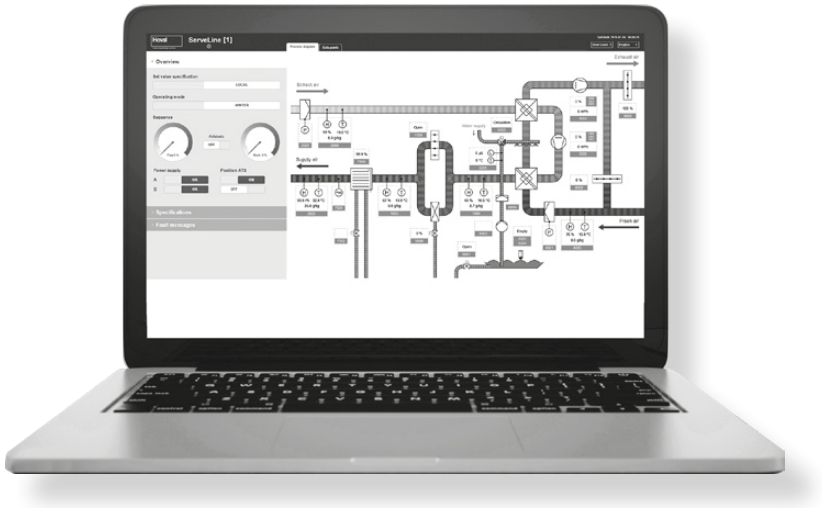
System control for ServeCool

Operating Instructions



System control for ServeCool

Operating Instructions

4 219 126-en-01

Hoval

1 Use

1.1 Intended use

The ServeCool system control is used for clearly laid-out operation of ServeCool units. It is operated via the web application integrated in the controller with a graphical user interface (Web GUI). Any web browser can be used for access via the interface directly on the unit (recommended web browser: Google Chrome).

The system control gives trained users access to all information and settings that are necessary for normal operation:
- Display and setting of operating modes
- Display of actual values (temperature, humidity, flow rate, ...)
- Display and setting of set values
- Display and programming of the annual calendar
- Display and handling of alarms and faults
- Display and setting of control parameters
- Password protection

Intended use also includes compliance with the operating instructions. Any usage over and above this use is considered to be not as intended. The manufacturer can accept no liability for damage resulting from improper use.

1.2 User groups

There are 4 user levels:

User level	User group	Access rights	Access
Guest	Untrained users	■ Read rights ■ Fault reset	free
Level 1	Trained users	■ Read rights ■ Write rights – BMS set values – Operating parameters – Fault reset – Control parameters	Protected by a password Factory setting: **12345**
Level 2	Trained users with extended access rights	■ Read rights ■ Write rights – Calendar – BMS set values – Local set values – Operating parameters – Fault reset – Control parameters	Protected by a password (password handover at commissioning of the plant)
Level 3	Super user	■ Read rights ■ Write rights – Calendar – BMS set values – Local set values – Operating parameters – Fault reset – Control parameters	Protected by a password (password handover at commissioning of the plant)

2 Basic principles

2.1 Operating modes

The ServeCool unit has the following operating modes:
- Summer operation
- Winter operation

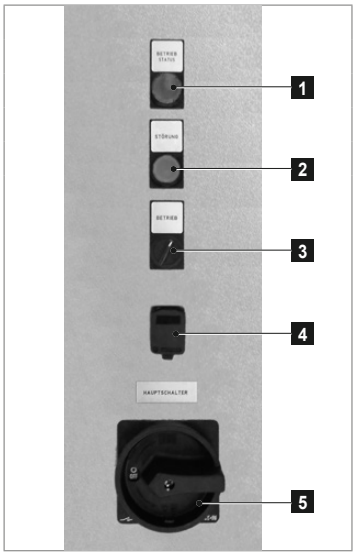
The system control controls and regulates the unit according to demand and depending on the operating conditions. Switching between summer and winter operation is carried out via the time program.

Operating mode	Description	Use
Summer operation	The unit uses the following cooling processes depending on the temperature and moisture conditions: ■ Indirect free cooling with fresh air ■ Indirect adiabatic cooling ■ Mechanical aftercooling (for covering load peaks) The chiller for supplying the cooling coil and the water supply are in operation.	During the hot season
Winter operation	The unit uses the following cooling processes depending on the temperature and moisture conditions: ■ Indirect free cooling with fresh air ■ Mechanical aftercooling (for covering load peaks) The chiller for supplying the cooling coil is in operation. There is no need for a water supply. **Attention** The adiabatic system must be drained and frost-proofed during winter operation.	During the cold season and in transitional periods

2.2 Setpoint sets

2 setpoint sets can be specified:
- Set values for local mode
- Setpoints for BMS operation
  (The setpoints are specified by the building management system.)

2.3 Operating and display elements on the control panel



1	Operation indicator light
2	Indicator lamp and pushbutton Fault / Reset
3	Local / BMS selector switch
4	Network interface
5	Main switch

Operation indicator light
Green... ServeCool unit ON or in standby mode
Off..... ServeCool unit OFF

Indicator lamp and pushbutton Fault / Reset
Red ..... There is a fault message.
Press the button to acknowledge faults.

Local / BMS selector switch
- Local mode: The unit controller operates autonomously according to the specifications from the internal memory.
- BMS mode: The unit controller operates according to the specifications from the building management system.

