GRANDIS L

Heat Pump Air / water

Operating Manual

IN BRIEF:

To turn on/off the heat pump:

- **If the symbol lights up on the  display , the heat pump is switched off.**

- To switch on the TC, press the ✓ button. A confirmation dialog will appear, go to YES and confirm with the ✓ button. The heat pump will start in automatic mode.
- To turn off the TC, select the Settings panel with the arrow keys, enter it with the arrow key >, find the item Turn off TC [OFF], confirm with the arrow key > or the ✓ button. The confirmation dialog will appear again, scroll to YES and confirm with the ✓ button. The TC will be switched off. In off mode, the freezing water temperature is monitored.

To adjust the room temperature:

- To set the desired room temperature, go to the main panel by holding down the **x** button. Press the >, +/- or ✓ arrow. The display will show the current room temperature setpoint.
- Pressing the +/- button increases or decreases the desired temperature by 0.1 °C.
- Press the ✓ button when the desired room temperature is reached.
- For more information see chap. *3.1.7* on the page *20*.

To find out the outside temperature:

- Hold down the X button to go to the main panel. The outside  temperature is next to the symbol.

To determine the hot water (DHW) temperature:

- If the DHW is set, from the main panel, use the up or down arrow to go to the DHW Temperature panel to display the current temperature and the desired DHW temperature.

1 Explanation of symbols, validity of documentation

1.1 Symbols used

Important information that does not involve a risk to people or material values is marked with white letters and a blue circle. They are demarcated from the text by lines above and below the text.

Warning instructions in the text are marked with a red warning triangle with a white exclamation mark and bordered by a box.

1.2 Validity of documentation

The instructions in this documentation apply to **ACOND GRANDIS®** heat pump models air/water with **ACOND® THERM** control with version sw 150.XX and later.

Failure to comply with these instructions during installation, operation and maintenance will void **ACOND a.s.**'s obligations under the warranty.

ACOND a.s. reserves the right to change parts of the documentation and specifications without prior notice.

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2 Important information

If the installation is not used in winter or cannot be started up for operational reasons (e.g. due to a serious malfunction) and is not filled with antifreeze, the water must be drained from the heating system, otherwise there is a risk of frost damage to the installation.

!! Do not disconnect the heat pump from the power supply for an extended period of time (several days) !!! The backup battery may be discharged, the control software deleted and data lost. Any trip of the technician will be charged according to the current price list of Acond a.s.

The equipment must not be operated by persons with insufficient experience and knowledge (including children) unless they are under the supervision of instructed persons responsible for their safety.

2.1 Security

- The equipment is safe to operate when used properly.
- The design and construction of the device are in accordance with the relevant DIN/VDE regulations.
- Each person working on the instrument must read, understand and follow the relevant instructions before starting work.
- Any person carrying out work on the equipment must comply with the locally applicable occupational safety and health regulations. This applies in particular to the use of personal protective clothing.

2.1.1 Personal protective equipment

Any person carrying out maintenance and repair work must use protective equipment.

2.1.2 Fire-fighting equipment

The device is safe under normal conditions. In the event of unforeseen circumstances and improper operation of the equipment, damage and fire may occur. Fire extinguishers suitable for extinguishing electrical equipment must be used to extinguish the fire, i.e:

- Powder extinguisher
- Foam extinguisher

Caution, the unit contains flammable refrigerant!
In the event of a refrigerant leak, disconnect the unit from the power supply and contact the service!

Caution, the unit contains flammable refrigerant!
In case of fire, disconnect the equipment from the power source and call 112!

No handling of open flames near the outdoor unit!

2.1.3 Treatment of the device

Do not use chlorine to treat stainless steel surfaces and avoid abrasive materials and wire cloths!

You can treat stainless steel surfaces:

- Special preparations for stainless steel materials that polish and protect the surface
- Detergent can be used to degrease

Due to the risk of damage to the heat pump casing, do not use any type of spray around the heat pump. This applies in particular to:

- Solvents
- Cleaning agents containing chlorine
- Colors
- Adhesives

2.1.4 Installation and Maintenance

- Observe the locally applicable regulations!
- Only install the heat pump outdoors or in mechanical rooms, that comply with EN 378-3!
- A degasser with a safety valve suitable for R290 refrigerant (e.g. degasser - MUT DF DG HP 32 E - G 5/4" MMM VS Smart Plus 2.5 bar with insulation) must be installed at the outlet of the heat pump to drain the refrigerant to the outside in case of failure of the plate heat exchanger in the pump.
- A non-return valve must be installed at the water inlet of the heat pump.
- Do not install heat pumps in aggressive environments or in environments with higher salt content in the air!

- If the condensate is discharged into the waste pipe, it must be at a non-freezing depth on the pipe or inside the building where there is no risk of freezing, a siphon must be placed!
- Do not install heat pumps in ventilation systems!
- Do not constrict or obstruct the sides of the heat pump!
- Never start the heat pump when the fan cover is removed!
- Installation, maintenance and repairs must only be carried out by authorised installers.

  (*see chap. 9*).

2.1.5 Risk of death by electric shock

- Before opening the heat pump or carrying out work on electrical parts, disconnect the mains voltage completely and take precautions against accidental switching on.
- Have only a qualified electrician carry out the electrical connection and work on the electrical parts.
- When installing and carrying out electrical work, follow the relevant EN, VDE or locally applicable safety regulations.

Electric shock warning!

- Only carry out all electrical installation work and electrical connections in accordance with national and local regulations.

Electric shock warning

- The connection to the mains must be made as a fixed connection only.
- The device must be able to be disconnected from the mains at all poles at a distance of at least 3mm.
- This requirement is met by the use of circuit breakers, switches, fuses, etc.
- If current protectors are required by local regulations, these type B protectors must be sensitive to all types of currents (RCDs).

2.1.6 Danger of injury due to icing

At the air outlet of the heat pump, the air temperature is about 5 °C below the ambient temperature, so the surroundings can be icy and slippery.

2.2 Service inspections and maintenance

The operator is responsible for the safety and environmental compatibility of the heat pump. If refrigerant leaks from a leaky area, personal injury or environmental damage may result.

If you find a leak that is leaking refrigerant, disconnect the heat pump from the power supply. Inform customer service.

RISK OF INJURY! Only authorised refrigeration technicians may work on the refrigerant circuit, see chap. *9.*

2.2.1 System modifications

Before you change the control system settings, find out what these changes mean first! Do not make design changes that could affect the safe operation of the heat pump!

Only authorized installers may modify the following components:

- Heat pump unit
- Refrigerant and water piping, supply

2.3 Damage protection

Never stick foreign objects into the outdoor unit of the heat pump! The heat pump operates in intermittent automatic operation, the fan runs at high speedand injury may result.

2.3.1 Water quality and volume

All water (including heating water) must meet the parameters for drinking water according to Commission Directive (EU) 2015/1787, however, in addition, the maximum total hardness must be less than 1.25 mmol/l, the chloride content below 85 mg/l and the pH in the range of 6.8 to 8.0.

Table 1: Water volume in the plant

Subtype	Grandis-L16	Grandis-L18	Grandis-L21
Volume of water in the device [l]	2,76	2,76	2,76

2.3.2 Stainless steel water tanks

The Acond heating system can be fitted with a stainless steel vessel for heating water accumulation or a stainless steel hot water storage tank (hereinafter referred to as vessels). Although these are they are stainless steel vessels, they are not maintenance-free! Instructions for installation and maintenance of the vessels are given in in the documentation **Storage Vessels, Hot Water Storage Tanks**, which is included in the delivery of the vessels.

The tanks are designed for heating water accumulation and as a drinking water storage tank. For water requirements *see 2.3.1* .

The vessel must not be put into operation and further operated without a fully functional **safety valve**. The maximum possible operating pressure of the vessel is 0,6 MPa.

Occasional leakage of water from the safety valve during hot water heating is a normal phenomenon caused by thermal expansion of water (about 10l per week). Continuous water leakage indicates a faulty safety valve and causes large energy losses.

If the system is equipped with full DHW heating and the DHW tank is not filled with water, it is necessary to disconnect the DHW circulation pump from the power supply, otherwise there is a risk of damage!!

2.4 Technical data

The following technical data and performance parameters are for the average climate and for the unit with clean heat exchangers!

Table 2: Technical data

Model	Grandis-L16	Grandis-L18	Grandis-L21
Supply voltage code; protection*)	3~N/PE/400V/50Hz; B25A	3~N/PE/400V/50Hz; B25A	3~N/PE/400V/50Hz; B25A
Maximum current [A]	23	23	23
Start-up current [A]	<5	<5	<5
Degree of protection of the outdoor unit	IP24	IP24	IP24
Degree of protection of the indoor unit	IP20	IP20	IP20
Dimensions (HxWxD) [mm]	1357x1792x742	1357x1792x742	1357x1792x742
Pump weight [kg]	283	283	283
Pdesign [kW] **)	16	18	22
Maximum heat loss of the building [kW] ***)	28	28	28
Refrigerant	R290	R290	R290
Refrigerant weight [kg]	2,6	2,6	2,6
Maximum permissible pressure - high pressure section [bar]	30	30	30
Maximum permissible pressure - low pressure section [bar]	30	30	30
Acoustic performance at A7/W55 [dB(A)]	47,9	50,2	52,5
Air temperature limits [°C]	-25 to 38	-25 to 38	-25 to 38
Water temperature limits [°C]	20 to 75	20 to 75	20 to 75
Minimum water flow [m^3/h]	1,1	1,1	1,1
Maximum water flow [m^3/h]	5	5	5

*) follow local regulations
**) medium-temperature applications (A-10/W55) according to EN 14 825
***) the building losses (at -15°C) must include DHW heating, pool heating if fitted. For these maximum losses it is necessary that the bivalent controlled source has an output of at least 14kW.

Table 3: Performance parameters of EN 14 511 nominal conditions

Subtype	Grandis-L16	Grandis-L18	Grandis-L21
Heating power A7/W35 [kW]	11,41	13,15	16,69
COP A7/W35 [1]	5,14	5,16	5,15
Heating power A7/W55 [kW]	10,2	11,77	14,98
COP A7/W55 [1]	3,17	3,21	3,28

Table 4: Performance parameters, equithermal control

Subtype	Grandis-L16	Grandis-L18	Grandis-L21
Heating capacity A12/W27 [kW]	7,12	7,13	7,14
COP A12/W27 [1]	9,57	9,58	9,6
Heating capacity A7/W27 [kW]	6,03	6,51	7,38
COP A7/W27 [1]	7,35	7,38	7,59
Heating capacity A2/W30 [kW]	8,35	10,12	11,31
COP A2/W30 [1]	5,31	4,59	4,26
Heating capacity A-7/W34 [kW]	13,71	16,7	18,5
COP A-7/W34 [1]	3,34	3,22	2,71
Heating power A12/W34,8 [kW]	7,04	7,05	7,05
COP A12/W34.8 [1]	7,96	7,97	7,99
Heating power A7/W36 [kW]	5,54	6,23	7,67
COP A7/W36 [1]	5,33	5,35	5,45
Heating capacity A2/W42 [kW]	8,62	9,69	11,85
COP A2/W42 [1]	3,81	3,79	3,22
Heating capacity A-7/W52 [kW]	14,49	15,92	19,42
COP A-7/W52 [1]	2,52	2,49	2,24
Heating capacity A-10/W35 [kW]	5,49	5,07	4,75
COP A-10/W35 [1]	4,03	4,02	3,62
Heating capacity A-10/W55 [kW]	7,12	7,13	7,14
COP A-10/W55 [1]	9,57	9,58	9,6
SCOP W35 [1]	6,03	6,51	7,38
SCOP W55 [1]	7,35	7,38	7,59

Table 5: Flow rates for nominal conditions according to EN 14 511

Subtype		Grandis-L16	Grandis - L18	Grandis - L21
A7/W35	Fan speed [1/min]	370	370	370
	Water flow [m^3 /h]	1,97	2,27	2,89
	Pressure difference [kPa]	-2,29	-3,07	-5,16
A7/W55	Fan speed [1/min]	370	370	370
	Water flow [m^3 /h]	1,1	1,27	1,64
	Pressure difference [kPa]	-0,8	-1	-1,37

2.4.1 Operating conditions of the heat pump

The conditions listed in this paragraph must be met for proper operation of the heat pump. If these conditions are not met, auxiliary heating rods will be attached or the heat pump will be completely shut down and heated only by heating rods.

