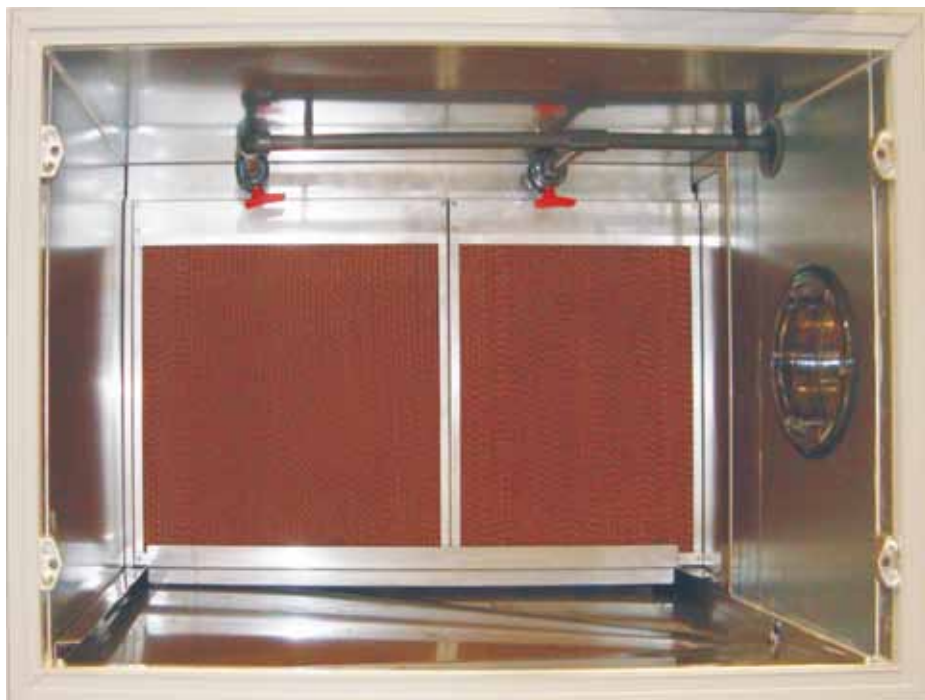


WRS-K installation and operating instructions

Adiabatic cooling
(Translation of the original)



Example – freshwater contact humidifier with removable finned block

Valid for software version 2.2.016 or higher

Wolf GmbH · Postfach 1380 · 84048 Mainburg · Tel. 08751/74-0 · Fax 08751/741600 · Internet: www.wolf-heiztechnik.de

Part no. 3063167_201203 Subject to technical modifications

1. Information on this documentation	3
1.1 Other applicable documentation	3
1.2 Safekeeping of these documents	3
1.3 Symbols and warnings used	3
1.4 Applicability of these instructions	3
1.5 Warnings	3
1.6 Maintenance/repair	3
1.7 Disposal	3
2. Function description	4
Cooling sequence	4
Demand-dependent DHW volume control	4
3. Programming level 1	5-6
Main menu	5
Standard settings	5
Adiabatic cooling enable/disable	5
Displays	6
Sensors	6
Components	6
4. Programming level 2	7-9
Contractor	7
Cooling	7
Enthalpy-controlled enabling	7
Draining the water supply line	8
Drying	8
Hygiene function for recirculation contact humidifier	8
Scaling with freshwater contact humidifier	8
Additional parameters	8
Service	9
Sensor adjustment	9
Manual mode	9
Digital inputs	9
5. System examples	10-11
6. Fault messages	12

1.1 Other applicable documentation

The additional installation and operating instructions from Wolf – control system for air conditioning (WRS-K) and that of all accessories used – also apply.

1.2 Safekeeping of these documents

The system user or operator 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" must be complied with to the letter, to prevent risks and injuries to individuals and material losses on the appliance.



Danger through 'live' electrical components!
Please note: Switch OFF the ON/OFF switch before removing the casing.

