 Files**

The LON interface is supplied with the application files (.xif, .nxe) already installed. In addition, the files in their latest version are available to download from the Wolf homepage ([www.wolf-heiztechnik.de](http://www.wolf-heiztechnik.de)).

**6.1 Service LED (green):**

OFF during operation	Correct operation
Flashing after the power is switched on	Start phase
Flashing after bridging the service PIN	Confirmation/recognition of service PIN
Flashing during operation	Data loss from the card / reprogramming required

**6.2 Fault LED (red):**

If the red fault LED illuminates, there is a communication error between the LON interface and the KLM air handling and ventilation module. Ensure that the installation has been carried out according to the instructions. Check whether the transfer rate is set to 4800.

Via the LON interface module, it is possible to gain read and write access to the air handling control unit. Standard network variable types (SNVT) are used.

### 7.1 Read access

The following variables are available for read access:

Description	Network variable Designation	Network variable Type
Supply air temperature	nvoTempSup	SNVT_temp_p
Outside temperature	nvoTempOut	SNVT_temp_p
Room temperature	nvoTempRoom	SNVT_temp_p
Extract air temperature	nvoTempExh	SNVT_temp_p
Extract air temperature downstream of humidifier for adiabatic cooling	nvoTempAC	SNVT_temp_p
Air quality (VOC)	nvoAirQuality	SNVT_volt
Air quality (CO2)	nvoCO2	SNVT_ppm
Indoor air humidity	nvoHumiRoom	SNVT_lev_percent
Relative humidity, extract air	nvoHumiExh	SNVT_lev_percent
Relative humidity, supply air	nvoHumiSup	SNVT_lev_percent
Supply air pressure	nvoPressSup	SNVT_press_p
Extract air pressure	nvoPressExh	SNVT_press_p
Supply air flow rate	nvoFlowSup	SNVT_count
Extract air flow rate	nvoFlowExh	SNVT_count
Set room transducer	nvoRoomSet	SNVT_temp_p
Current set value, supply air temperature	nvoTempSupSet	SNVT_temp_p
Current set temperature	nvoTempSet	SNVT_temp_p
Current set value, fresh air proportion	nvoFrAirSet	SNVT_lev_percent
Current set speed, supply air fan	nvoSpSupSet	SNVT_lev_percent
Current set speed, extract air fan	nvoSpExhSet	SNVT_lev_percent
Current set value, fan stage	nvoStepSet	SNVT_count
Current set pressure, supply air	nvoPresSupSet	SNVT_press_p
Current set pressure, extract air	nvoPresExhSet	SNVT_press_p
Current set flow rate, supply air <sup>1)</sup>	nvoFlowSupSet	SNVT_count
Current set flow rate, extract air <sup>1)</sup>	nvoFlowExhSet	SNVT_count
Operating mode	nvoMode	SNVT_count
External system enable	nvoExtEnable	SNVT_switch
Hygrostat	nvoHygrostat	SNVT_switch
Humidifier enable	nvoStatusHumi	SNVT_switch
System status	nvoStatusAHU	SNVT_switch
Operating status <sup>2)</sup>	nvoOperation	SNVT_switch
Special operating mode	nvoSpecial	SNVT_state
Central fault	nvoAlarm	SNVT_switch
Current alarm code	nvoAlarmCode1	SNVT_state
	nvoAlarmCode2	SNVT_state
	nvoAlarmCode3	SNVT_state
	nvoAlarmCode4 <sup>2)</sup>	SNVT_state

<sup>1)</sup> Required value = 10 times the specified value

<sup>2)</sup> Available WRS-K software version 3.0.000 or higher



### 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

### Special operating mode (nvoSpecial):

When the special operating mode is enabled, the associated bit is set.

		Bit	Explanation
0	Holiday program		
1	Filter check	9	Air quality control
2	Preheat program	10	External demand
3	Night ventilation	11	Run-on
4	Backup mode	12	HR Ice guard
5	Extension of utilisation time	13	Speed reduction
6	Peak ventilation	14	Setback mode <sup>1)</sup>
7	Natural cooling	15	Winter start HR <sup>1)</sup>
8	Hygrostat function		

<sup>1)</sup> Available WRS-K software version 3.0.000 or higher

### Alarm code (nvoAlarmcode1/2/3)

An enabled alarm code is transferred via 3 SNVT\_state variables (nvoAlarmCode1/2/3).