- The temperature of the water returning from the system must be at least 20°C. If the return temperature is lower (e.g. when the heat pump is first started or after a longer shutdown and start-up in a cooled building), the auxiliary heating rods will be started at the same time as the heat pump.
- The minimum room temperature setting is related to the minimum return temperature condition. For systems without a storage tank, the minimum possible setpoint is 15°C, for systems with a storage tank, the desired temperature of the heated building can be lower (antifreeze - at least 10 °C).
- The control maintains the set room temperature with a tolerance of +/- 0.5°C. To stabilize the control
  after a significant intervention occurs within 24 hours for underfloor heating, or within 12 hours for a system equipped with radiators. A change of the desired room temperature by more than 1.5°C, switching on the system, failure of one of the temperature sensors, change of the type of control, etc. is considered a significant intervention in the control.
- At lower outdoor temperatures, if the heat pump is not performing sufficiently well, the auxiliary heating rod is switched on or the heat pump is switched off and all fitted heating rods are switched on.
- In the summer, high outdoor temperatures (>28°C) can cause the DHW heating to fault A01 - high pressure. In this case, we recommend lowering the desired DHW temperature.
- For the AcondTherm control to work properly, the heating system must not be in the room with a room thermostat must be equipped with thermostatic heads or other overriding controls. If this is not complied with, we recommend using an Ekviterm or Standard control (*see chap. 3.2.6 on page 31*).

If the outlet temperature of the heat pump is below 18°C, there is a risk of condensation! For this reason, the temperature in the heating system cannot be set lower than 18°C, thus limiting the temperature of the water that can be used to cool the living space.

2.5 Description of the heat pump operation

2.5.1 Heating

A C The OND® heat pump generates heat energy for the house according to the current demand. The hot water is heated continuously or according to a DHW heating schedule. If the average outdoor temperature (average over 3 days, temperature measured in the morning, noon and evening) rises above the "End of heating" value, the heating of the house stops.

When heating a very cold object, the auxiliary heating rod (bivalence) is switched on. When the return temperature from the system rises above 21°C, the heat pump runs according to the set mode (*see chap. 3.2.7 on page 32*).

2.5.2 Cooling

If the installation is designed for cooling and is not activated during installation, it is possible to contact customer service to request activation of cooling in the heat pump parameters. After activation, the CHP mode must be changed to cooling (CHL). However, switching to this mode is only possible if the CHP is in summer operation, i.e. the average outdoor temperature of the last 3 days has exceeded the value for the end of the heating season.

Cooling starts if the required temperature of the plate heat exchanger outlet is exceeded by the specified hysteresis. Conversely, cooling will stop if the outlet temperature drops below the requirement. Another condition for the cooling to stop is that the return temperature must be lower, than the required outlet temperature increased by a hysteresis of 3 °C.

*Cooling will not occur if the CH is in winter mode, if the temperature at the plate heat exchanger is too low (error A07), if the temperature at the intake is too low (error A18), or if there is any error that shuts down the compressor for heating.
*can be classified in the faults section

2.5.3 Defrosting

During the operation of the air heat exchanger (evaporator) is cooled by the subcooled refrigerant and is covered with frost due to the humidity of the outside air. Therefore, an automatic defrost function is included in the operation of the ACOND® heat pump to defrost the air heat exchanger.

The defrost sequence is triggered when the evaporator temperature of the outdoor unit drops below the set point. The four-way valve in the refrigerant circuit switches the direction of refrigerant flow and the fan stops. The warm refrigerant does not heat the condenser (plate/tube heat exchanger), but instead heats the frost on the air heat exchanger. This process stops when the evaporator temperature reaches the set temperature. The four-way valve reverses the direction of refrigerant flow and the heat pump again generates thermal energy for the heating system.

During defrosting, the direction of refrigerant flow is changed, the air heat exchanger becomes a condenser and the condenser for heating the heating system becomes an evaporator. For a short period of time, the sound of the heat pump is changed, which is caused by switching the direction of the refrigerant flow and changing the pressure ratios in the refrigerant circuit.

When defrosting the evaporator, heat energy is extracted from the heated heating system of the house. A storage tank is used to balance the temperatures.

For proper defrosting of the outdoor unit, the minimum return water temperature is and the minimum temperature in the storage tank is set to 20°C.

2.5.4 Adverse climatic conditions

High humidity and temperatures just below zero for very long periods of time can cause the grille and fan surroundings to freeze. This is not a malfunction but a physical phenomenon. It may be necessary to temporarily stop the heat pump with the main circuit breaker and very carefully remove the frost mechanically.

2.5.5 Summer/winter switching

In summer, the heat pump switches on if the system is fitted:

- full DHW heating and the DHW temperature drops below the set point
- with a storage vessel that allows preheating of DHW, and the preheating option is selected in summer - then the temperature in the storage vessel is maintained at 45 °C.

Summer/winter mode switching occurs according to the set average outdoor temperature or by clicking on the sun/snowman symbol. Average outdoor temperature value is calculated as the average of the morning, midday and evening outdoor air temperature over the past 3 days.

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3 Heat pump control

Control of the heat pump is possible:

1. using a web browser via www.acond.cz if the heat pump control is connected to the Internet - chapter *3.2*
2. via a direct connection at the installation site on the local network - chapter *3.2.2.3*
3. via the indoor unit in the reference room - chapter *3.1*

3.1 Heat pump control via indoor control unit

3.1.1 Interior control unit C-ID

The C-ID indoor control unit is used to display and set the room temperature, return water temperature, DHW temperature (if fitted), to set the control mode and type, to display the heat pump status and the outdoor temperature.

Warning! The indoor control unit must be placed on the wall so that it is freely accessible - i.e. it must not be covered by furniture, curtains, etc. If covered, there is a risk of impaired room temperature control and associated higher heating costs.

The HDO vt symbol on the display shows the current status of the HDO, while the symbols on the web page show the blocking of individual components, i.e. this information may differ, if HDO monitoring is not checked on the information page, the component blocking symbol will not appear, even if the tariff is high, but the C-ID display shows HDO vt.

3.1.2 Meaning of the individual symbols of the C-ID control unit panel

C-ID	Symbol	Description
	AT	AcondTherm regulation
	EKV	Regulation of Equiterm
	STD	Regulation Standard
	Car	Automatic mode

C-ID	Symbol	Description
	**Tch**	Heat pump mode
	Biv	Bivalence mode
	Chl	Cooling mode (if equipped)
	Man	Manual mode
		Off mode
	HDO vt	If the symbol is lit, a high electricity tariff is in effect
		The outdoor temperature has reached the end of heating - summer operation parameter
		Winter operation
		If there is a fault on the device, the display will show a panel with a description of the fault. The fault indication is also displayed on the main panel.
		"Holiday" mode according to the timetable
		Outdoor temperature
		The desired temperature is currently governed by the timetable
		Degrees Celsius
		System circulator
		Defrosting the outdoor unit
		Domestic hot water heating

C-ID	Symbol	Description
		Bivalence on - stage 1 and 2
		Outdoor unit compressor
		Outdoor unit fan
		Brine circulation pump
		Plate heat exchanger circulation pump

3.1.3 Basic display

In the basic view, the display shows the **current temperature in the room**, the type of control, the current mode, or the symbol for a fault. Pressing any button on the display takes you to the main panel.

Note: The display will automatically return to the basic display after 2 minutes of inactivity.

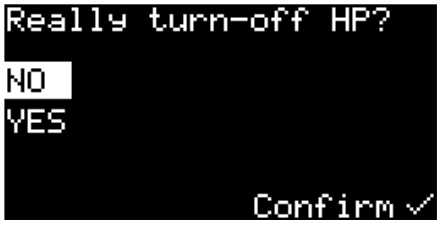
3.1.4 Main panel

The main panel displays the current room temperature, the outside temperature, the control type, the current mode and some of the other symbols, the meaning of which is described in chapter *3.1.2*.

3.1.5 Display control

Use the up and down arrows (Λ,V) to switch between the different display panels.
The right arrow (>) is used to move to the parameter settings.
The + / - buttons increase and decrease the desired temperature. Holding down these buttons changes the desired temperature more quickly. After seven seconds of holding the button steady, the temperature value stops. It is necessary to remove your finger from the button for two seconds and press again if necessary.
The left arrow (<) goes back from the previous panel. The settings from the previous panel will not be saved.
The OK button (✓) is used to confirm the request to change the settings.
Holding the **X button for** 1s returns from the other panels to the base panel.

3.1.6 How to switch on the heat pump:



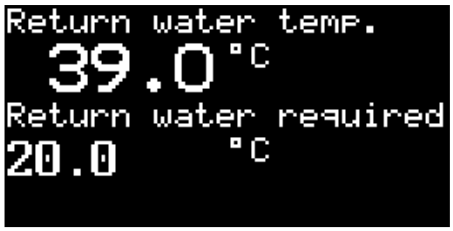
If the CH is switched off, the display shows the symbol and the temperature in the room. The up or down arrow can be used to toggle between the room temperature, return water temperature, DHW temperature (if fitted) and outside temperature displays. The DHW is switched on by pressing the ✓ button, which brings up the DHW confirmation panel. After switching on, the CH is in automatic mode.

3.1.7 How to set the desired room temperature:

To set the desired room temperature, go to the main panel by holding down the **x** button and pressing the **>** arrow**, +/-** or ✓ buttons. The display will show the current room temperature setpoint. Press the **+** or **-** button to increase or decrease the setpoint temperature by 0.1 °C. Holding down these buttons changes the desired temperature more quickly. When your desired room temperature is reached, press the ✓ button. This will save the desired value and return it to the main panel.

The control normally maintains the set room temperature within a tolerance of +/- 0.5°C. This tolerance is exceeded only in exceptional cases (e.g. after a system restart, after a change in the desired temperature, after ventilation, etc.).

3.1.8 How to find and set the return water temperature



Use the up or down arrow button to scroll to the Return Water Temperature panel. The actual return water temperature and the desired return water temperature will be displayed. If the control is set to Standard, you can change the desired return water temperature: press the **>, +/-** or ✓ arrow button. The display will show the current desired return water temperature, use the +/- buttons to change the temperature value. When the desired return water temperature is reached, press the ✓ button. This will save the desired value and return you to the Return Water Temperature panel.

The return water temperature can only be set in **Standard (ST)** mode.

3.1.9 How to find and set the DHW temperature

The DHW Temperature panel can only be displayed if DHW heating is fitted via a DHW heater. Use the up or down arrows from the main page to navigate to the DHW Temperature panel. The actual DHW temperature and the desired DHW temperature are displayed. Press the **>** arrow and the display will show the actual DHW setpoint, which can again be changed using the + and - buttons. Press the ✓ button when you have finished entering the desired DHW temperature. This will save the desired value and return the system to the DHW Temperature panel. The clock symbol on the right side of the panel indicates the blocking of DHW heating via the time schedule.

3.1.10 How to find out the average outdoor temperature and set the heating end temperature

Use the up or down arrow button to select the Average Outdoor Temperature panel. The average outdoor temperature for the last 3 days will be displayed and the value above which the heating season will be terminated. **Press the >** arrow **to display** the average outdoor temperature value for the end of the heating season. The + and - buttons can be used to change the value. Press the ✓ button **to save the** desired value and return to the Average outdoor temperature panel.

Note: For more information see chap. 2.5.5.

3.1.11 How to set the outlet water temperature for cooling

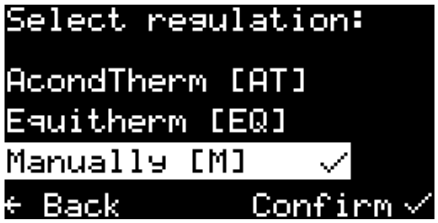
The panel Water temperature for **chlorine** can only be set with the up and down arrows in cooling mode, which can only be set in summer mode. It displays the current and desired temperature at the outlet of the CH. By pressing the **>** arrow, the desired temperature at the CH outlet can be changed. The editing is finished by pressing the ✓ button. This saves the desired value and returns you to the Water temperature for chl panel.

3.1.12 Setting panel

In the Settings panel it is possible to change the type of control, switch the CH on and off and set the operating mode. Pressing the **>** arrow will display the menu with the individual options.

Use the up and down arrows to move between menu items, and the right arrow or ✓ button to select a menu item.

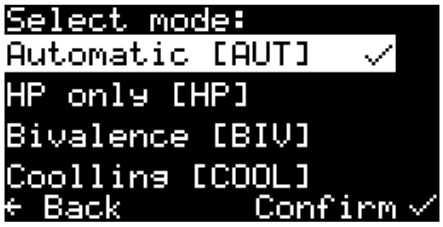
3.1.12.1 How to set the heat pump control type



After selecting the "Control selection" item, you can select the type of control. Move between the items again with the up and down arrows, select the item by pressing the ✓ button**.**

Note: For more on the description of the types of regulation, see chap. 3.2.6.