Switching between local mode and BMS mode is done via the selector switch on the control panel or via a software switch (software parameter 9000-08 in the **Data points** screen). The following applies:

Setting Control panel selector switch	Value Software switch	Valid
Local	Local	Local
Local	BMS	Local
BMS	Local	Local
BMS	BMS	BMS

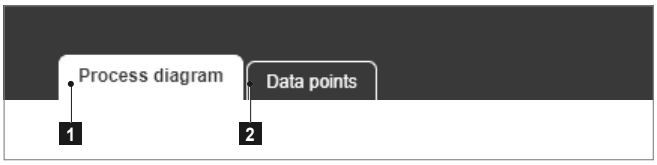
Network interface
RJ45 interface for access to the unit controller

Main switch
The main switch disconnects the system from the power supply and, if necessary, interrupts the optional UPS (uninterruptible power supply).

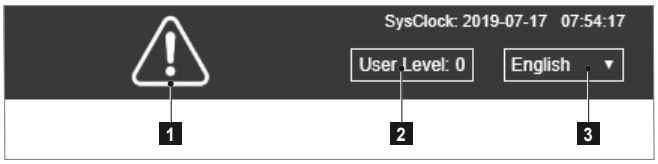
2.4 Icons

Icon	Meaning
	Edit value
	Save value
	Cancel
	Display help text
	Fault
	Manual set value active

2.5 Buttons in the header



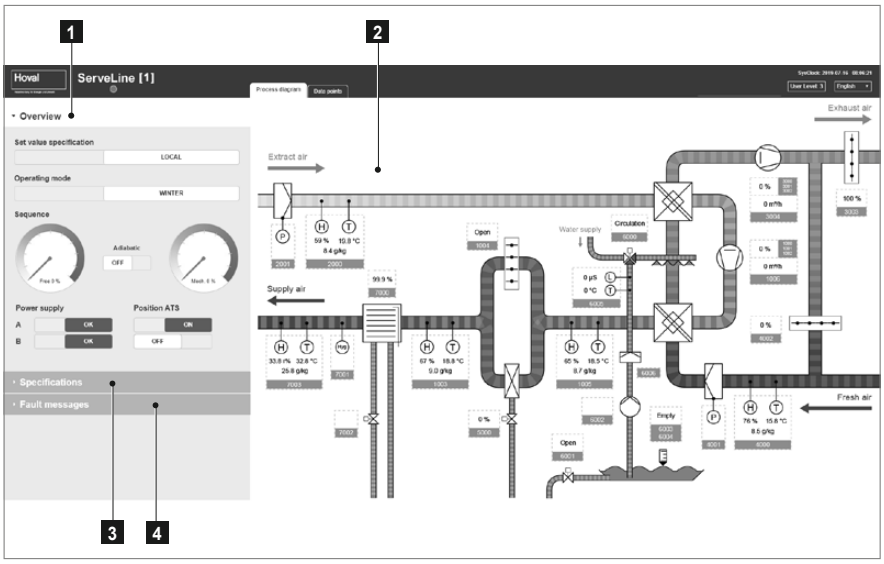
1	Open **Process diagram** screen
2	Open **Data points** screen



1	Fault exists | Show fault messages
2	Current user level | Enter password
3	Select language

3 Process diagram

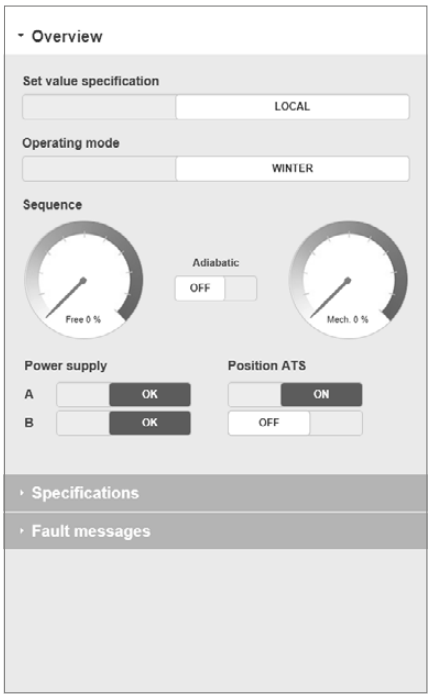
The **Process diagram** screen shows the following information and buttons:



1	Overview: Information about valid set value specifications and the current operating mode
2	Process diagram with current measured values and status displays
3	Specifications: Entering the set values and the time program
4	Fault messages: Display and reset of faults

Notice
Depending on the installed unit type and optional components, the display on the screen may differ from the display in this manual.

3.1 Overview



Set value specification
Display of the currently valid set value specification:
– Set values for building management system mode (BMS)
– Set values for local mode (Local)

Switching between local mode and BMS mode is done via the selector switch on the control panel or via a software switch (software parameter 9000-08 in the **Data points** screen).