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

The supply terminals are 'live' even when the ON/OFF switch is in the OFF position.

Please note

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

1.4 Applicability of these instructions

This information sheet applies to systems with adiabatic cooling in connection with the Wolf control system for air conditioning (WRS-K).

1.5 Warnings



- Removing, bypassing or disabling of safety and monitoring equipment is not permissible.
- The system must only be operated if it is in perfect technical condition. Immediately remove/remedy any faults and damage that may impact on safety.

1.6 Maintenance/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.
- Specified electrical fuse ratings must be observed (see specification). Any damage or loss resulting from technical modifications to Wolf control units is excluded from our liability.

1.7 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 equipment 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.

If the system provides adiabatic cooling, a **freshwater contact humidifier, recirculation contact humidifier or high pressure humidifier** can be switched, subject to selection.

The following describes the function, the required parameters and additional fault messages associated with adiabatic cooling.

Cooling sequence

If recirculation dampers are fitted, initially the natural cooling control (if enabled) is activated when there is a cooling demand.

Adiabatic cooling will be called up if the fresh air damper is 100% open when natural cooling control is active, and additional cooling capacity is required.

At this point, the heat recovery regulates the ventilation air temperature to the actual set value.

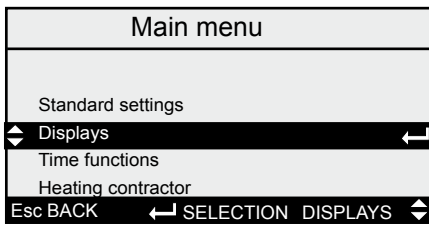
The cooling unit (if installed) is called up if heat recovery is 100% open and additional cooling capacity is required.

Natural cooling control → Adiabatic cooling → Cooling bank

Demand-dependent DHW volume control

Subject to the saturation level of the humidifier, enabling or inlet valve will be switched. The valve will be opened until the extract air cannot absorb any more moisture.

Main menu

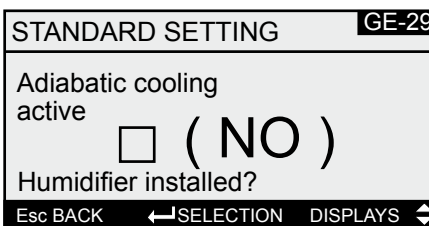


Pressing **Esc** takes you to the main menu, where pressing **↑↓** enables the selection between the menu choices shown in the overview. After selecting a menu choice, pressing **←** calls up the required submenu. Pressing **Esc** returns you to the standard display. If no adjustment is made for more than 2 minutes, the standard display will return automatically.

Overview:

- **Standard settings**
- **Displays**
- **Time functions**
- **Heating contractor**

Adiabatic cooling

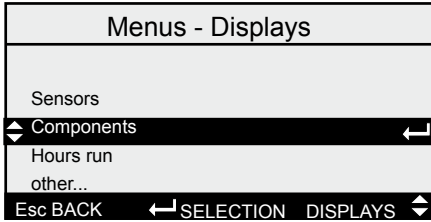


Standard mask **Esc** → Main menu **←** → Standard settings

Pressing **↑↓** enables the selection of the following default setting.

Pressing **←** enables the activation of adiabatic cooling. By pressing this key a second time, it can be disabled.

Displays



Standard mask Main menu Displays

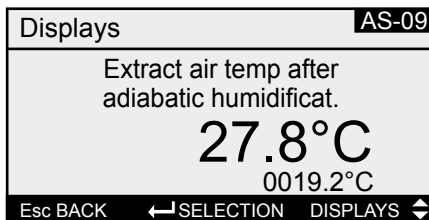
All available sensors and components are displayed.
In addition, the software version and system configuration can be scanned.

Pressing enables the selection from the menu choices shown in the overview.
After selecting the menu choice, pressing calls up the required submenu.