3.1.12.2 How to set the running mode of the heat pump



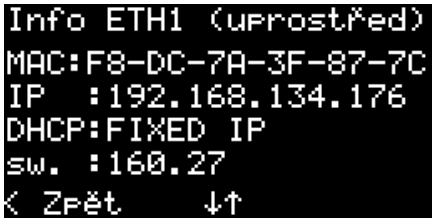
After selecting the "Mode selection" item, a menu is displayed with the selection of the operation mode of the CH. The cooling mode is displayed only in summer operation. To move through the menu items via the up and down arrows, the mode setting occurs by pressing the ✓ button. If the main panel or in the basic view, the **Man** mode is displayed, the heat pump is being serviced by a service technician.

Note: For more information on mode descriptions, see chap. 3.2.7.

3.1.12.3 How to turn off the heat pump

The item Switch off CH [OFF] in the settings panel allows you to switch off the CH.
After selecting it, a confirmation dialog will be displayed, after confirming "YES" the device will be switched off.

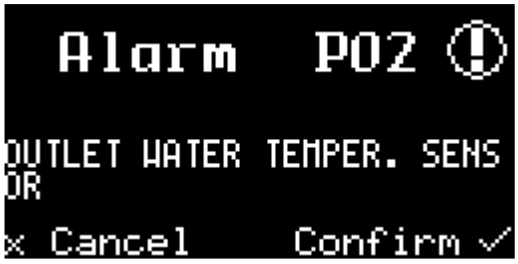
3.1.12.4 Display Ethernet interface information



In the Settings Panel it is possible to call up information about the ETH channel through which the TC is connected to the local network. This information can be useful for the technician renewing the connection of the CH to the Internet.

Note: ETH1 is used only for connecting the service technician, ETH2 is used for connecting the CH to the internet.

3.1.13 Display, fault confirmation



If a fault occurs on the heat pump, the display The fault code panel, the symbol and a short description of the fault are displayed immediately. The fault can be acknowledged (confirmed) by pressing the ✓ button. If the problem persists, the TC will start. If the fault persists, the fault cannot be acknowledged. To set/control the operation of the heat pump components, display temperatures, etc., press the **x** button to go to the standard panels. After 20s of inactivity, the fault panel is displayed again.

Note: For more information about the faults, see chap.4 .

3.2 Control via web interface

3.2.1 Connecting the heat pump to the internet

The connection of the heat pump to the internet will be made by a service technician when the heat pump is installed or later via the Acond service phone line. When logging in, users access to a web server with a heat pump database.

If the heat pump is assigned a fixed IP address when it is installed at the customer's site, be sure to maintain the original address space when replacing the router or modem in the home network. Any service call to reset the IP address of the heat pump will be charged according to the current company price list.

3.2.2 Login to the system

3.2.2.1 Via the website www.acond.cz:

In the address bar of your web browser (Google Chrome, Firefox, Internet Explorer, etc.), type the address: www.acond.cz . *Fig 1*).

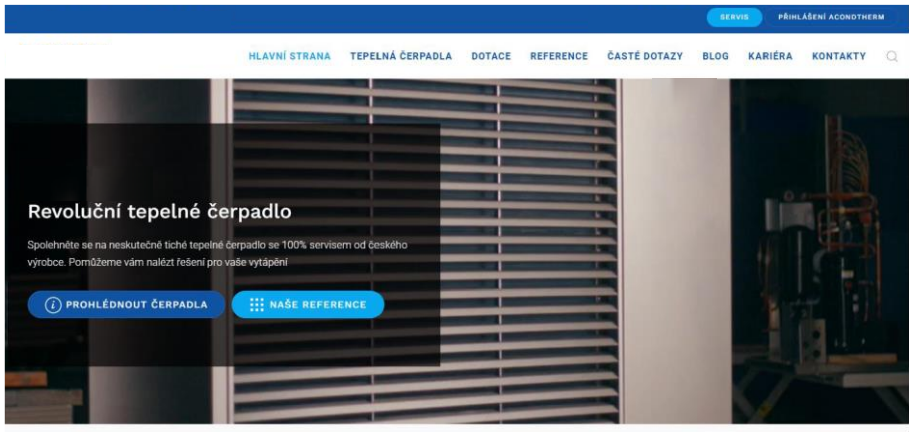


Fig 1 Acond a.s. website with heat pump login (Link top right)

Click on the ACONDTHERM LOGIN sign in the upper right and a page with a login table will appear, *see Fig 2.*

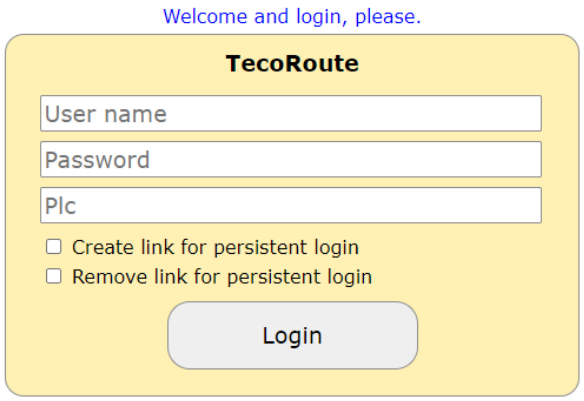


Fig 2 Login page to the TecoRoute system

The login details (username and password) will be supplied by the installer when the heat pump is handed over.

Type your login name in the **Username field**.

Type your password in the **Password field**.

Leave the PLC name field **blank**.

After entering, press Enter or the Login button. The heat pump menu screen will appear, (*see Fig 3*) to which you are allowed access (the list opens when you click on the arrow in the right edge of the heat pump name bar). Select the appropriate heat pump and click on the Select button or press the Enter key.

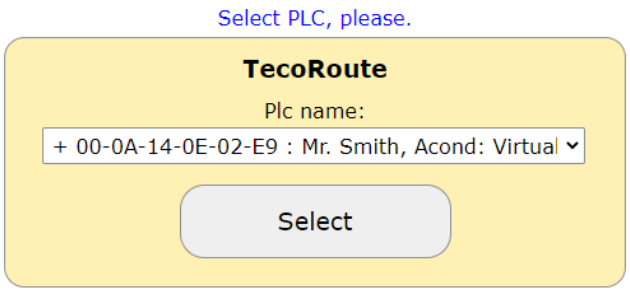


Fig 3 Choosing a heat pump

The heat pump login page is displayed (*see Fig 4*).

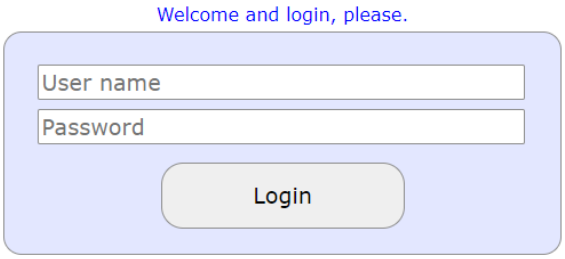


Fig 4 Logging in to the heat pump

Enter acond in the **Username** and **Password** fields (factory default - you can change the username and password on the Information page, *see chap. 3.2.12 on page 36*).

Confirm your name and password by clicking the Login button or the Enter key and the main page will be displayed - *see Fig 5*.

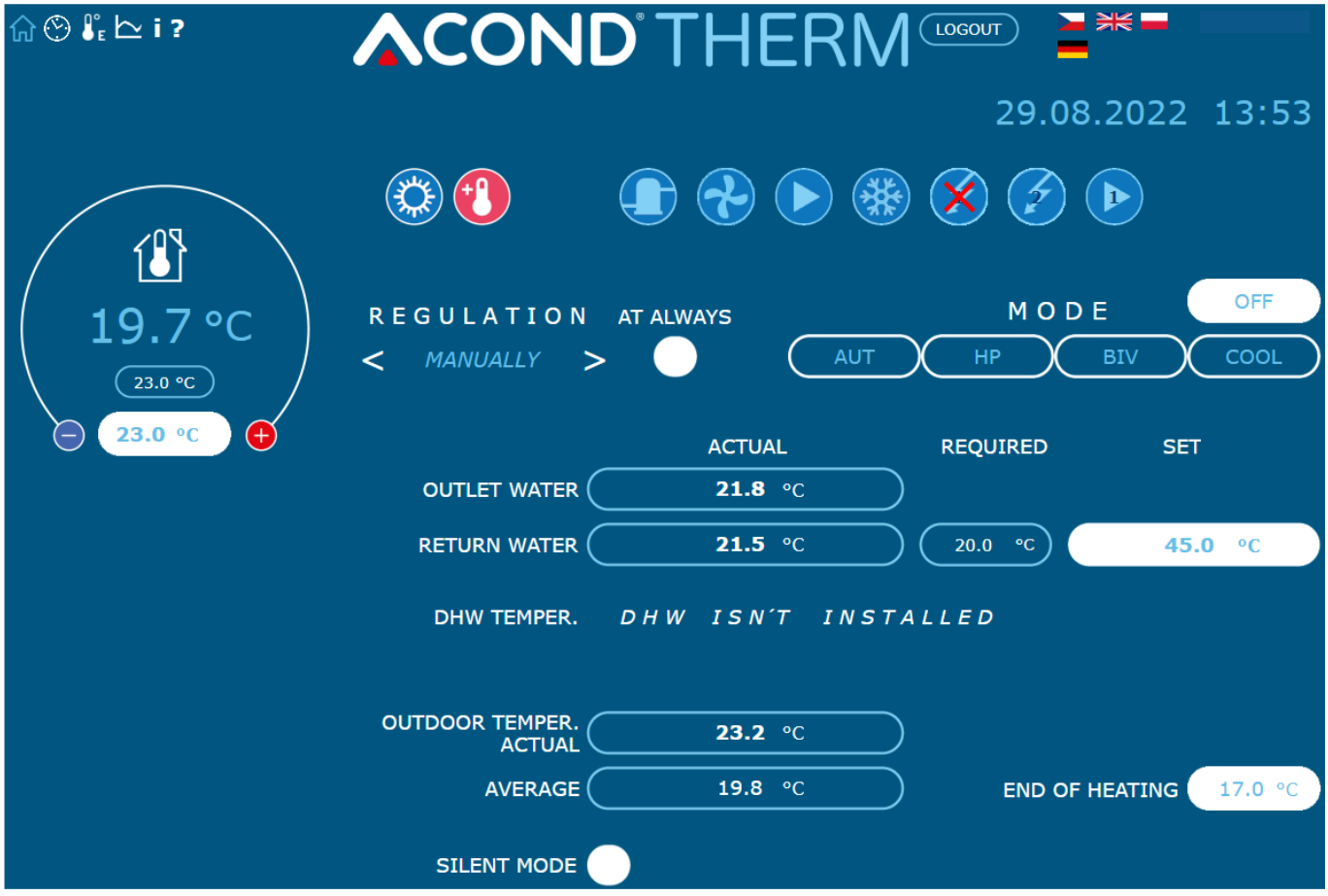


Fig 5 Main page of the web browser

Values that are bordered by a white oval, or are white backlit, can be edited (changed).

3.2.2.2 Establish a permanent connection to TecoRoute via a line

After entering your name and password and displaying the login page to the TecoRoute server (*see Fig 2*), you can check the "Create a link for permanent login" checkbox to facilitate the next login. A web page with a table will appear*, see Fig 6.* This page should be bookmarked or saved to the desktop or browser bar. After pressing login, the pump login page appears (*see Fig 4*) and continue with the previously described procedure.

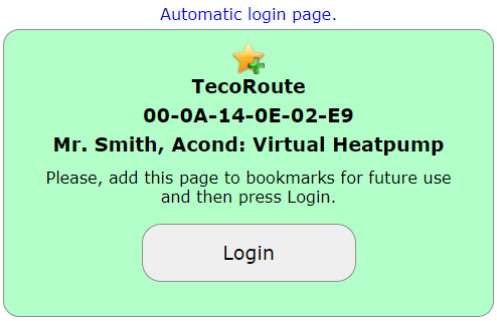


Fig 6:Creating a permanent link to log in to the heat pump website

3.2.2.3 On the local network:

Enter the IP address of the heat pump (supplied by the installer) in the address bar of your web browser (Google Chrome, FireFox, Internet Explorer, etc.). A login web page will appear - *see Fig 4.*

Enter acond in the **Username** and **Password** fields (factory default - you can change the username and password on the Information page, *see chap. 3.2.12 on page 36*).

Confirm your name and password by clicking on the Login button or the Enter key on the keyboard and the main page will appear - *see Fig 6.*

3.2.3 Homepage

In the left part of the upper web page there is a menu for selecting individual subpages with heat pump parameters.