Operating mode
Display of the current operating mode:
– Summer
– Winter

Switching between summer and winter operation is done via the time program (see section chapter 3.2).®

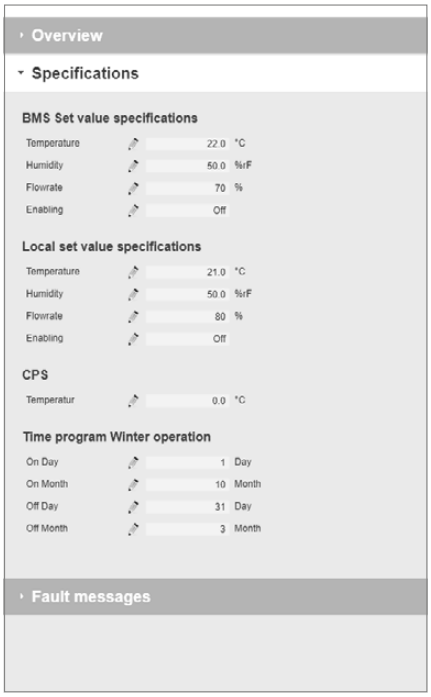
Sequence
Display of currently used cooling processes:
– Indirect free cooling with fresh air
– Indirect adiabatic cooling
– Mechanical aftercooling

Power supply
Status display of the power supply

Position ATS (automatic transfer switch)
Display of currently used power supply

You can define the priority for the power supply in the **Data points** screen (control panel parameter 0000-06).

3.2 Specifications



BMS/Local set value specifications
Displaying the set value specifications for BMS operation, displaying and setting the set value specifications for local operation:
– Temperature (supply air)
– Humidity (supply air)
– Flowrate (supply air)
– Enabling (unit)

- In each case, click on the icon.
- Enter the desired value.
- Click the icon to save the value.

CPS
Define the target temperature for the Condensation Prevention System to prevent condensation of moisture in the recirculation air flow:
– Temperature (fresh air after admixture of exhaust air)

Time program Winter operation
Define the period in which the unit runs in the 'Winter' operating mode.

- In each case, click on the icon.
- Enter the on and off dates for winter operation.
- Click the icon to save the value.

Attention
When switching to winter operation, ensure that the adiabatic system is drained and frost-proofed.

3.3 Fault messages

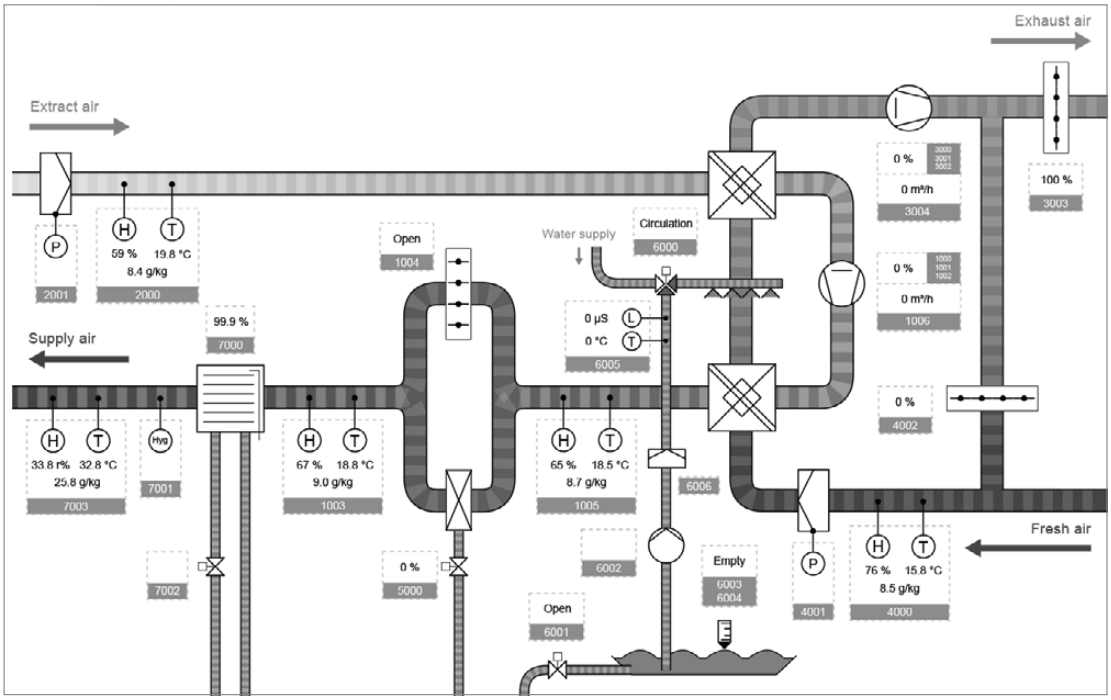
The list of fault messages shows all faults with date and time of their occurrence:
– Active faults appear in red.
– Corrected faults appear in green.

- Click on 'Reset' to acknowledge faults.

Notice
The list of past faults is successively loaded by the unit controller.
For data that is further back in time, the loading times may be longer.

3.4 Process diagram

The process diagram shows a unit overview with current measured values and status displays.