Overview:

- Sensors
- Components
- Hours run
- Other...

Sensors



Standard mask Main menu Displays Sensors

Pressing enables the display in sequence of the actual values of connected sensors.

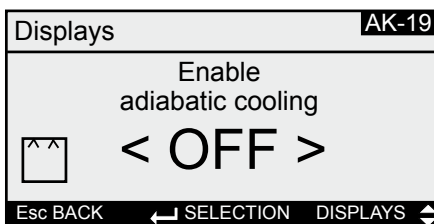
Overview:

- | | |
|--------------------------|-------------------------------|
| → Room temperature | → Ice sensor |
| → Rel. humidity (room) | → Outside temperature day |
| → Vent. air temperature | → Outside temperature overall |
| → Rel. hum., vent. air | → Air quality |
| → Extract air temp | → Air pressure |
| → Rel. hum., extract air | → Flow rate |
| → Outside temperature | → Set value transducer |

→ Temperature downstream of the humidifier

(The calculated extract air temperature resulting from humidifying the extract air downstream of the humidifier, is shown in small figures below)

Components



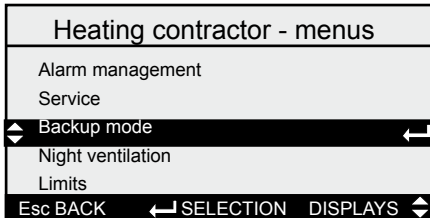
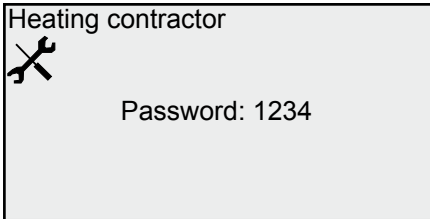
Standard mask Main menu Displays Components

Pressing enables the display in sequence of the current status, subject to the connected components.

Overview:

- Fan stage
- Fan speed
- Heating circuit pump
- Hot water valve
- Pump, cooling circuit
- Cold water valve
- Electric heater bank
- Direct evaporator
- Mixed air damper
- Heat recovery
- Humidifier
- Ext. enabling
- **Enable adiabatic cooling**

Heating contractor menu



Standard mask $\xrightarrow{\text{Esc}}$ Main menu $\xleftrightarrow{\leftarrow}$ Heating contractor

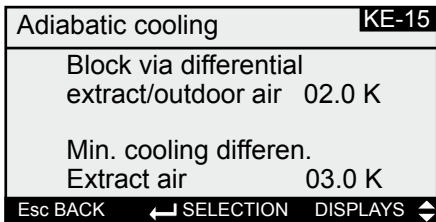
Setting heating contractor parameters

The Wolf logo will be displayed. Pressing \leftarrow prompts entry of the heating contractor password (1234), which can then be changed with \uparrow/\downarrow . By confirming with \leftarrow you reach the heating contractor menu. There, by pressing \uparrow/\downarrow you select from the menu choices displayed. After selecting the required menu choice you call up the required submenu by pressing \leftarrow . Pressing **Esc** returns you to the standard display. If no adjustment is made for more than 2 minutes, the standard display will return automatically.

Overview:

- \rightarrow Alarm management
- \rightarrow Service
- \rightarrow Backup mode
- \rightarrow Night ventilation
- \rightarrow Limits
- \rightarrow Preheat program
- \rightarrow Pump control
- \rightarrow Air dampers
- \rightarrow Cooling
- \rightarrow ...