1. **Home page** (*Fig 5*) is displayed after logging in to the system and any time you click on the little house icon.
2. **Timetables** *(Fig 13)* allows setting the value of the automatic change of the desired room temperature (or temperature in the storage tank in STANDARD control) according to the time of day. Here it is possible to implement e.g. a night temperature drop.

3. **The equithermal curve** allows you to change the parameters of the equithermal control.
4. **Graphs** the display of the return temperature, room temperature and DHW temperature for the last 24h.
5. **Information** list of service information - data about the user, installed software version, heat pump type, HDO settings, etc.

3.2.4 The meaning of the pictogram (symbols)

Below the heat pump mode selection, there are pictograms showing the status of the heat pump system components. The following table describes the meaning of each pictogram.

Table 3: Meaning of pictograms used on the heat pump main page

pictogram	Status	pictogram	Status	Description
	Inactive		Active	Heat pump compressor
	Inactive		Active	Heat pump fan
	Inactive		Active	Circulator Heat Pump
	Inactive		Active	Defrosting the heat pump
				Winter/summer operation
	Heating		Cooling	Heating/cooling mode display (if cooling is fitted)
	Inactive		Active	Heating system circulator (only in case of installed storage tank and pump in the heating system)
	Inactive		Active	Circulation pump of the 2nd circuit of the heating system (only in case of installation of the 2nd heating circuit)

pictogram	Status	pictogram	Status	Description
	Inactive		Active	Domestic hot water heating via heat pump (hydrobox) or heating rod (preheating, electric boiler)
	Inactive		Active	Bivalence - switching of auxiliary electric heating rod
	Blocked	The crossed-out flash symbol is displayed if the bivalence is not fitted or cannot be triggered at the moment. A locked bivalence occurs when the compressor is triggered. Due to the overall protection of the technology, it is not possible to run the compressor and both bivalences simultaneously (only the first stage of the bivalence can be operated simultaneously with the compressor).		
		HDO	Active	Symbol indicating a higher electricity rate (appears on the component if it must not be started on a higher tariff*, see chapter 3.2.12*)

3.2.4.1 Summer/winter operation

The symbol of the snowman indicates the winter season, when heating of living spaces and hot water is active. The sun symbol indicates summer, when the heat pump only heats domestic hot water (if fitted) or maintains 45°C in the storage tank for DHW preheating (the option is located in the middle of the main page at the bottom). In summer mode, the cooling mode can be set. For more information see *chap. 2.5.5 on page 16*.

The end of the winter season will occur when the average outdoor temperature rises above the End of Heating Season value shown on the main website. Clicking on the snowman/snowflake symbol will switch the system to summer/winter operation.

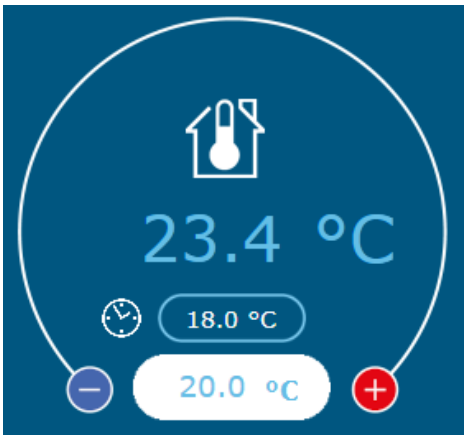


Fig 7 Temperature settings

3.2.5 Setting values

In the left part of the web interface it is possible to edit (change) the desired temperature in the room, or in the rooms (if more room thermostats are installed), by clicking in the space field it is possible to change the value. The largest blue value shows the current temperature in the room with the room thermostat fitted, the smallest value in the blue oval shows the desired value in the room, which can be may differ from the value in the white box (if the room temperature schedule is active).

The clock symbol next to the desired room temperature value indicates that the desired temperature in the room is governed by the value set in the room temperature schedule

(*Ch. 3.2.11 on page 34*)**.** If the symbol is not displayed, the desired value is determined by the value entered in the white input field on the main page.

In the middle part, the temperatures are displayed - the sensor values, the desired values of these temperatures and the changeable values in the white fields. In the case of **STANDARD** control (*Kap. 3.2.6 on page 31),* the desired water temperature in the bottom of the accumulator vessel is entered here, e.g. water returning from the heating system. In the case of the selected **Ekviterm** or **AcondTherm** control, this value is calculated from the outside temperature or room temperature and cannot be changed manually.

After entering the value it is necessary to confirm the change by pressing the **ENTER** key or by clicking the mouse on the arrow in the right part of the white input field.

The Acond Therm® control normally maintains the set room temperature within a tolerance of +/- 0.5°C. This tolerance is only exceeded in exceptional cases (e.g. after a system restart, after a change in the desired temperature, after ventilation, etc.).

When selecting the DHW **PREHEATING** option, the temperature in the storage tank is maintained at 45°C in summer for heating domestic hot water.

When **ANTISEPSE OPTION** is selected, the boiler is disinfected once a week by heating to 60°C. Antisepsis can also be triggered once by clicking on the **START** sign if antisepsis is enabled.

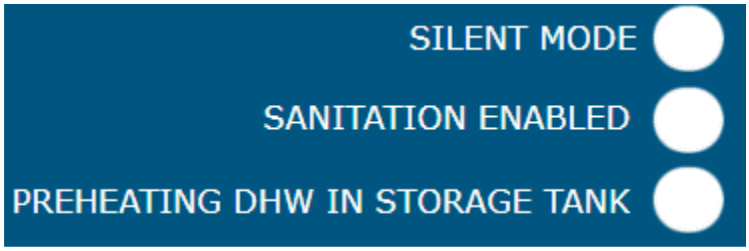


Fig 8 TUV - antisepsis

When selecting the **QUIET MODE of the CHP**, it is possible to specify the time when the fan speed will be reduced due to the noise of the heat pump. In summer, as soon as the outside temperature exceeds 17°C, the speed is reduced automatically.

3.2.6 Choosing a control system

Fig 9: Choice of control system

The control system can be selected on the home page using the right and left arrows *(Fig 9).*

3.2.6.1 AcondTherm®

The most economical and comfortable control system. The pump calculates the lowest necessary heating water temperature according to the needs of the building. This system is the most economical control option and saves 15 to 35% energy compared to other systems. The "**AT Always**" checkbox ensures that the system will go into AcondTherm® control each time it restarts after a power failure.

For proper operation of the AcondTherm control, the heating system in the room with the space thermostat must not be equipped with thermostatic heads or other overriding controls. If this is not complied with, we recommend using an Ekviterm or Standard control.

3.2.6.2 Equiterm

The temperature of the water in the heating system is determined by the outside temperature. The disadvantage of this control is that the curve of the required return water temperature must be set so that even in the worst outdoor conditions (wind, rain, snow) it ensures the desired air temperature in the building. This usually makes it unnecessarily high, causing an increase in electricity consumption.

3.2.6.3 Standard

Set constant temperature of heating water in the heating system - this option is mainly for service purposes or for the installation of temperature control in rooms by the parent system.

3.2.7 Control mode selection

On the home page, next to the regulation option *(Fig 9),* you can also set the control mode.

3.2.7.1 Automatic selection - AUT button

Automatic system selection favours the operation of the heat pump. If necessary, a bivalent source of heat energy is attached - electric heating rods.

3.2.7.2 Heat pump - DH button

With this option, only the heat pump can be operated. The bivalent source (heating rods) is blocked and is only started in the event of a serious equipment failure.

3.2.7.3 Bivalent source - BIV button

Only the operation of a bivalent source - heating rods - is allowed for heating.

3.2.7.4 Cooling - CHL button

In summer mode, the cooling mode (if fitted) can be activated. When pressed, the "Water temperature" value is displayed next to the in desk. Exchanger", a window appears for entering the desired water temperature for cooling.

3.2.7.5 Off - OFF button

The entire system shuts down, including the circulation pumps. The anti-freeze is maintained in the off mode - if the water temperature in the outdoor unit drops below 7°C, the primary circuit circulator is switched on. If the temperature drops further, the heating rod may also switch on.

3.2.8 Solar panel

To operate the solar panels, use the Solar window, which is called by clicking on the Solar icon located at the bottom of the main screen *(Fig 10).*

Fig 10: Solarium window

The solar circulator runs when the temperature of the solar panel exceeds the temperature in the storage tank by at least 8°C. It shall stop if the temperature of the solar panel exceeds the temperature in the storage vessel by only 3 °C or less, or if the temperature in the storage vessel is greater than 80 °C.

If the heating system is not equipped with solar panels, the Solar button will not appear in the bottom bar.

3.2.9 Swimming pool

To operate the pool, use the Pool window that appears when you press the Pool icon at the bottom of the main screen (*Fig 11*). If the system is not equipped with a pool, the Pool button will not appear in the bottom bar.

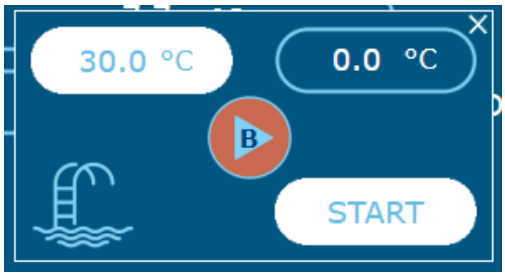


Fig 11: Pool window

When the pool heater is switched on, the temperature of the return line (storage tank) is set to 45°C. The pool is heated only when the living rooms and the heated DHW are heated.

3.2.10 Fault display

Fig 12 Fault display on the web page

In the event of a malfunction, an exclamation mark appears next to the AcondTherm logo on a red background. After clicking on the exclamation mark icon, a description of the fault is displayed with an OK button that can be used to confirm the fault after it has been corrected (if the cause of the fault has passed) (*Fig 12*).

3.2.11 Timetables

When you click on the **Time Schedules** icon in the menu of the web page, tables are displayed in which you can enter the time periods during which the temperature entered in the white box below is valid. Similarly, it is possible to set up time schedules for the heating water temperature and the behaviour of the DHW during holiday periods. Links to these time schedules can be found in the bottom right corner of the page.

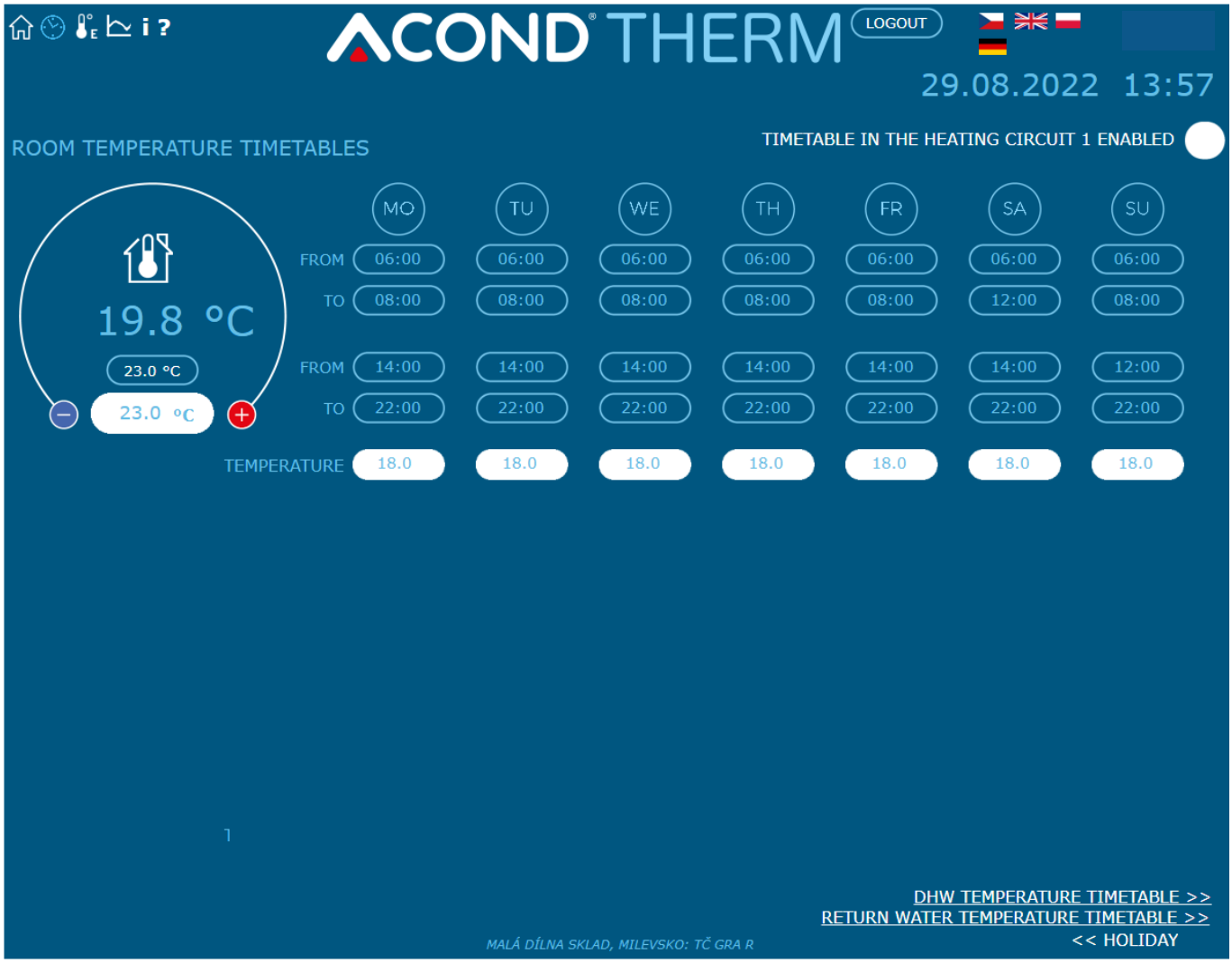


Fig 13 Room temperature schedule

3.2.11.1 Circuit1, Circuit2, Heating water

For each day it is possible to enter 2 time periods in which the room temperature (heating water temperature) will be in STANDARD control) will be controlled to the value in the white oval below the corresponding times in this table. At the top of the table it is possible to select whether the heat pump will be controlled by the time schedule - if the box is left unchecked, the device ignores the set times and independently of the time heats the building to the setpoint temperature value entered on the main page. The holiday date overrides this option, it is always valid.