10	Supply air
1003	Combination sensor supply air
1004	Bypass damper cooling coil
1005	Combination sensor E monitoring
1006	Supply air flowrate
20	**Extract air**
2000	Combination sensor extract air
2001	Extract air filter
30	**Exhaust air**
3003	CPS damper (Condensation Prevention System)
3004	Exhaust air flowrate
40	**Fresh air**
4000	Combination sensor fresh air
4001	Fresh air filter
4002	CPS damper (Condensation Prevention System)

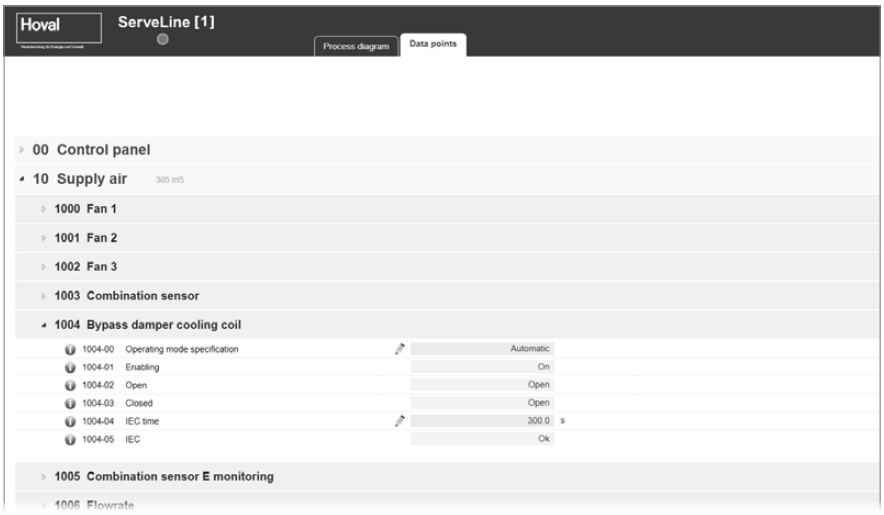
50	Chilled water
5000	Cold water valve
60	**Adiabatic**
6000	Feed valve
6001	Drain valve
6002	Adiabatic pump
6003	Liquid level switch (too high)
6004	Liquid level switch (too low)
6005	Combination sensor conductivity measurement
6006	Flow sensor
70	**Humidification**
7000	Humidifier
7001	Hygrostat
7002	Drain valve
7003	Combination sensor humidifier

↑

Data point number: Under this number you will find the component in the data point list.

4 Data points

The **Data points** screen displays the operating and control parameters of the system control:



- The parameters are thematically grouped:
  - Click a group or component to show/hide the associated parameters.
  - Depending on the current user level, not all values are displayed.
- Move the mouse pointer over the icon to display the help text for the respective parameter.
- Editable values are marked with the icon:
  - Click on the icon.
  - Enter the desired value.
  - Click on the icon to save the value or click on the icon to cancel without saving.
  - If the value in the current user level must not be changed, the editing icon is inactive and greyed out.

4.1 Night-time reduction

Notice
Use the 'nighttime reduction' function so the unit will be operated particularly quietly during the night. It reduces the exhaust air flow rate and thus the noise level of the fans. But please note that the cooling power will also be reduced!

- Set the 'nighttime reduction' function with the following parameters:

30	**Exhaust air**	
3099	**Night-time reduction**	
3099-61	Activation	Activate/deactivate night-time reduction
3099-62	Limited max value	Exhaust air flow rate in % of the nominal air flow rate
3099-63	Begin reduction	Time for nighttime reduction on
3099-64	End reduction	Time for nighttime reduction off
3099-65	Nighttime reduction feedback	System feedback

4.2 Emergency operation

Notice
Use the 'emergency mode' function to maintain adiabatic cooling in the event of a fault in the adiabatic pump.

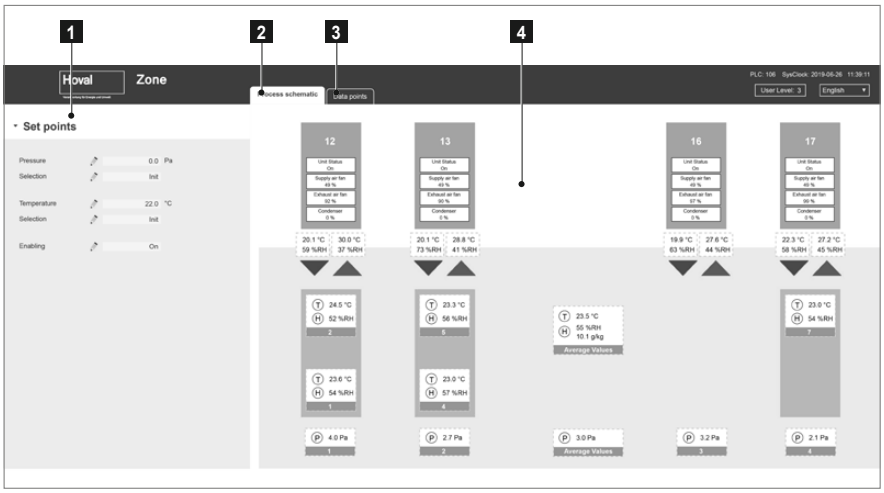
- In the event of a fault in the adiabatic pump, activate the 'emergency mode' function with the following parameter:

60	**Adiabatic**	
6099	**Control**	
6099-09	Activation	Activate/deactivate emergency operation

The unit opens the inlet valve and the outlet valve and sprays water continuously into the fresh air stream. Water that is not evaporated is collected in the trough and flows directly to the drain.

5 Zone control

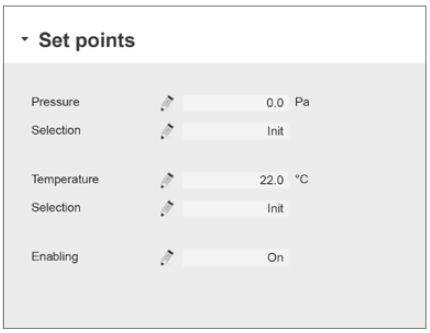
The **Process diagram Zone** screen shows the following information and buttons:



1	Set points: Entering the set values
2	Open **Process diagram Zone** screen
3	Open **Data points Zone** screen
4	Process diagram Zone

Notice
Depending on the local conditions, the display on the screen may differ from the display in this manual.

