

# HCU-Control

## Data sheet

### Properties

- Measurement of the dew-point temperature or the absolute humidity of the ambient air (e.g. cellar) and the outside air
- Control of fans for reaching the dehumidification condition (dew point difference)
- Permanent ventilation or intermittent ventilation
- Dew point temperature difference and minimum ambient air temperature adjustable
- Release or switch-on of ventilation using a potential-free contact (relay)
- Control of DC and AC fans or ventilation systems



Dehumidification controller

### Application

- Air dehumidification or humidity control, particularly in spaces in cellars and on ground floors using dew point control.
- Humidity control, room drying and dew point temperature control by controlling exhaust and supply venti-

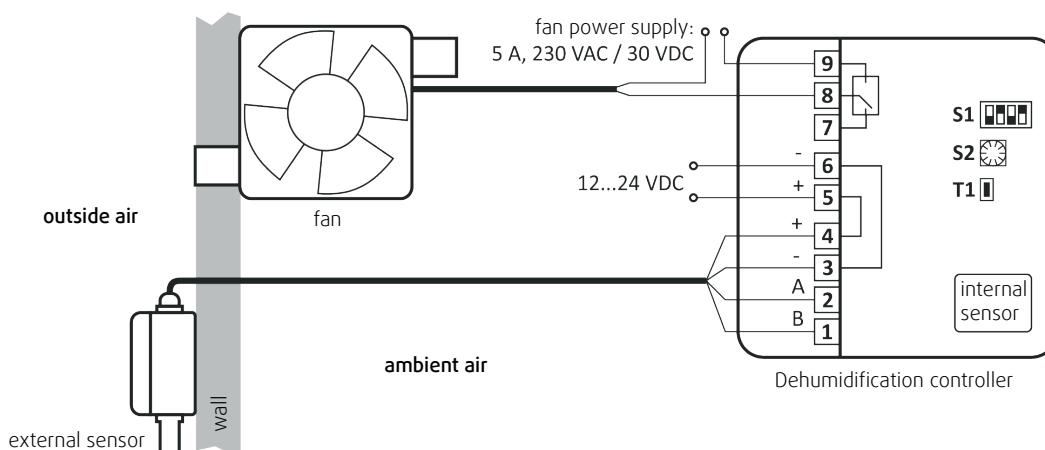
lators as well as central and decentralised ventilation systems.

- Controlled cellar ventilation, ventilation of conservatories and rooms at risk from mould.

### Short Description

The controller measures the dew point and the temperature of the ambient air using the internal sensor. The dew point and the temperature of the outside air are measured with the external sensor. From a dew point difference that can be adjusted with the switch S1 (dew point of outside air lower than dew point of the ambient air), the relay retracts and the fan starts to ventilate. If the dew point difference drops below a value that can be adjusted with S1, the ventilation is switched off. As a second condition,

the minimum room air temperature can be adjusted with S2. The ventilation is switched off or not switched on below this temperature. Use switch S1 to specify whether the fan runs continuously or operates periodically. A performance check of the ventilation can be performed with micro button T1. Press the button, the relay is activated and fan starts to turn.



Typical connection scheme for room dehumidification or cellar ventilation





## Attention

Only the **protective low voltage** may be connected to **terminals 1...6!** If a **line voltage** should be connected to **terminals 7..9** and not a protective low voltage, for example, then:

- the accompanying **protective cover** must be mounted!
- the power cable must be attached with the accompanying cable tie to the **fixing eyelet (fixing)**!

## Interfaces

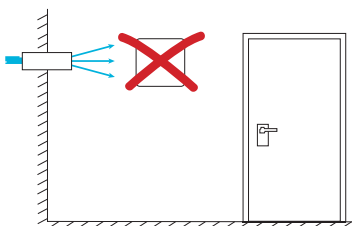
The following table describes the connection terminals of the device and their function. The connection numbers can be found at the terminals in the device. Details about the connections are described in the technical data.