At the bottom of the page, you can enter the holiday date and the temperature to be maintained in the room during the holiday. It is also possible to enter the DHW temperature during the same period. The holiday in progress is displayed at the top of the main page. If the heating system is composed of several independent heating circuits with separate settings, each circuit follows its own schedule.

3.2.11.2 DHW timetable

When you click on the TUV Schedule link at the bottom right of the web page, a table will appear (*see Fig 14*), to enter the 2 time periods in which DHW heating will be enabled. At the top of the table, an option is made available to select whether the heat pump should follow the displayed time schedule. If the box is left unchecked, the device ignores the set times and DHW is heated as required regardless of time.

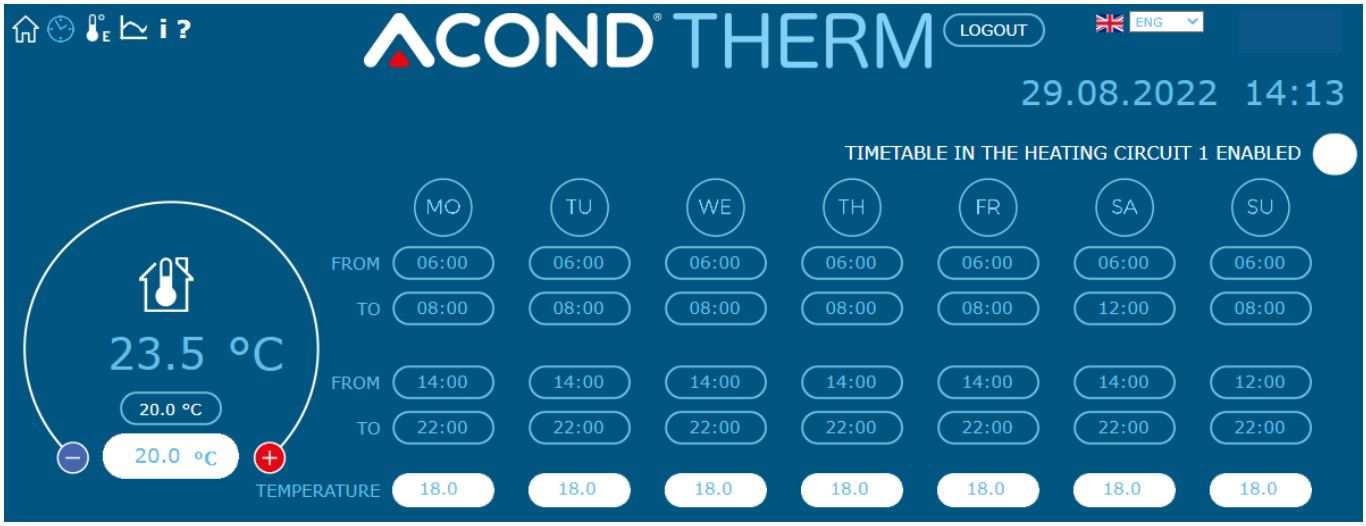


Fig 14 DHW heating schedule

Caution, if the heating times are set so that heating does not occur at all or only for a short period of time (on time = off time) and the DHW container is placed in an unheated room, the container may freeze in winter!

Note that the day starts at 0:00 and ends at 23:59, i.e. when requesting a time period ending at midnight, you must enter 23:59, not 0:00.

3.2.12 Information

The Information page contains basic information about the heat pump and its user, installation location and other information entered by the technician during installation. At the bottom of the page you can change the username and password to access the heat pump website and the system time. The username and password can contain a maximum of 10 characters, do not use diacritical marks (hooks, commas). Also on this page you will find the number of hours that the individual system components have been active.

On the right side of the information page there is a menu (*see Fig 15*) that allows the use of the HDO signal (=High-Density Remote Control, switching between cheap and expensive electricity tariffs). If you tick the

box "HDO switches off DHW heating", no DHW will be heated during the more expensive tariff. Similarly, if you tick the box "HDO switches off DHW for heating", the heat pump will not run during the more expensive tariff due to low temperature in the room and after ticking the last box "HDO switches off the bivalent for heating" the bivalent source will not run during the more expensive tariff. During the more expensive tariff period (if the HDO options are ticked), a shutdown icon will appear next to the icon of the respective heat pump component, see *Table 3: Meaning of pictograms used on the heat pump main page*. If the windows are empty, the heat pump and the bivalent heat source will run regardless of the HDO signal.

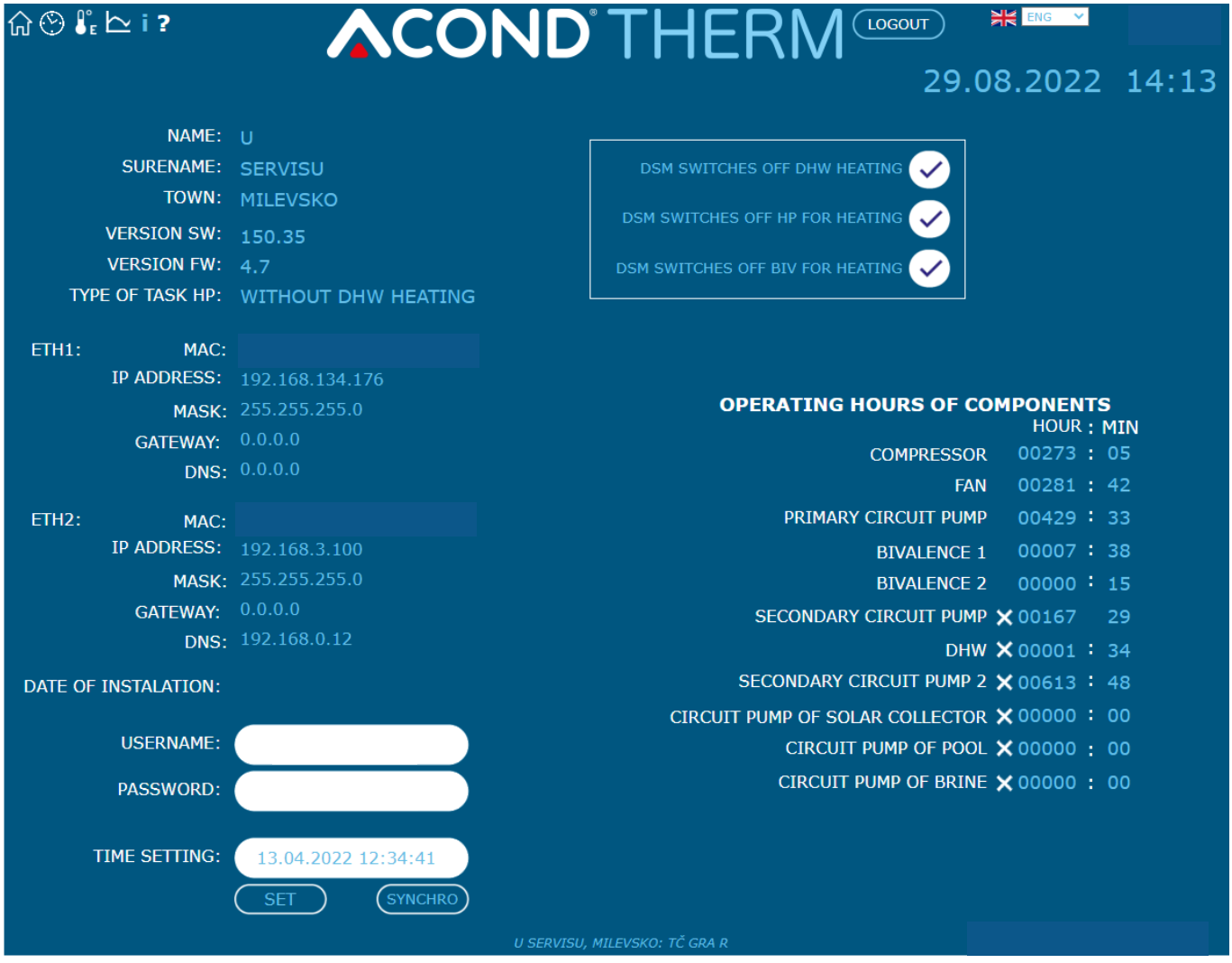


Fig 15 Information, HDO selection

3.2.13 Equithermal curve

Clicking on the link in the Equithermal Curve menu will display the table with the equithermal control settings (*see Fig 16*).

The numbers below the horizontal axis indicate the outdoor temperature of the breaks (points) of the equithermal curve, the numbers above the graph indicate the heating water temperature corresponding to these breaks (points). The number above the graph corresponds to the heating water temperature calculated according to the specified equithermal curve depending on the current outdoor temperature.

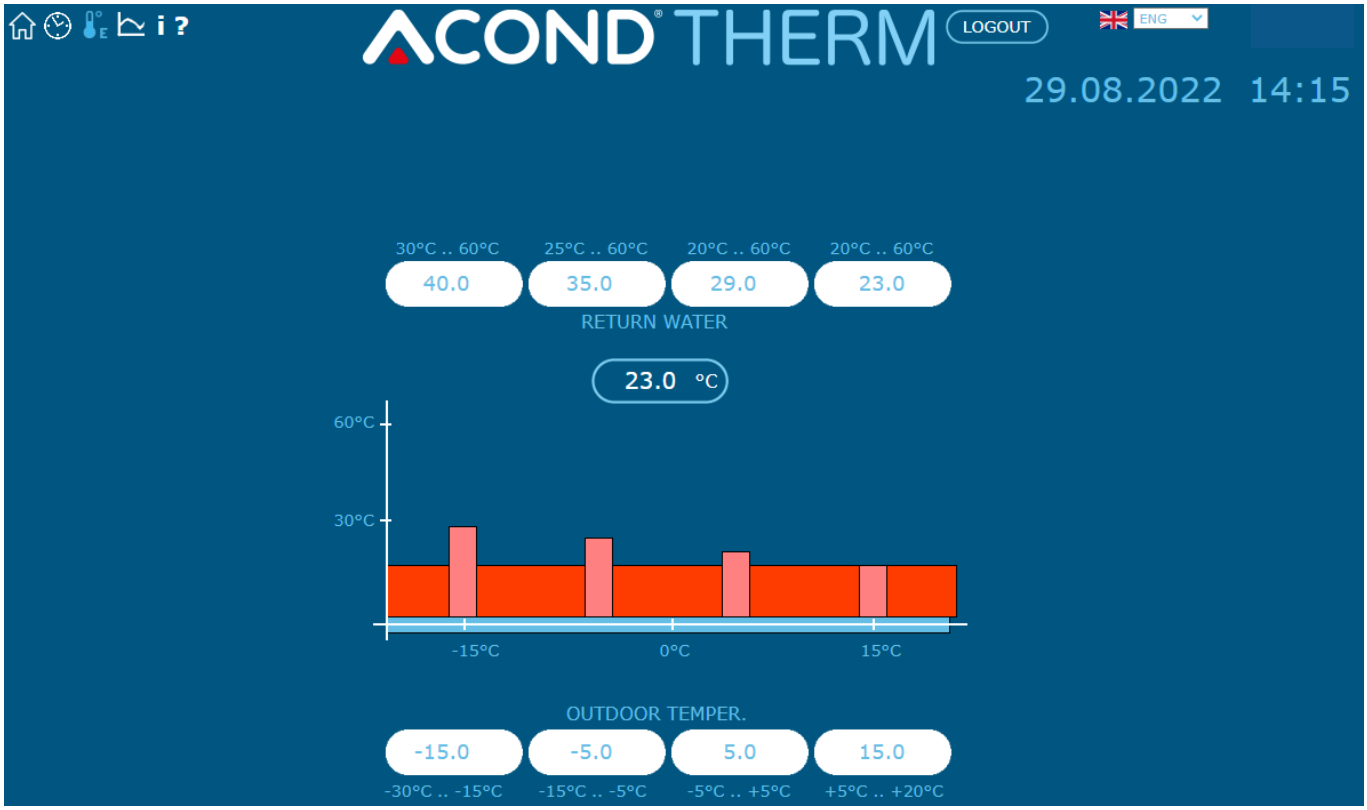


Fig 16 Equitherm control settings

3.2.14 Temperature histories

The page displays temperature trends for the last 24 hours. Next to the curve chart there is a legend with the curve colors of each waveform with checkboxes to enable/disable the display of the waveforms. The "Reset Data" button below the graph resets the data for the last 24 hours. The data is stored in a circular buffer, i.e. data older than 24h is replayed with new data. It is therefore not possible to display waveforms older than 24h.