5.1 Set points



The zone control specifies the setpoint values for several ServeCool units. Define the required values for the zone:
– Pressure difference between raised floor and server room / cold aisle
– Temperature in the server room / cold aisle

- In each case, click on the icon.
- Enter the desired value.
- Click the icon to save the value.

The actual values are recorded via the sensors distributed in the room and the system control calculates the maximum value, the average value and the minimum value in each case. You can choose which of these values should be used for the zone control.

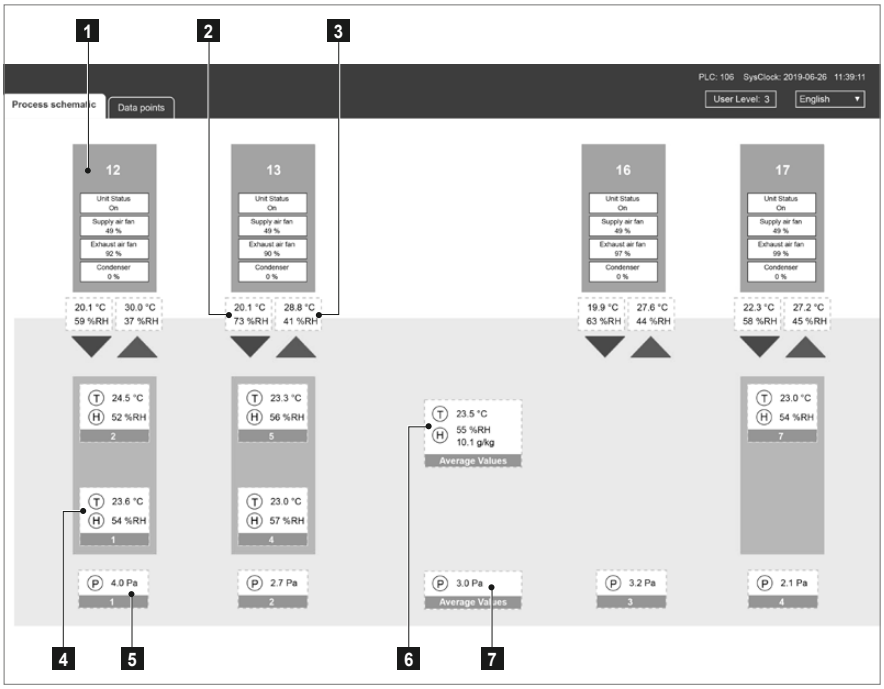
- In each case, click the icon at 'Selection'.
- Select the value to be used.
- Click on the icon to save the selection.

Attention
As long as you have not yet made a selection, 'Init' is displayed and the units in the zone are switched off.

The 'Release' parameter can be used to switch all ServeCool units in the zone on and off.

5.2 Process diagram Zone

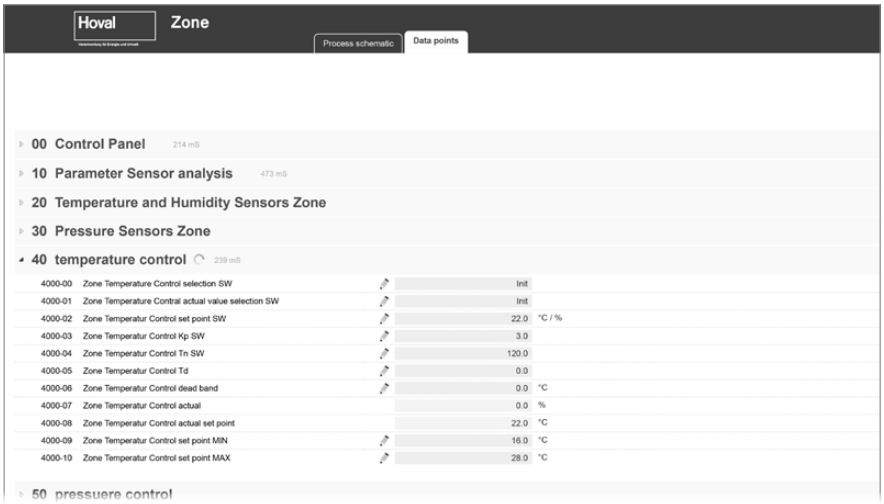
The zone process diagram shows a zone overview with current measured values and status displays.



1	Status display of the ServeCool units (On / Off, supply air fan, exhaust air fan, condenser)
2	Temperature / humidity of supply air
3	Temperature / humidity of extract air
4	Temperature / humidity in the server room / cold aisle
5	Pressure difference between raised floor and server room / cold aisle
6	Average values for temperature / humidity in the server room
7	Average value of pressure difference

5.3 Data points Zone

The **Zone data points** screen displays the operating and control parameters of the zone control:



- The parameters are thematically grouped:
  - Click a group or component to show/hide the associated parameters.
  - Depending on the current user level, not all values are displayed.
- Move the mouse pointer over the icon to display the help text for the respective parameter.
- Editable values are marked with the icon:
  - Click on the icon.
  - Enter the desired value.
  - Click on the icon to save the value or click on the icon to cancel without saving.
  - If the value in the current user level must not be changed, the editing icon is inactive and greyed out.