When the alarm is enabled, the associated bit is set. More detailed descriptions of fault messages and possible solutions can be found in the WRS-K installation and operating instructions.

Variable	Bit	Explanation
nvoAlarmCode1	0	Fault, inverter, supply air fan
	1	Motor temperature too high, supply air fan
	2	Isolator switch, supply air fan
	3	Air flow monitor, supply air
	4	Fault, inverter, extract air fan
	5	Motor temperature too high, extract air fan
	6	Isolator switch, extract air fan
	7	Air flow monitor, extract air
	8	Outdoor air filter contaminated
	9	Supply air filter contaminated
	10	Extract air filter contaminated
	11	Pump fault, DHW bank
	12	Frost stat has responded
	13	Frost protection temperature, supply air not reached

	14	Temperature limiter, electric heater bank
	15	High limit safety cut-out, electric heater bank
nvoAlarmCode2	0	Fault, pump, cold water bank
	1	Central fault, external refrigeration unit
	2	Fire alarm system responded
	3	Supply air temperature sensor faulty or not connected
	4	Supply air humidity sensor faulty or not connected
	5	Room temperature sensor faulty or not connected
	6	Indoor air humidity sensor faulty or not connected
	7	Extract air temperature sensor faulty or not connected
	8	Extract air humidity sensor faulty or not connected
	9	Outside temperature sensor faulty or not connected
	10	Extract air temperature sensor downstream of humidifier for adiabatic cooling faulty or not connected
	11	Icing-up sensor HR faulty or not connected
	12	Fire damper responded
	13	Fault, EC motor, supply air fan
	14	Fault, EC motor, extract air fan
	15	Databus fault, extension modules
nvoAlarmCode3	0	Remote control not connected or databus fault
	1	Set value transducer not or incorrectly connected
	2	Service required
	3	Icing-up temperature HR below set value <sup>2)</sup>
	4	Fault, heat recovery
	5	Service message, humidifier
	6	Fault, humidifier
	7	External fault
	8	Smoke detector responded
	9	Fault, burner KGWO
	10	Fault, humidifier for adiabatic cooling
	11	No adiabatic cooling
	12	Scaling, freshwater contact humidifier, adiabatic cooling
	13	Humidifier for adiabatic cooling at risk of icing up
	14	Service message, humidifier for adiabatic cooling
	15	Pump fault, heat pump <sup>1)</sup>
nvoAlarmCode4 <sup>1)</sup>	0	Pump fault, reheater bank <sup>1)</sup>
	1	Frost thermostat responded, reheater bank <sup>1)</sup>
	2	Refrigeration system controller, databus fault <sup>3)</sup>
	3	KVS control unit, databus fault <sup>3)</sup>
	4	KVS control unit switched off (standby) <sup>3)</sup>
	5	BMS outside temperature implausible <sup>3)</sup>

<sup>1)</sup> Available WRS-K software version 3.0.000 or higher

<sup>2)</sup> Available up to WRS-K software version 2.1.031

<sup>3)</sup> Included in WRS-K software version 5.3.000 or higher

### 7.2 Write access

With write access, set values can be specified or adjusted in the control unit, subject to operating mode, via a LON-Works network.

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.

#### 7.2.1 Variables

The following variables are available for write access:

Description	Network variable	Network variable
	Designation	Type
Set temperature from BMS	nviTempSet	SNVT_temp_p
Set speed, supply air fan from BMS	nviSpSupSet	SNVT_lev_percent
Set speed, extract air fan from BMS	nviSpExhSet	SNVT_lev_percent
Set value, fresh air proportion from BMS	nviFrAirSet	SNVT_lev_percent
Set pressure, supply air from BMS	nviPresSupSet	SNVT_press_p
Set pressure, extract air from BMS	nviPresExhSet	SNVT_press_p
Set flow rate, supply air from BMS <sup>1)</sup>	nviFlowSupSet	SNVT_count
Set flow rate, extract air from BMS <sup>1)</sup>	nviFlowExhSet	SNVT_count
Set value, fan mode (stage or ON/OFF) from BMS	nviFanStepSet	SNVT_count
Offset set temperature	nviOfsTemp	SNVT_temp_diff_p
Offset set speed, supply air fan	nviOfsSpSup	SNVT_lev_percent
Offset set speed, extract air fan	nviOfsSpExh	SNVT_lev_percent
Offset set value, fresh air proportion	nviOfsFrAir	SNVT_lev_percent
Offset set pressure, supply air	nviOfsPresSup	SNVT_press_p
Offset set pressure, extract air	nviOfsPresExh	SNVT_press_p
Offset set flow rate, supply air <sup>1)</sup>	nviOfsFlowSup	SNVT_count
Offset set flow rate, extract air <sup>1)</sup>	nviOfsFlowExh	SNVT_count
Operating mode	nviMode	SNVT_count
Outside temperature specified by BMS	nviTempOutBMS	SNVT_temp_p

<sup>1)</sup> Required value = 10 times the specified value

### 7.2.2 Operating mode

If a LON interface module 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 LON 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 LON interface.

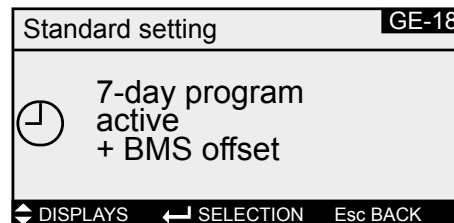
#### BMS mode

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

The operating mode can be changed via the BMK programming module or the LON 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 LON interface:

Via variable nviMode, the operating mode can be changed using the LON interface:

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

### 7.2.3 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:

- nviOfsTemp (adjust set temperature)
- nviOfsSpSup (adjust set speed for supply air fan)
- nviOfsSpExh (adjust set speed for extract air fan)
- nviOfsFrAir (adjust fresh air proportion)
- nviOfsPresSup (adjust set pressure for supply air)
- nviOfsPresExh (adjust set pressure for extract air)
- nviOfsFlowSup (adjust set flow rate for supply air)
- nviOfsFlowExh (adjust set flow rate for extract air)
- nviMode (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.**

**For systems with active set value transducers, the set temperature cannot be adjusted via the interface.**

**Systems with BMK-F remote control:**

**Adjusting the set temperature:**

If the set value is adjusted via the LON 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 LON interface.

**Example:**

Set value for manual mode = **21 °C**; set value adjusted via BMK-F to **23 °C**.  
If an offset (nviOfsTemp) = **-1 K** is then specified, a new set value of **20 °C** (21 °C – 1 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 LON 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 LON 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 (nviOfsSpSup) 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 LON 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 LON interface.

**Example:**

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

### 7.2.4 BMS mode

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

The following variables are effective:

- nviTempSet (set temperature)
- nviSpSupSet (set speed for supply air fan)
- nviSpExhSet (set speed for extract air fan)
- nviFrAirSet (set value for fresh air proportion)
- nviPresSupSet (set pressure for supply air)
- nviPresExhSet (set pressure for extract air)
- nviFlowSupSet (set flow rate for supply air)
- nviFlowExhSet (set flow rate for extract air)
- nviFanStepSet (set value for fan mode)
- nviMode (operating mode)

Via variable **FanStepSet**, the fans are switched on and the system is thus enabled with the set values specified by the LON 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 LON interface when the value of variable nviTempSet is **changed**.

##### Set speed / pressure / flow rate:

If the set value has been altered via the remote control, a new set value specification is accepted via the LON interface when the value of variable nviSpSupSet or nviSpExhSet (or nviPresSupSet or nviPresExhSet) is **changed**. As soon as a new set value for supply air **or** extract air is specified, the set values specified via the LON 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 LON interface when the value of variable nviTempSet is **changed**.

Operating conditions	-0-55 °C, 20-80 % r.H. not condensing
Storage conditions	-20-70 °C, 20-80 % r.H. not condensing
Transceiver	Echelon FTT-10A
Transfer rate	78.125 kb/s
Power supply	Via KLM

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