3.3 Control via mobile app

3.3.1 ACOND®Therm basic mobile app

The ACOND®Therm basic application provides remote access to the control of heat pumps supplied by Acond a.s. It is available for download in AppStore and GooglePlay.

Main features of the app:

- heat pump status display
- display and change the temperature in the reference room, hot water, heating water
- change of summer/winter operation
- switching on/off of the solarium
- switching the pool heating on/off, displaying the current temperature
- changing the desired temperatures of the above components
- displaying and changing the type of control, switching the mode, switching the CH off/on

3.3.2 Operating system requirements

If the ACOND®Therm basic mobile app is to be operated on a mobile phone with Android operating system, Android 5.0 or higher must be installed on the device. For mobile phones with iOS, iOS 10.0 and higher is required.

3.3.3 User login

To monitor and control your Acond heat pump via your mobile phone, you must first log in to the app. **On the login page, enter the same username (Login) and password that you use to access the web app** (i.e. the one you received before you first logged in to the heat pump via the internet).

3.3.4 Home page

After a successful login, a signpost appears with a selection of other pages and a quick preview of the heating status. Click on the individual windows to select the system function you want to change, ev. monitor. Only the **functions (areas) that your heating system is equipped with are displayed**.

The **Heating** area allows you to change the desired room temperature, the **Return Water area** sets the desired heating water temperature when the Standard control is selected (see the "Operating Instructions" for more information), the **Boiler area** displays/changes the hot water temperature, the **Pool** and **Solar** control components related to heating the pool or using the solar panel. The **Operation** area allows you to change the summer/winter operation of the heat pump (for more information see "Instructions Operating instructions").

If **cooling** is fitted and cooling mode is set, the output temperature from the CH is entered and displayed instead of the room temperature.

The bottom of the page is uniform throughout the application, unchanged. It displays the outdoor temperature at the heat pump installation site and the house symbol, which allows you to return to the main page - the signpost.

The question mark bubble shows a quick help for each part of the page.

Movement between pages is possible by swiping sideways or by clicking on the arrows at the top of the pages.

Most pages contain a **circular control** that allows you to edit (change) the displayed value. Editing is possible by dragging your finger on the circle with the Acond logo or by clicking on the + and - symbols. Another input option is to click on the value in the middle of the circle. will appear. A keyboard appears, allowing you to enter the exact value to be changed.

3.3.5 Heating/cooling

Clicking on the Heating area will display the heating system and outdoor unit status page. At the top of the page you can change the **operating mode of** the heat pump (see the "Operating Instructions" for a description of the modes). The circular controller allows you to change the desired room temperature. If the heating system is equipped with two heating circuits, the Heating page is duplicated, each heating circuit has its own circular controller.

The current temperature is displayed below the circular control in the reference room, and below it you can click on the arrows **< >change the** type of control that calculates the temperature required to heat the object.

If **cooling is fitted**, the symbol **CHL** - cooling mode - will appear in the top row of modes. If this mode is selected, the chilled water temperature is displayed instead of the desired room temperature and the desired chilled water temperature is changed with the circular control.

Below the control type selection is a bar showing the **status of the individual** heating system **components**. The icons show (from left): compressor, fan, primary circuit circulator, defrost, secondary (heating) circuit circulator, DHW heating in progress, operation of the backup (bivalent) source. The symbols displayed are similar to the icons in the web interface.

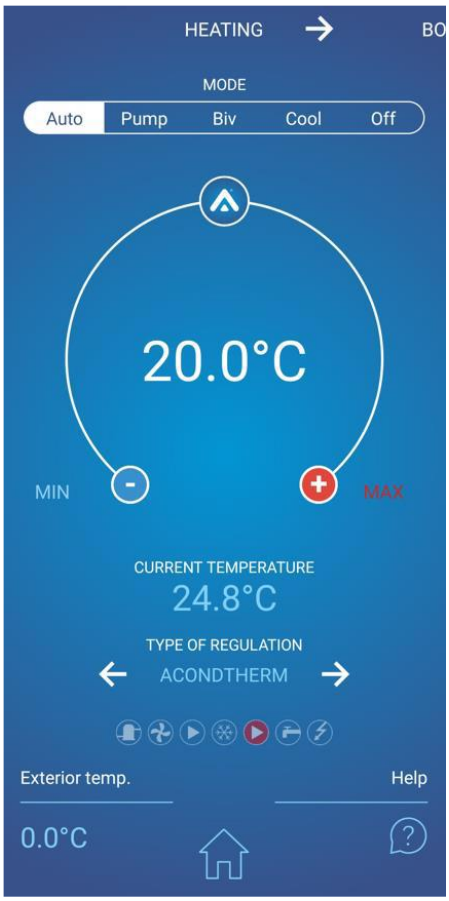


Fig 18 Heating

3.3.6 Boiler

Click on the Boiler area to display the page with the hot water temperature in the boiler. In the middle of the circular control the desired DHW temperature is displayed, at the bottom the current water temperature at the bottom of the tank (boiler) is displayed.

3.3.7 Return water

The Return Water area contains a circular control for entering the heating water temperature (i.e. the temperature of the water returning from the heating system). If the STANDARD control type is selected, the value in the middle of the control can be edited, if another control type is selected or if it is summer, a text will appear warning that this value cannot be changed.

Below the circular control is the current heating water temperature (i.e. the temperature of the water returning from the system) and below this value you can use the **< >** arrows to change the type of control.

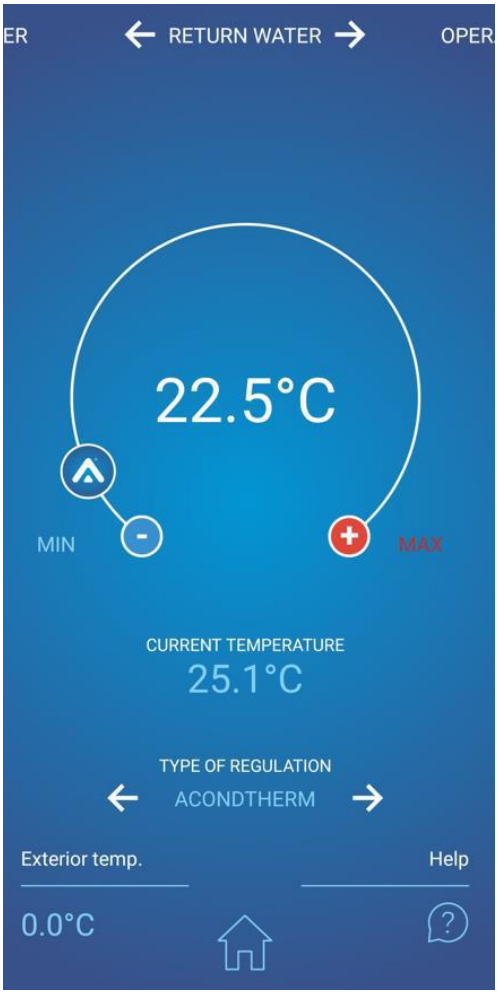


Figure 20 Return water

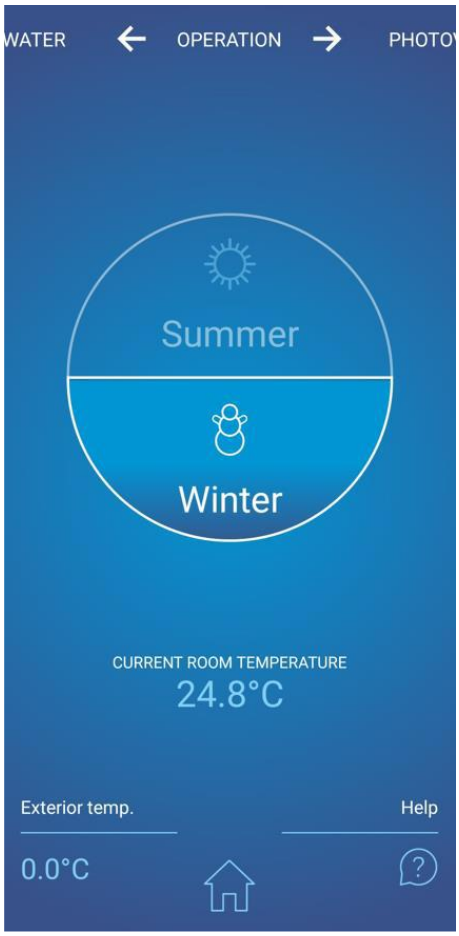


Figure 21 Summer / winter operation

3.3.8 Operation

The Operation page shows the current status of the system in relation to the time of year. The circular dial is divided into two halves, showing the symbols of the sun - summer operation and the snowman - winter operation. Clicking on the inactive, greyed-out part of the control will to change the mode.

The current room temperature is displayed below the circular control.

3.3.9 Swimming pool

The Pool area is used to operate the pool water heating. The page again contains a circular control with the option to set the desired pool water temperature, below the circular control the current pool water temperature is displayed. Above the circular control, the pool water heating can be switched off.

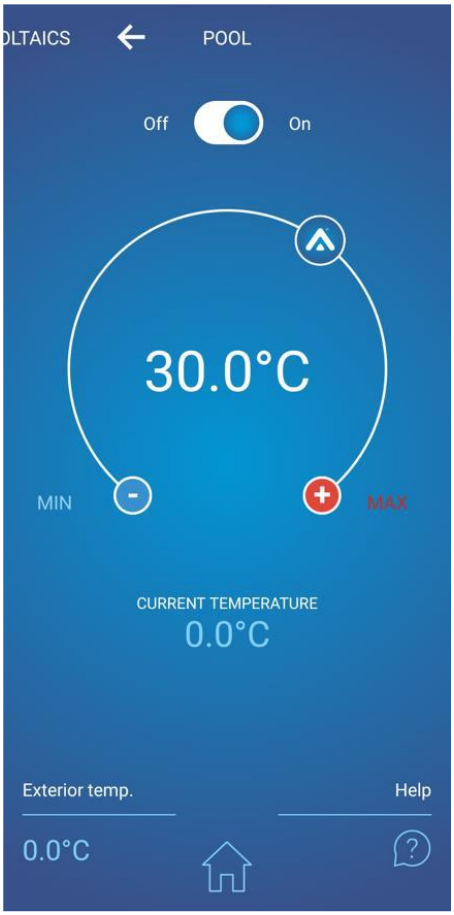


Fig 19 Pool heating

3.3.10 Solar

Fig 20 Solar panel control

When you click on the Solar area, a page will appear showing the status of the solar panel. At the top of the page you can turn off the pump that circulates the brine in the solar panel. In the circular control displays the running or stopping of this circulation pump, at the bottom is the current brine temperature in the panel.

4 Alarms, faults and removing them

Each alarm is signalled simultaneously via the web interface and on the indoor unit.

If a fault occurs on the heat pump, an exclamation mark appears in the red box on the home page (*see Fig 12*). A fault panel appears on the indoor unit, showing the fault code, the fault description and the exclamation mark symbol  .

4.1 Confirmation of failure

Confirmation of the removed fault is possible from the heat pump website by clicking OK on the fault icon (exclamation mark in the red box), or from the indoor unit by pressing the OK ✓ button (if you are in the fault panel).