6 Faults

The following table contains an overview of all faults and their cause. Contact Hoval customer service to have faults rectified.

ID	Fault	Cause	System reaction	Remedy
Group 00 – Control panel				
00-00-04	Power supply system 1 fault	Power supply system 1 faulty	Units with source switching switch to system 2.	Check power supply.
00-00-05	Power supply system 2 fault	Power supply system 2 faulty	Units with source switching switch to system 1.	
00-01-00	24 V supply fault	24 V supply faulty	Some units cannot be activated. Sensors deliver wrong values.	Check the fuse in the control panel. If this occurs again, contact Hoval customer service.
00-01-01	Surge voltage protection fault	Fault in overvoltage protection in the control panel, occurrence of overvoltage or varistor service life expired	The unit is no longer protected against overvoltage.	Check overvoltage protection and replace if necessary.
00-02-01	External release feedback	No external release (bridge in control panel interrupted)	The unit switches off or displays only one message (adjustable).	Check safety chain and release.
Group 10 – Supply air				
10-00-06 10-01-06 10-02-06	Fan # / Fault message	The displayed fault is present at supply air fan no. # (1 | 2 | 3).	The unit continues to run with the other supply air fans.	Call Hoval customer service.
10-00-09 10-01-09 10-02-09	Fan # / CEC			
10-00-11 10-01-11 10-02-11	Fan # / Hall sensor			
10-00-12 10-01-12 10-02-12	Fan # / Phase failure			
10-00-13 10-01-13 10-02-13	Fan # / Undervoltage intermediate circuit			
10-00-14 10-01-14 10-02-14	Fan # / Overvoltage intermediate circuit			
10-00-15 10-01-15 10-02-15	Fan # / Earth fault			
10-00-16 10-01-16 10-02-16	Fan # / IGBT error			
10-00-21 10-01-21 10-02-21	Fan # / Temperature management			
10-00-25 10-01-25 10-02-25	Fan # / Fuse blown			
10-00-26 10-01-26 10-02-26	Fan # / Motor blocked			

ID	Fault	Cause	System reaction	Remedy
10-03-01	Combination sensor / Temperature fault message	Fault in the supply air temperature measurement	–	Check combination sensor supply air. Call Hoval customer service.
10-03-03	Combination sensor / Temperature low fault message	The measured supply air temperature is lower than the limit value.	–	Set limit values correctly, check air conditions.
10-03-05	Combination sensor / Temperature high fault message	The measured supply air temperature is higher than the limit value.	–	
10-03-08	Combination sensor / Rel. humidity fault message	Fault in the supply air moisture measurement (relative humidity)	–	Check combination sensor supply air.
10-03-10	Combination sensor / Rel. humidity low fault message	The measured relative humidity of the supply air is lower than the limit value.	–	Set limit values correctly, check air conditions.
10-03-12	Combination sensor / Rel. humidity high fault message	The measured relative humidity of the supply air is higher than the limit value.	–	
10-03-15	Combination sensor / Abs. humidity fault message	Fault in the supply air moisture measurement (absolute humidity)	–	Check combination sensor supply air.
10-03-17	Combination sensor / Abs. humidity low fault message	The measured absolute humidity of the supply air is lower than the limit value.	–	Set limit values correctly, check air conditions.
10-03-19	Combination sensor / Abs. humidity high fault message	The measured absolute humidity of the supply air is higher than the limit value.	–	
10-04-05	Bypass damper cooling coil / CEC	The bypass damper cooling coil does not behave according to the activation.	–	Check damper actuator.
10-05-01	Combination sensor E monitoring / Temperature fault message	Fault in the supply air temperature measurement after the plate-type heat exchanger	–	Check combination sensor energy monitoring.
10-05-03	Combination sensor E monitoring / Temperature low fault message	The measured supply air temperature after the plate-type heat exchanger is lower than the limit value.	–	Set limit values correctly, check air conditions.
10-05-05	Combination sensor E monitoring / Temperature high fault message	The measured supply air temperature after the plate-type heat exchanger is higher than the limit value.	–	
10-05-08	Combination sensor E monitoring / Rel. humidity fault message	Fault in the supply air moisture measurement after the plate-type heat exchanger (relative humidity)	–	Check combination sensor energy monitoring.
10-05-10	Combination sensor E monitoring / Rel. humidity low fault message	The measured relative humidity of the supply air after the plate-type heat exchanger is lower than the limit value.	–	Set limit values correctly, check air conditions.
10-05-12	Combination sensor E monitoring / Rel. humidity high fault message	The measured relative humidity of the supply air after the plate-type heat exchanger is higher than the limit value.	–	
10-05-15	Combination sensor E monitoring / Abs. humidity fault message	Fault in the supply air moisture measurement after the plate-type heat exchanger (absolute humidity)	–	Check combination sensor energy monitoring.
10-05-17	Combination sensor E monitoring / Abs. humidity low fault message	The measured absolute humidity of the supply air after the plate-type heat exchanger is lower than the limit value.	–	Set limit values correctly, check air conditions.
10-05-19	Combination sensor E monitoring / Abs. humidity high fault message	The measured absolute humidity of the supply air after the plate-type heat exchanger is higher than the limit value.	–	
10-06-01	Flow rate / Fault message	Fault in the supply air flow rate measurement	–	Check sensor and measuring hoses.
Group 20 – Extract air				
20-00-01	Combination sensor / Temperature fault message	Fault in the extract air temperature measurement	–	Check combination sensor extract air.
20-00-03	Combination sensor / Temperature low fault message	The measured extract air temperature is lower than the limit value.	–	Set limit values correctly, check air conditions.
20-00-05	Combination sensor / Temperature high fault message	The measured extract air temperature is higher than the limit value.	–	