Cooling



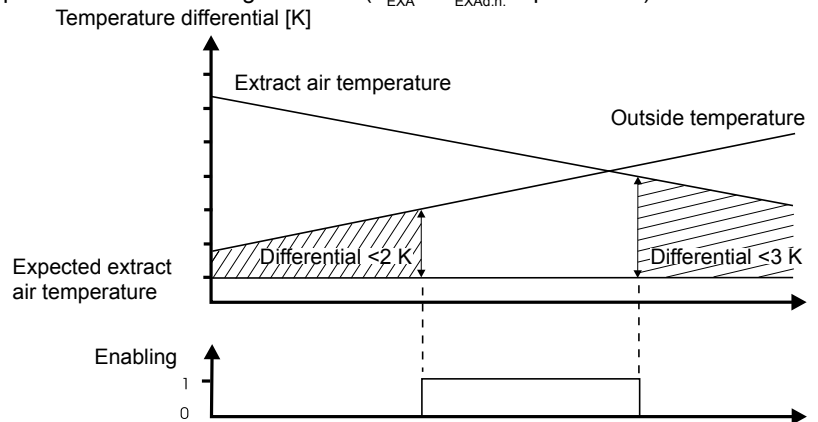
Standard mask $\xrightarrow{\text{Esc}}$ Main menu $\xleftrightarrow{\leftarrow}$ Heating contractor $\xleftrightarrow{\leftarrow}$ Cooling

Enthalpy-controlled enabling

The expected extract air temperature downstream of the humidifier is calculated using the extract air temperature and the extract air humidity.

Enabling requires the following conditions to be met:

1. The differential between the expected extract air temperature downstream of the humidifier and the outside temperature must be greater than the value of parameter "Block via differential extract/outdoor air" ($T_{\text{outdoor}} - T_{\text{EXAd.h.}} > \text{parameter}$).
2. The differential between the extract air and the expected extract air temperature. The value downstream of the humidifier must be greater than the value of parameter "Min. cooling differen." ($T_{\text{EXA}} - T_{\text{EXAd.h.}} > \text{parameter}$).



Parameter	Setting range	Factory setting
Block via differential extract/ outdoor air	0 – 10 K	2 K
Min. cooling differen. extract air	0 – 10 K	3 K

4. Programming level 2

Draining the water supply line

If a drain valve is fitted to the water supply line to the humidifier, the line can be drained subject to outside temperature. The supply valve will be closed and the drain valve opened if this function is enabled and the outdoor temperature exceeds the value set for parameter "Drain". This prevents frost damage. In the case of fresh water contact humidifiers, a service message "Pull humidifier" will also be issued. The humidifier can then be removed to minimise the pressure drop.

The drain valve is closed if the outdoor temperature exceeds the value set for parameter "Filling".

Parameter	Setting range	Factory setting
Enable draining	Yes/No	No
Draining	0 – 20 °C	6 °C
Filling	0 – 30 °C	20 °C

Drying

Initially adiabatic cooling will be disabled when the system is shut down (time program or manually). The system runs on without adiabatic cooling for the selected drying time. The system shuts down once the drying time has expired. The system will be dried at least for the selected time if a drying contact has been fitted. If the contact remains closed after expiry of this time, the system continues to operate until the contact opens.

Parameter	Setting range	Factory setting
Humidifier drying time	0 – 120 min.	*10 min./**60 min.

* for high pressure humidifiers ** for contact humidifiers

Hygiene function for recirculation contact humidifier

To prevent a constant increase in the mineral concentration in the water held in the water pan and in order to counteract the growth of bacteria, a regular draining (interval or time-dependent) of the water pan can be enabled.

Parameter	Setting range	Factory setting
Hygiene function interval	1 – 365 days	90 days
Time	00:00 – 23:59 h	00:00 h

Scaling with freshwater contact humidifier

The level of scale build-up is captured by a differential pressure switch. The contact closes and an alarm message is issued if the pressure differential upstream and downstream of the humidifier exceeds a selected threshold. An alarm delay may be set.

Additional parameters

Parameter	Setting range	Factory setting
Min. fresh air with adiabatic cooling	0 – 100%	100%
Alarm delay, scaling	0 – 600 s	60 s
Start delay, cooling bank	0 – 30 min.	10 min.