Code	ALARM	Cause	Removing
P01	**REVERSE SENSOR FROM THE SYSTEM**	Probe missing, defective, cable defective, probe resistance exceeds limits	*Call technical support.*
P02	**TEMPERATURE SENSOR AT THE EXIT OF THE BOARD. EXCHANGE**	Probe missing, defective, cable defective, probe resistance exceeds limits	*Call technical support.*
P03	**TEMPERATURE SENSOR ON COMPRESSOR SUCTION**	Probe missing, defective, cable defective, probe resistance exceeds limits	*Call technical support.*
P04	**OUTDOOR TEMPERATURE SENSOR**	Probe missing, defective, cable defective, probe resistance exceeds limits	*Call technical support.*
P05	**ROOM TEMPERATURE SENSOR - 1ST CIRCUIT**	Electrical fault, disconnected (faulty) room thermostat	*Call technical support.*
P06	**HEAT SENSOR**	Probe missing, defective, cable defective, probe resistance exceeds limits	*Call technical support.*
P08	**SOLAR SENSOR**	Probe missing, defective, cable defective, probe resistance exceeds limits	*Call technical support.*

Code	ALARM	Cause	Removing
P09	**ROOM TEMPERATURE SENSOR - 2. DISTRICT**	Electrical fault, disconnected (faulty) room thermostat	*Call technical support.*
P10	**POOL SENSOR**	Probe missing, defective, cable defective, probe resistance exceeds limits	*Call technical support.*
P11	**MIXER SENSOR - FLOOR SENSOR**	Probe missing, defective, cable defective, probe resistance exceeds limits	*Call technical support.*
P12	**BRINE TEMPERATURE SENSOR**	Probe missing, defective, cable defective, probe resistance exceeds limits	*Call technical support.*
P15	**LOW PRESSURE SENSOR**	Probe missing, defective, cable defective, limits exceeded	*Call technical support.*
P16	**HIGH PRESSURE SENSOR**	Probe missing, defective, cable defective, limits exceeded	*Call technical support.*
P99	**CLOSED**	The time for entering the payment confirmation code has expired	*On the main page enter the code confirming payment*
A01	**HIGH PRESSURE**	Activating the preset on the refrigerant circuit Little or no water flow through the plate heat exchanger Clogged water filter Closed tap on the water circuit	*Clean the water filter* *Increase the water flow through the plate heat exchanger and thus reduce the outlet water temperature* *Check heating circuit clearance*
A02	**LOW PRESSURE**	Pressure switch activated on refrigerant circuit Defrost setting incorrectly set Too low outside temperature for heat pump operation Refrigerant leak	*Call technical support.*
A03	**COMPRESSOR OPERATION, PHASE SEQUENCE**	Compressor not running - electrical fault, problems with the balance of the el. network problems (undervoltage on some phases)	*Check that the compressor is turning. If not, call technical support.*

Code	ALARM	Cause	Removing
A04	**LOW TEMPERATURE OF THE GROUND COLLECTOR**	Low collector temperature	*Call technical support.*
A05	**HIGH HEAT SUCTION COMPRESSOR**	The evaporator temperature exceeded the set point during defrosting or after defrosting has finished	*Call technical support.*
A06	**LOW COMPRESSOR SUCTION HEAT**	The evaporator temperature has dropped below the set point	*Call technical support.*
A07	**FROST PROTECTION**	Water temperature in plate heat exchanger too low	*Call technical support.*
A08	**SLOW HEATING TUV**	The max. time for DHW heating has expired	*Check the venting of the DHW circuit*
A09	**HIGH COMPRESSOR DISCHARGE PRESSURE**	Overheated outdoor unit	*Call technical support.*
A10	**FAN OPERATION**	The fan is not spinning	*Check that the fan is not mechanically blocked - dirt, frost... If possible, remove dirt/frost when the heat pump circuit breaker is blown.*
A11	**COMMUNICATION BREAKDOWN**		*Call technical support.*
A12	**REMOVAL**	The unit hasn't defrosted enough	*Check for frost on the outdoor unit.*
A13	**LARGE NUMBER OF DEFROSTING**	Switches defrost too often	*Check that the fan propeller is spinning* *Call technical support.*
A14	**BLOCKED SENSORS**	Electrical fault	*Restart the heat pump. If the fault occurs again, call technical support.*
A15	**HIGH PULSE. IGBT COMPONENT**	Overheated electronics	*Call technical support.*
A16	**LOW FLOW THROUGH THE PLATE HEAT EXCHANGER**	Clogged water filter Aerated water circuit Insufficient performance, circulation pump failure	*Clean the water filter* *Vent the water circuit*

Code	ALARM	Cause	Removing
A17	**LOW FLOW THROUGH THE BRINE EXCHANGER PLATE**	Brine vented circuit Insufficient performance, brine circulation pump failure	*Bleed the brine circuit*
W00	**HIGH OUTLET TEMPERATURE OF THE POWER UNIT**	Superheated by solar heating, bivalent source (e.g. solid fuel boiler)	*Just a heads-up, it'll die out on its own*
W01	**LOW ROOM TEMPERATURE**	Most often when finding a cold house	*Just a heads-up, it'll die out on its own*
W02	**LOW RETURN WATER TEMPERATURE**	Most often, when a cold house comes on, it triggers the heating rod earlier	*Just a heads-up, it'll die out on its own*
W03	**HIGH TEMPERATURE IGBT COMPONENTS**	Overheated electronics	*Just a heads-up, it'll die out on its own*
W04	**HIGH TEMPERATURE IN THE BATTERY**	Overheated storage tank (e.g. solar heating, bivalent source, solid fuel boiler...)	*Just a heads-up, it'll die out on its own*
W05	**LOW EVAPORATOR TEMPERATURE**	Low outdoor temperature, high humidity	*Alert only, triggers defrost, extinguishes itself*
W07	**LOW DESK TEMPERATURE. EXCHANGE**	Usually when you get into a cold house	*Just a heads-up, it'll die out on its own*
W11	**THE LONG LEGIONELLA**	Heating of DHW to a higher temperature (antisepsis) was not achieved in the set time	*Check the heating rod circuit breaker, check the boiler safety thermostat setting*

5 Accumulation and DHW tanks

The Acond heating system can be fitted with a stainless steel vessel for heating water accumulation or a stainless steel hot water storage tank (hereinafter referred to as vessels), which must be installed and operated in accordance with the instructions in this documentation.

Although the container is all stainless steel, it is not maintenance-free! Follow the instructions in this manual! If these instructions are not followed, the warranty provided for these products cannot be honoured!

- Installation, assembly and all service work may only be carried out by a person qualified to carry out the relevant work.
- The containers **are not** intended for use in very aggressive environments (stables, poultry houses, industrial plants).
- Each safety valve must be checked regularly for functionality at least once every six months (by manually releasing the water) and replaced in case of failure. Caution - hot water may leak from the valve! The vessel supplier is not responsible for defects caused by malfunctioning of the safety valve.
- The container is supplied as a complete product and cannot be further modified. Any modifications to the container (additional welding, replacement of protective elements, change of original use, etc.) are considered as a gross interference with the technical design and affect the acceptance of the warranty.

6 Regular checks

6.1 Inspection of intake and exhaust grilles and opening

Check the front grille and evaporator at regular intervals for leaves, papers or other debris. Clean if necessary with the heat pump switched off.

Never stick foreign objects into the outdoor unit of the heat pump! The heat pump operates in intermittent automatic operation, the fan runs at high speed and injury may result.

6.2 Checking the refrigerant circuit

Caution, the unit contains flammable refrigerant!
In the event of a refrigerant leak, disconnect the device from the power supply and contact the service!

The refrigerant circuit is hermetically sealed and maintenance-free. Regular inspections are not necessary and there is no need to keep an operating log.

6.3 Traffic Control

During operation of the heat pump it is necessary to regularly check the alarm indicator in order to quickly eliminate any possible error and to minimize the operation of auxiliary heaters (bivalence), because in most alarms these heat sources are triggered in case of low temperature in the room.

6.4 Checking the pressure in the heating system

At least once a month it is necessary to check the pressure in the piping of the installation. The external pressure gauge must show a value between 1 and 1.5 bar. If the value is below 0.8 bar, top up the water in the heating system.

Normal tap water can be used to top up the heating system. In exceptional cases tap water is unsuitable for topping up the heating system - e.g. very hard water with too much mineral content. If you are unsure, contact your installer*, see chap. 9*.

Do not add any additives to the water in heating systems

In the closed expansion tank there is a bladder filled with air that compensates for variations in the volume of water in the heating system. This bladder must never be drained!

The system is equipped with a safety valve. For each safety valve, a periodic function check must be carried out at least once every six months (by manually releasing the water). and contact the installer in the event of a fault. Caution - hot water may leak from the valve. The heating system supplier is not responsible for defects caused by malfunctioning of the safety valve.

6.4.1 System and expansion vessel pressure control procedure

When draining water from the expansion tank, have a large enough container on hand, as more water may flow out (depending on the size of the expansion tank).

For pressure control:

- switch off the heat pump, drop the circuit breaker of the heating system
- close the ball valve **1** above the expansion tank (*see Fig 21*)
- loosen the drain valve cover **2,** open the drain valve - beware, up to several litres of water can leak out of the drain valve hose, have a sufficiently large container ready
- Use a pressure gauge (e.g. for measuring tyre pressure) to measure the air pressure in the air bag of the expansion tank
- if the air pressure does not match the label on the expansion tank, refill the air in the bag
- close the drain valve **2**, screw on the valve cover
- open ball valve **1** above the expansion tank
- Check the water pressure in the system on pressure gauge **3**
- if the pressure on pressure gauge **3** does not match the pressure on the label of the expansion tank, refill the water in the system
- flip the circuit breaker, turn on the heat pump

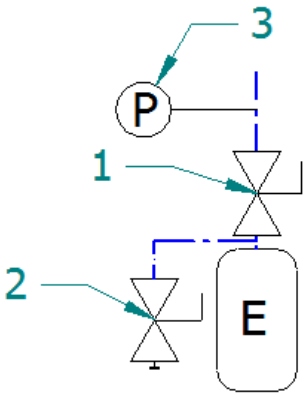


Fig 21 Connecting the expansion vessel

Expansion vessel

Ball valve

Drain valve

6.5 Cleaning filters in the heating system

Switch off the heat pump before cleaning the filters in the heating circuit!

After installation, the filters in the heating system must be cleaned twice a year. If it is obvious that cleaning twice a year is not necessary, this interval can be extended.

6.5.1 Filter cleaning procedure

Have a rag handy when opening the filter cover, usually a small amount of water will come out.

To clean the filter:

- switch off the heat pump, disconnect the heat pump from the power supply (drop the circuit breaker of the heat pump)
- turn the shut-off valves before and after the filter to the closed position
- unscrew and remove the filter cover - keep a rag handy, a small amount of water will leak out.
- remove the filter
- rinse the filter
- reinstall the filter
- Check that the sealing ring on the filter cover is not damaged
- Screw the cover back into place, tighten with a spanner
- turn the shut-off valves before and after the filter to the open position
- flip the breaker, turn on the heat pump

Filter

6.5.2 Magnetic filter cleaning procedure

Before starting the cleaning process, it is necessary to switch off the CH via the thermostat, web or telephone (alternatively, it is possible to drop the CH at the circuit breaker, but only when the CH is in off mode). It is also necessary to close the upper and bottom shut-off valve to prevent unwanted water leakage.
The screwdriver can then be used to loosen the vent screw at the top of the magnetic filter to release the pressure.
On the other hand, at the bottom, the cap can be removed and the water left in the filter is drained out. The nut is then removed from the

Magnetic mechanical filter

particulate filter using an adjustable wrench and the strainer is removed and washed under running water. Once cleaned, it can be returned to its original position and the nut tightened appropriately.

6.6 System venting

Air in the heating system reduces heat transfer and can therefore significantly reduce heating efficiency. When designing the heating system, care is therefore taken to ensure that there are sufficient ventilation options. It is necessary to regularly check the system for air and continuously vent the system.

Vent valve

6.7 Magnesium anode check

If the system is equipped with a domestic hot water heater and the installation includes a DHW tank (e.g. boiler Dražice, Hydrobox), it is necessary to check the magnesium anode located in the tank. The first check is to be carried out no more than 6 months after commissioning and the interval for the next check is to be determined according to the result. The period between inspections shall not exceed 2 years.

In the case of more than 50% loss of the magnesium anode (original diameter approx. 20 mm), it is necessary to replace it. Replacement is done either by a complete replacement including the brass nut, or just by fitting a new anode rod into the original brass nut (turning with an M8 screw).