ID	Fault	Cause	System reaction	Remedy
20-00-08	Combination sensor / Rel. humidity fault message	Fault in the extract air moisture measurement (relative humidity)	–	Check combination sensor extract air.
20-00-10	Combination sensor / Rel. humidity low fault message	The measured relative humidity of the extract air is lower than the limit value.	–	Set limit values correctly, check air conditions.
20-00-12	Combination sensor / Rel. humidity high fault message	The measured relative humidity of the extract air is higher than the limit value.	–	
20-00-15	Combination sensor / Abs. humidity fault message	Fault in the extract air moisture measurement (absolute humidity)	–	Check combination sensor extract air.
20-00-17	Combination sensor / Abs. humidity low fault message	The measured absolute humidity of the extract air is lower than the limit value.	–	Set limit values correctly, check air conditions.
20-00-19	Combination sensor / Abs. humidity high fault message	The measured absolute humidity of the extract air is higher than the limit value.	–	
20-01-00	Filter / Filter	The extract air filter is soiled.	–	Change extract air filter. Check pressure socket.
20-99-03	Temperature limitation / Feedback	Extract air temperature limiting is active.	The unit reduces the supply air setpoint temperature to the set value.	Reduce extract air temperature.
Group 30 – Exhaust air				
30-00-06 30-01-06 30-02-06	Fan # / Fault message	The displayed fault is present at exhaust air fan no. # (1 | 2 | 3).	The unit continues to run with the other exhaust air fans.	Call Hoval customer service.
30-00-09 30-01-09 30-02-09	Fan # / CEC			
30-00-11 30-01-11 30-02-11	Fan # / Hall sensor			
30-00-12 30-01-12 30-02-12	Fan # / Phase failure			
30-00-13 30-01-13 30-02-13	Fan # / Undervoltage intermediate circuit			
30-00-14 30-01-14 30-02-14	Fan # / Overvoltage intermediate circuit			
30-00-15 30-01-15 30-02-15	Fan # / Earth fault			
30-00-16 30-01-16 30-02-16	Fan # / IGBT error			
30-00-21 30-01-21 30-02-21	Fan # / Temperature management			
30-00-25 30-01-25 30-02-25	Fan # / Fuse blown			
30-00-26 30-01-26 30-02-26	Fan # / Motor blocked			
30-03-04	CPS damper / Fault message	Fault in the CPS damper for exhaust air (Condensation Prevention System)	–	Check damper actuator.
30-03-07	CPS damper / CEC	The CPS damper for exhaust air (Condensation Prevention System) does not behave according to the activation.	–	
30-04-01	Flow rate / Fault message	Fault in the exhaust air flow rate measurement	–	Check sensor and measuring hoses.

ID	Fault	Cause	System reaction	Remedy
Group 40 – Fresh air				
40-00-01	Combination sensor / Temperature fault message	Fault in the fresh air temperature measurement	CPS operation (Condensation Prevention System) no longer possible.	Check combination sensor fresh air.
40-00-03	Combination sensor / Temperature low fault message	The measured fresh air temperature is lower than the limit value.	–	Set limit values correctly, check air conditions.
40-00-05	Combination sensor / Temperature high fault message	The measured fresh air temperature is higher than the limit value.	–	
40-00-08	Combination sensor / Rel. humidity fault message	Fault in the fresh air moisture measurement (relative humidity)	–	Check combination sensor fresh air.
40-00-10	Combination sensor / Rel. humidity low fault message	The measured relative humidity of the fresh air is lower than the limit value.	–	Set limit values correctly, check air conditions.
40-00-12	Combination sensor / Rel. humidity high fault message	The measured relative humidity of the fresh air is higher than the limit value.	–	
40-00-15	Combination sensor / Abs. humidity fault message	Fault in the fresh air moisture measurement (absolute humidity)	–	Check combination sensor fresh air.
40-00-17	Combination sensor / Abs. humidity low fault message	The measured absolute humidity of the fresh air is lower than the limit value.	–	Set limit values correctly, check air conditions.
40-00-19	Combination sensor / Abs. humidity high fault message	The measured absolute humidity of the fresh air is higher than the limit value.	–	
40-01-00	Filter / Filter	The fresh air filter is soiled.	–	Change the fresh air filter. Check pressure socket.
40-02-04	CPS damper / Fault message	Fault in the CPS damper for fresh air (Condensation Prevention System)	–	Check damper actuator.
40-02-07	CPS damper / CEC	The CPS damper (Condensation Prevention System) does not behave according to the activation.	–	
Group 50 – Chilled water				
50-00-04	Chilled water valve / Fault message	Fault in the cold water valve	The unit switches to adiabatic cooling, if possible.	Check valve actuator.
50-00-07	Chilled water valve / CEC	The cold water valve does not behave according to the activation.		
50-01-03	Condenser / Fault message	Fault in the condenser	The unit switches to adiabatic cooling, if possible.	Check condenser.
Group 60 – Adiabatic				
60-00-05	Feed valve / CEC	The inlet valve does not behave according to the activation.	The unit blocks adiabatic cooling.	Check feed valve.
60-01-05	Drain valve / CEC	The outlet valve does not behave according to the activation.	The unit blocks adiabatic cooling.	Check drain valve.
60-02-02	Pump / Fault message	Fault in the adiabatic pump	The unit blocks adiabatic cooling.	Check the motor protection switch in the control panel
60-05-01	Combination sensor / Conductivity fault message	Fault in the conductivity measurement	The unit blocks adiabatic cooling.	Check combination sensor conductivity measurement.
60-05-03	Combination sensor / Conductivity low fault message	The measured conductivity is lower than the limit value.	–	Set limit values correctly, check water conditions.
60-05-05	Combination sensor / Conductivity high fault message	The measured conductivity is higher than the limit value.	–	
60-05-07	Combination sensor / Temperature fault message	Fault in the temperature measurement of the circulating water	The unit blocks adiabatic cooling.	Check combination sensor conductivity measurement.
60-05-09	Combination sensor / Temperature low fault message	The measured temperature is lower than the limit value.	–	Set limit values correctly, check water conditions.
60-05-11	Combination sensor / Temperature high fault message	The measured temperature is higher than the limit value.	–	
60-05-12	Sensor fault message	Fault in the conductivity sensor	The unit blocks adiabatic cooling.	Check combination sensor conductivity measurement.