Service

Service - menus	
Hours run	
◀ Sensor adjustment ▶	←
Manual mode	
Digital inputs	
Esc BACK	← SELECTION DISPLAYS →

Standard mask Main menu Heating contractor Service

Settings and displays to assist in servicing the system.

Pressing enables the selection from the menu choices shown in the overview. After selecting the parameter, you call up the required submenu by pressing .

Overview:

- Hours run
- Sensor adjustment
- Manual mode
- Digital inputs

Sensor adjustment

Sensor adjustment		FA-12
Extract air temp after adiabatic cooling		
		0.0 K
Esc BACK	← SELECTION	DISPLAYS →

At this point, a sensor correction can be implemented for the temperature sensor downstream of the humidifier.

Manual mode

(Condition: system switched OFF)

Subject to the humidifier selected, the available outputs can be switched on or off.

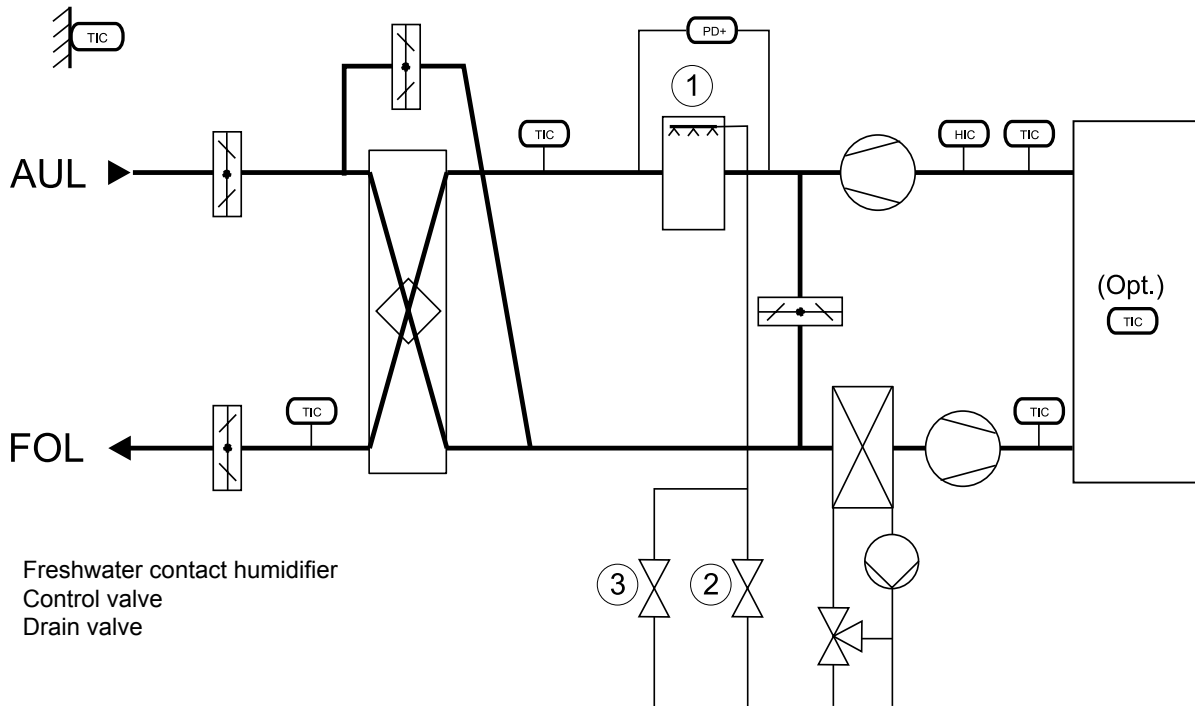
Manual mode		HB-19
Adiabatic cooling		
Enabling:		Off
Drain valve:		Closed
Esc BACK	← SELECTION	DISPLAYS →