Connection	Designation	Description	
01	B	Communication line to external sensor	
02	A	Communication line to external sensor	
03	-	Ground reference for the external sensor	
04	+	Supply voltage output for the external sensor	
05	+	Supply voltage connection for the controller	
06	-	Ground reference for the supply voltage connection	
07	NC	Relay output for the fan connection	
08	COM		 Fan switched off
09	NO		 Fan switched on

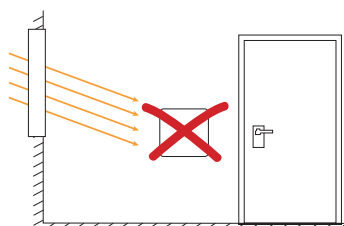
## Installation Instructions

The following information is to be observed when installing the complete system. If the information is not observed, the function of the controller and sensors may be impaired. The tolerances and properties described in the technical data may then no longer be complied with in certain circumstances.

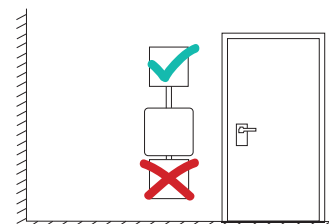
Do not install the controller directly in the supply air



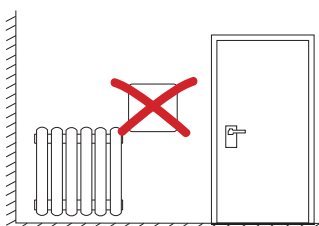
Do not expose the controller to direct sunlight



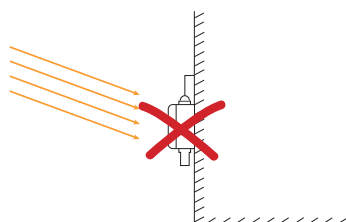
Do not install the power supply under the controller, min. distance 5 cm



Do not install controller near heating



Do not expose the external sensor to direct sunlight



Installation on the north side is preferable



## Switch Settings

Use the switch S1 to set the minimum dew point difference when the fan is switched on and switched off. The dew point difference is the difference between the dew point temperature of the ambient air and the outside air (dew point difference = dew point of ambient air – dew point of outside air).

The dew point temperature of the air reflects the absolute humidity. The higher the absolute humidity of the air, the higher the dew point temperature. If the dew point of the ambient air is higher than the dew point of the outside air, this means that the outside air is “drier” than the ambient air and the dehumidification condition is therefore met. However ventilation is only started when the temperature condition (see switch S2) is also met.

Switch S1, positions 1 and 2 – setting the dew point difference					
	S1.1	S1.2	Switch-on point	Switch-off point	Note
	OFF	OFF	3 °C	1 °C	
	OFF	ON	5 °C	1 °C	Standard
	ON	OFF	7 °C	3 °C	
	ON	ON	9 °C	5 °C	

Use positions 3 and 4 of switch S1 to set the ventilation interval when ventilation is activated after reaching the humidification conditions. When using a ventilation system with heat recovery, continuous ventilation is recommended as the heat recovery minimises the cooling of the room. If merely supply air or supply/exhaust air systems are used, periodic operation prevents the room cooling. Ventilation should be adapted to the room volume to replace sufficient air during the ventilation time. During the ventilation downtime, the replaced air can heat up and absorb moisture from the walls.

Switch S1, positions 3 and 4 – setting the ventilation interval					
	S1.3	S1.4	Interval	Ventilation duration	Note
	OFF	OFF		Continual ventilation	Standard
	OFF	ON	30 min	10 min	
	ON	OFF	60 min	20 min	
	ON	ON	90 min	30 min	

The minimum temperature of the ambient air can be set with switch S2. If the room temperature drops below the set value, ventilation is switched off or not switched on. If the temperature drops below the minimum room temperature, ventilation is only switched on again when the measured temperature is 0.5 K higher than the set value.

Switch S2 – Setting of the minimum room temperature					
	Minimum temperature			Minimum temperature	
0	OFF (standard)		5	14 °C	
1	6 °C		6	16 °C	
2	8 °C		7	18 °C	
3	10 °C		8	20 °C	
4	12 °C		9	22 °C	

## Butten for performance check

A performance check of the ventilation can be performed with micro button T1. Press the button, the relay is activated and fan starts to turn. Release the button to end the performance check. If the button is activated for more

than 1 min, the controller automatically switches off the performance check. In addition, the signal LED cyclically changes through all the colours during the performance check (see signal LED).