ID	Fault	Cause	System reaction	Remedy
60-06-01	Flow sensor / Fault message	Fault in the flow rate measurement	The unit blocks adiabatic cooling.	Check water supply.
60-06-03	Flow sensor / No flow	The measured flow rate is too low for adiabatic operation.		
60-07-01	Pressure sensor A / Pressure fault message	Fault in pressure measurement (line A)	The unit switches to the other water supply.	Check water supply.
60-07-03	Pressure sensor A / Pressure low fault message.	The measured pressure is lower than the limit value.	–	Set limit values correctly, check water conditions.
60-07-05	Pressure sensor A / Pressure high fault message	The measured pressure is higher than the limit value.	–	
60-08-01	Pressure sensor B / Pressure fault message	Fault in pressure measurement (line B)	The unit switches to the other water supply.	Check water supply.
60-08-03	Pressure sensor B / Pressure low fault message.	The measured pressure is lower than the limit value.	–	Set limit values correctly, check water conditions.
60-08-05	Pressure sensor B / Pressure high fault message	The measured pressure is higher than the limit value.	–	
60-09-06	Valve A / CEC	Valve A does not behave according to the activation.	–	Check valve actuator.
60-10-06	Valve B / CEC	Valve B does not behave according to the activation.	–	Check valve actuator.
60-99-03	Control / Fault message	Fault in the adiabatic system	The unit blocks adiabatic cooling.	Check water supply.
60-99-17	Control / A fault message	Fault in the water supply A	The unit switches to the other water supply.	Check water supply.
60-99-18	Control / B fault message	Fault in the water supply B		
Group 70 – Humidification				
70-00-05	Humidifier / Fault message	Fault in the humidifier	The unit stops the humidification.	Check humidifier.
70-00-07	Humidifier / CEC	The humidifier does not behave in accordance with the activation.		
70-00-10	Humidifier / Fault 48 V supply	Fault in the 24 V supply of the humidifier		
70-01-00	Hygrostat / Fault message	The air humidity is too high.	The unit stops the humidification.	Check the settings of the humidifier.
70-03-01	Combination sensor / Temperature fault message	Fault in the supply air temperature measurement after the humidifier	–	Check combination sensor humidifier.
70-03-03	Combination sensor / Temperature low fault message	The measured supply air temperature after the humidifier is lower than the limit value.	–	Set limit values correctly, check air conditions.
70-03-05	Combination sensor / Temperature high fault message	The measured supply air temperature after the humidifier is higher than the limit value.	–	
70-03-08	Combination sensor / Rel. humidity fault message	Fault in the supply air humidity measurement after the humidifier (relative humidity)	–	Check combination sensor humidifier.
70-03-10	Combination sensor / Rel. humidity low fault message	The measured relative humidity of the supply air after the humidifier is lower than the limit value.	–	Set limit values correctly, check air conditions.
70-03-12	Combination sensor / Rel. humidity high fault message	The measured relative humidity of the supply air after the humidifier is higher than the limit value.	–	
70-03-15	Combination sensor / Abs. humidity fault message	Fault in the supply air humidity measurement after the humidifier (absolute humidity)	–	Check combination sensor humidifier.
70-03-17	Combination sensor / Abs. humidity low fault message	The measured absolute humidity of the supply air after the humidifier is lower than the limit value.	–	Set limit values correctly, check air conditions.
70-03-19	Combination sensor / Abs. humidity high fault message	The measured absolute humidity of the supply air after the humidifier is higher than the limit value.	–	

International
Hoval Aktiengesellschaft
9490 Vaduz
Liechtenstein
Tel. +423 399 24 00
info.klimatechnik@hoval.com
www.hoval.com

United Kingdom
Hoval Ltd.
Northgate, Newark
Notts
NG24 1JN
Tel. 01636 672711
hoval@hoval.co.uk
www.hoval.co.uk