Digital inputs

Digital inputs		DE-30
Fault burner		
ID--		
Humidifier scaling		
ID01 KLM-E Adr. 1		
Esc BACK	← SELECTION	DISPLAYS →

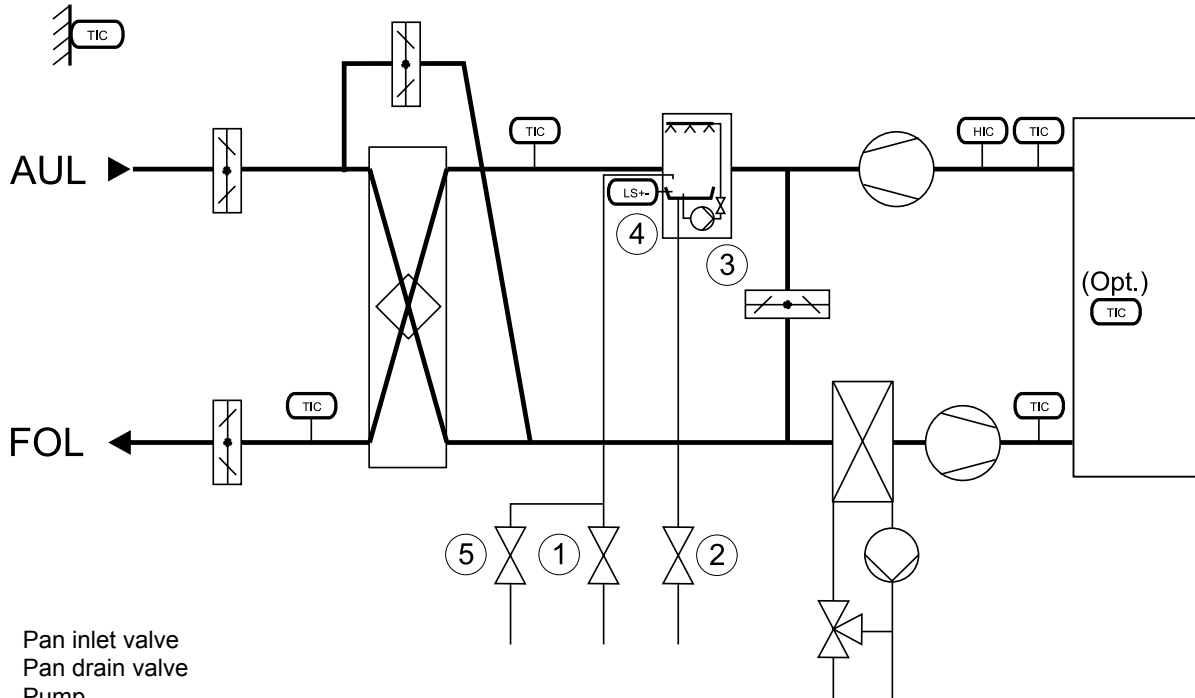
All digital inputs in connection with the adiabatic cooling are displayed with their current status (contact closed or contact open).