## Signal - LED

The signal LED shows the states of the dehumidification controller in colours and partially by flashing.

Colour	Display type	Beschreibung
● Red	Continuous	Ventilation stopped, dehumidification condition is not met
	Flashes	External sensor is faulty or not correctly connected
● Green	Continuous	Ventilation switched on, dehumidification condition is met
● Yellow	Continuous	Downtime of the interval, dehumidification condition is met
● Blue	Continuous	Temperature drops below minimum room temperature, but dehumidification condition is met
	Flashes	Internal sensor faulty

## Technical Data

Supply input		
Operating voltage	12 ... 24 VDC ±10 %	
Supply performance	1 W (without external sensor)	
Relay NC, COM, NO		
Switching power	230 VAC, 5 A, cosφ = 1 30 VDC, 5 A 48 VDC, 1,5 A	
Insulation	4 kV (to all other connections)	
Connection external sensor A, B		
Type	RS-485	
Baud rate	9600 baud	
Internal sensor	Measurement range	Tolerance
Temperature	-30 ... +90 °C	±0,5 K (0 ... +60 °C)
Dew point temperature	-70 ... +90 °C	±1,5 K
Mechanical data		
Dimensions (L x W x H)	88 x 88 x 31 mm	
Weight	100 g	
Protection type	IP20	
Protection class	II	
Contamination level	2	
Installation	Wall mounting, flush-mounted	
Connection		
Connection type	Screw terminals	
Clamping range	Terminals 1 ... 6: rigid 0,14 ... 1,5 mm <sup>2</sup> flexible 0,14 ... 1,0 mm <sup>2</sup> ferrule 0,25 ... 0,5 mm <sup>2</sup>	Terminals 7 ... 9: rigid 0,14 ... 2,5 mm <sup>2</sup> flexible 0,14 ... 1,5 mm <sup>2</sup> ferrule 0,25 ... 1,5 mm <sup>2</sup>
Line length	Terminals 1 ... 6: max. 30 m	Terminals 7 ... 9: unlimited
Environmental conditions		
Operating temperature	-20 ... 50 °C	
Storage temperature	-20 ... 80 °C	
Humidity	0 ... 95 %, no condensation	

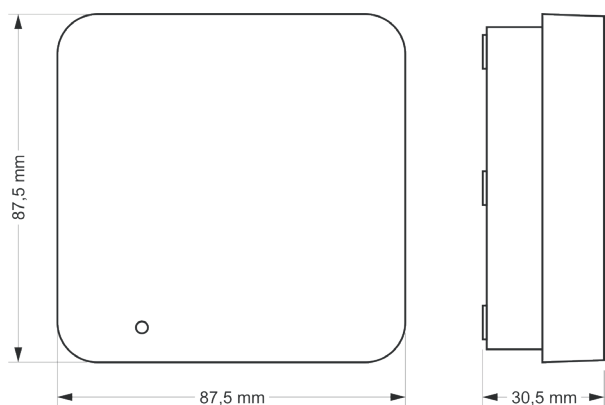
## Directives / Standards

Directives	Standards
Low voltage directive 2014/35/EU	EN 60730-1, Automatic electrical controls for household and similar use - General requirements EN 60730-2-9, Automatic electrical controls for household and similar use - Particular requirements for temperature sensing controls EN 60730-2-13, Automatic electrical controls for household and similar use - Particular requirements for humidity sensing controls EN 60950-1, Information technology equipment - Safety
EMC directive 2014/30/EU	EN 55011, Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement EN 61000-6-2, Generic standards - Immunity standard for industrial environments EN 61000-6-3, Generic standards - Emission standard for residential, commercial and light-industrial environments
RoHS directive 2011/65/EU	

## Markings




## Drawings



Dimensions

## Order information

Image	Description
	Dehumidification controller and external sensor set

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