Freshwater contact humidifier



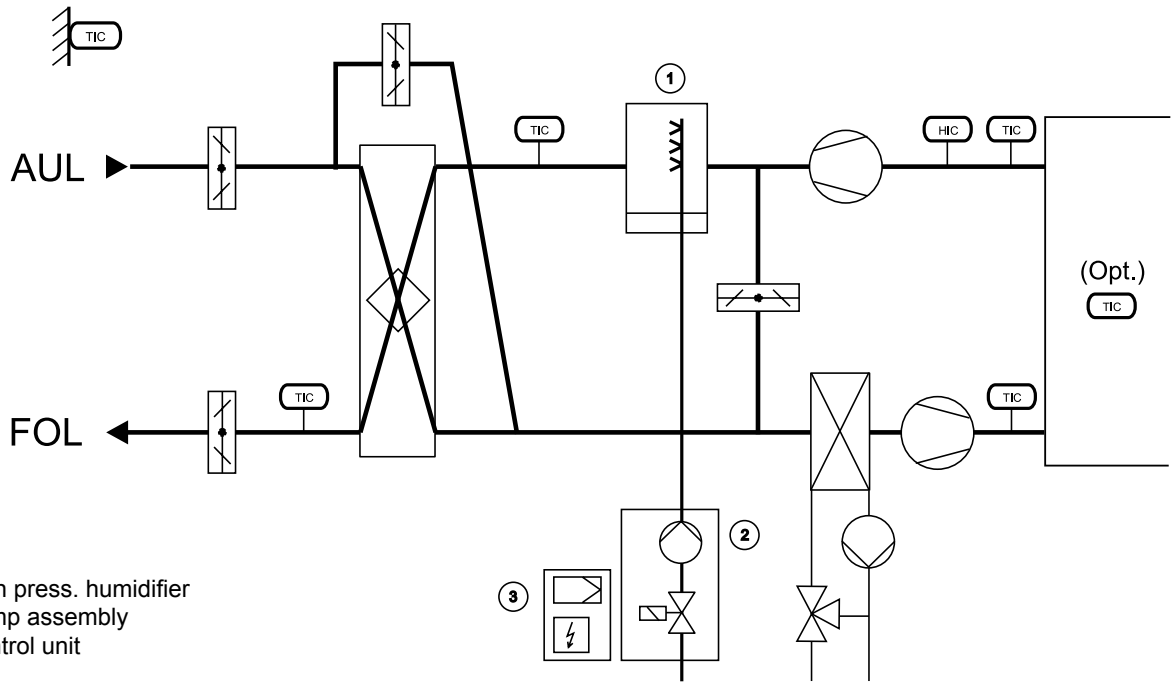
- Key**
- 1 = Freshwater contact humidifier
 - 2 = Control valve
 - 3 = Drain valve

Recirculation contact humidifier



- Key**
- 1 = Pan inlet valve
 - 2 = Pan drain valve
 - 3 = Pump
 - 4 = Level switch
 - 5 = Inlet line drain valve

High pressure humidifier



6. Fault messages

Alarms are signalled by the red LED flashing. Pressing the key displays the alarm in plain text; pressing the key on the alarm display again acknowledges remedied alarms. If several alarms are active, this is indicated by a symbol in the top r.h. corner. Further alarms can be called up by means of the scroll keys.

Alarm messages	Effects	Cause	Remedy
Humidifier for adiabatic cooling fault (AL 67)	Adiabatic cooling shutdown; system continues to operate	Fault recognition through humidifier; humidifier faulty	Check humidifier; acknowledge fault message
No cooling capacity Adiabatic cooling (AL 68)	Adiabatic cooling shutdown; system continues to operate	Faulty water connection	Check water supply line; acknowledge fault message
Service – adiabatic cooling disabled; remove humidifier (AL 69)	Water supply line drained; adiabatic cooling disabled; freshwater contact humidifier can be removed	Outdoor temperature is below the value of the "Draining" parameter	Check whether a freshwater contact humidifier has been installed. Check whether the outside temperature has exceeded the value of the parameter "Filling" and has activated adiabatic cooling
Humidifier for adiabatic cooling scaled up (AL 70)	Display only	Limescale deposits inside the humidifier, increased air resistance and reduced cooling capacity	Replace freshwater contact humidifier
Risk of freezing for humidifier Room temp. too low (AL 71)	System will be shut down or does not start	Room or extract air temperature below 3 °C	Heat up room to above 3 °C; acknowledge fault message
Temp. sensor after adiabatic cooling faulty or not connected (AL 72)	Adiabatic cooling will be disabled; system continues to operate	Sensor or lead faulty	Check sensor and lead; acknowledge fault message
Service – humidifier for adiabatic cooling (AL 73)	Message only	Humidifier requires a service	Service humidifier; acknowledge fault message