6.7.1 Anode inspection (replacement) procedure

- switch off the heat pump, drop the circuit breaker of the heating system
- stop the cold water supply to the DHW tank, or close the hot water outlet vent valve (not required)
- with the hot water tap, release the water pressure, close the tap
- unscrew the anode (the location is marked with a sign)
- in case of more than 50% loss of magnesium anode (original diameter approx. 20 mm), replace
- screw in the anode
- open the cold water inlet to the hot water tank, loosen the vent valve on the hot water outlet (not required)
- flip the breaker, start the heat pump

6.8 Safety valve

The Acond heating system can be equipped with a vessel for heating water storage or a hot water tank with a safety valve. Each safety valve must be regularly checked for functionality at least once every six months (by manually draining the water) and replaced in the event of a fault. Caution - hot water may leak from the valve! **The supplier of the vessel is not responsible for for defects caused by malfunctioning of the safety valve.**

Occasional leakage of water from the relief valve when heating domestic hot water is a normal phenomenon caused by thermal expansion of the water. Persistent water leakage indicates a faulty relief valve and causes large energy losses.

7 Liquidation

When decommissioning, local laws, guidelines and standards for the recovery, reuse and disposal of heat pump cartridges and components must be followed.

RISK OF INJURY! Only authorised refrigeration technicians may work on the refrigerant circuit*, see chap. 9*

8 Technical information in accordance with Commission Regulation (EU) No 813/2013

([1]) For heat pump space heaters and combined heat pump space heaters, the rated heat output Prated is equal to the design heating load Pdesignh and the rated heat output of the supplementary heater Psup is equal to the supplementary heating output sup(Tj).

([2]) If the energy loss coefficient Cdh is not determined by measurement, it has a default value of 0.9.

Model(s):				Grandis-L16			
Heat pump air / water: (yes/no)				Yes			
Heat pump solution-water: (yes/no)				No			
Heat pump water-water (yes/no)				No			
Low-temperature heat pump (yes/no)				No			
Equipped with a supplementary heater (yes/no)				No			
Combined heater with heat pump: (yes/no)				No			
Application: (low temperature/medium temperature)				Low Temperature			
Climatic conditions: (colder/average/warmer)				average			
Item	**Label**	**Value**	**Unit**	**Item**	**Label**	**Value**	**Unit**
Rated thermal output ([1])	Prated	15,5	kW	Seasonal energy efficiency of heating	η_S	217	%
Declared heat output for partial load at indoor temperature 20 °C and outdoor temperature Tj				Declared heat factor or coefficient of primary energy ratio for partial load at indoor temperature 20 °C and outdoor temperature Tj			
Tj = -7°C	Pdh	13,71	kW	Tj = -7°C	COPd	3,34	-
Tj = +2°C	Pdh	8,35	kW	Tj = +2°C	COPd	5,31	-
Tj = +7°C	Pdh	6,03	kW	Tj = +7°C	COPd	7,35	-
Tj = +12°C	Pdh	5,5	kW	Tj = +12°C	COPd	7,4	
Tj = bivalent temperature	Pdh	15,5	kW	Tj = bivalent temperature	COPd	2,74	-
Tj = limit operating temperature	Pdh	15,5	kW	Tj = operation limit temperature	COPd	2,74	-
For air-to-water heat pumps: Tj = -15°C (if TOL <-20°C)	Pdh	-	kW	For air-to-water heat pumps: Tj = -15°C (if TOL <-20°C)	COPd	-	-
Bivalent temperature	Tbiv	-10	°C	For air-to-water heat pumps: Operation limit temperature	TOL	-10	°C
Cycling interval capacity for heating	Pcych	-	kW	Cycling interval capacity for heating	COPcyc	-	-
Energy loss coefficient ([2])	Cdh	0,9	-	Domestic hot water operating limit temperature	WTOL	75	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	P_{OFF}	0,0124	kW	Rated heat output (1)	Psup	0	kW
Thermostat-off mode	P_{TO}	0,0126	kW	Type of energy input	Electric		
Standby mode	P_{SB}	0,0124	kW				
Compressor cabinet heating mode	P_{CK}	0	kW				
Additional items							
Performance regulation	Variable			For air-to-water heat pumps: Rated air flow rate, outdoors	-	12 916	m^3/h
Sound power level, indoors/outdoors	L_{WA}	-/47,9	dB	For water/brine-water heat pumps: nominal brine or water flow rate	-	-	m^3/h
Emissions of nitrogen oxides	NO_X	-	mg/kWh				
For heat pump combination heater:							
Declared load profile	-			Water heating energy efficiency	η_{wh}		%
Electricity consumption	Q_{elec}	-	kWh	Daily fuel consumption	Q_{fuel}		kWh
Contact information	Acond a.s., Štěrboholská 1434/102a, 102 00 Prague 10 - Hostivař, Czech Republic						

Model(s):				Grandis-L18			
Heat pump air / water: (yes/no)				Yes			
Heat pump solution-water: (yes/no)				No			
Heat pump water-water (yes/no)				No			
Low-temperature heat pump (yes/no)				No			
Equipped with a supplementary heater (yes/no)				No			
Combined heater with heat pump: (yes/no)				No			
Application: (low temperature/medium temperature)				Low Temperature			
Climatic conditions: (colder/average/warmer)				average			
Item	**Label**	**Value**	**Unit**	**Item**	**Label**	**Value**	**Unit**
Rated heat output (1)	Prated	18,8	kW	Seasonal energy efficiency of heating	η_S	200	%
Declared heat output for partial load at indoor temperature 20 °C and outdoor temperature Tj				Declared heat factor or coefficient of primary energy ratio for partial load at indoor temperature 20 °C and outdoor temperature Tj			
Tj = -7°C	Pdh	16,7	kW	Tj = -7°C	COPd	3,22	-
Tj = +2°C	Pdh	10,12	kW	Tj = +2°C	COPd	4,59	-
Tj = +7°C	Pdh	6,51	kW	Tj = +7°C	COPd	7,38	-
Tj = +12°C	Pdh	7,13	kW	Tj = +12°C	COPd	9,58	
Tj = bivalent temperature	Pdh	18,8	kW	Tj = bivalent temperature	COPd	2,71	-
Tj = operation limit temperature	Pdh	18,8	kW	Tj = operation limit temperature	COPd	2,71	-
For air-to-water heat pumps: Tj = -15°C (if TOL <-20°C)	Pdh	-	kW	For air-to-water heat pumps: Tj = -15°C (if TOL <-20°C)	COPd	-	-
Bivalent temperature	T_{biv}	-10	°C	For air-to-water heat pumps: Operation limit temperature	TOL	-10	°C
Cycling interval capacity for heating	Pcych	-	kW	Cycling interval capacity for heating	COPcyc	-	-
Energy loss coefficient (2)	Cdh	0,9	-	Domestic hot water operating limit temperature	WTOL	75	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	P_{OFF}	0,0124	kW	Rated heat output (1)	Psup	0	kW
Thermostat-off mode	P_{TO}	0,0126	kW	Type of energy input	Electric		
Standby mode	P_{SB}	0,0124	kW				
Compressor cabinet heating mode	P_{CK}	0	kW				
Additional items							
Performance regulation	Variable			For air-to-water heat pumps: Rated air flow rate, outdoors	-	12 916	m^3/h
Sound power level, indoors/outdoors	L_{WA}	-/50,2	dB	For water-/brine-to-water heat pumps: Nominal brine or water flow rate	-	-	m^3/h
Emissions of nitrogen oxides	NOx	-	mg/kWh				
For heat pump combination heater:							
Declared load profile	-			Water heating energy efficiency	η_{wh}		%
Electricity consumption	Q_{elec}	-	kWh	Daily fuel consumption	Q_{fuel}		kWh
Contact details	Acond a.s., Štěrboholská 1434/102a, 102 00 Prague 10 - Hostivař, Czech Republic						

Model(s):				Grandis-L21			
Heat pump air / water: (yes/no)				Yes			
Heat pump solution-water: (yes/no)				No			
Heat pump water-water (yes/no)				No			
Low-temperature heat pump (yes/no)				No			
Equipped with a supplementary heater (yes/no)				No			
Combined heater with heat pump: (yes/no)				No			
Application: (low temperature/medium temperature)				Low Temperature			
Climatic conditions: (colder/average/warmer)				average			
Item	**Label**	**Value**	**Unit**	**Item**	**Label**	**Value**	**Unit**
Rated heat output (1)	Prated	21	kW	Seasonal energy efficiency of heating	η_S	195	%
Declared heat output for partial load at indoor temperature 20 °C and outdoor temperature Tj				Declared heat factor or coefficient of primary energy ratio for partial load at indoor temperature 20 °C and outdoor temperature Tj			
Tj = -7°C	Pdh	18,5	kW	Tj = -7°C	COPd	2,74	-
Tj = +2°C	Pdh	10,5	kW	Tj = +2°C	COPd	4,6	-
Tj = +7°C	Pdh	7,38	kW	Tj = +7°C	COPd	7,59	-
Tj = +12°C	Pdh	7,14	kW	Tj = +12°C	COPd	9,6	
Tj = bivalent temperature	Pdh	18,5	kW	Tj = bivalent temperature	COPd	2,74	-
Tj = operation limit temperature	Pdh	18,5	kW	Tj = limit operating temperature	COPd	2,74	-
For air-to-water heat pumps: Tj = -15°C (if TOL <-20°C)	Pdh	-	kW	For air-to-water heat pumps: Tj = -15°C (if TOL <-20°C)	COPd	-	-
Bivalent temperature	T_{biv}	-7	°C	For air-to-water heat pumps: limit operating temperature	TOL	-10	°C
Cycling interval capacity for heating	Pcych	-	kW	Cycling interval capacity for heating	COPcyc	-	-
Energy loss coefficient (2)	Cdh	0,9	-	Domestic hot water operating limit temperature	WTOL	75	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	P_{OFF}	0,0124	kW	Rated heat output (1)	Psup	2,5	kW
Thermostat-off mode	P_{TO}	0,0126	kW	Type of energy input	Electric		
Standby mode	P_{SB}	0,0124	kW				
Compressor cabinet heating mode	P_{CK}	0	kW				
Additional items							
Performance regulation	Variable			For air-to-water heat pumps: Rated air flow rate, outdoors	-	12 916	m^3/h
Sound power level, indoors/outdoors	L_{WA}	-/52,5	dB	For water/brine-water heat pumps: nominal brine or water flow rate	-	-	m^3/h
Emissions of nitrogen oxides	NOx	-	mg/kWh				
For heat pump combination heater:							
Declared load profile	-			Energy efficiency of water heating	η_{wh}		%
Electricity consumption	Q_{elec}	-	kWh	Daily fuel consumption	Q_{fuel}		kWh
Contact information	Acond a.s., Štěrboholská 1434/102a, 102 00 Prague 10 - Hostivař, Czech Republic						

Model(s):				Grandis-L16			
Heat pump air / water: (yes/no)				Yes			
Heat pump solution-water: (yes/no)				No			
Heat pump water-water (yes/no)				No			
Low-temperature heat pump (yes/no)				No			
Equipped with a supplementary heater (yes/no)				No			
Combined heater with heat pump: (yes/no)				No			
Application: (low temperature/medium temperature)				mid-temperature			
Climatic conditions: (colder/average/warmer)				average			
Item	**Label**	**Value**	**Unit**	**Item**	**Label**	**Value**	**Unit**
Rated heat output (1)	Prated	16	kW	Seasonal energy efficiency of heating	η_S	158	%
Declared heat output for partial load at indoor temperature 20 °C and outdoor temperature Tj				Declared heat factor or coefficient of primary energy ratio for partial load at indoor temperature 20 °C and outdoor temperature Tj			
Tj = -7°C	Pdh	14,49	kW	Tj = -7°C	COPd	2,52	-
Tj = +2°C	Pdh	8,62	kW	Tj = +2°C	COPd	3,81	-
Tj = +7°C	Pdh	5,54	kW	Tj = +7°C	COPd	5,33	-
Tj = +12°C	Pdh	7,04	kW	Tj = +12°C	COPd	7,96	
Tj = bivalent temperature	Pdh	16	kW	Tj = bivalent temperature	COPd	2,1	-
Tj = limit operating temperature	Pdh	16	kW	Tj = operation limit temperature	COPd	2,1	-
For air-to-water heat pumps: Tj = -15°C (if TOL <-20°C)	Pdh	-	kW	For air-to-water heat pumps: Tj = -15°C (if TOL <-20°C)	COPd	-	-
Bivalent temperature	T_{biv}	-10	°C	For air-to-water heat pumps: Operation limit temperature	TOL	-10	°C
Cycling interval capacity for heating	Pcych	-	kW	Cycling interval capacity for heating	COPcyc	-	-
Energy loss coefficient (2)	Cdh	0,9	-	Domestic hot water operating limit temperature	WTOL	75	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	P_{OFF}	0,0124	kW	Rated heat output (1)	Psup	0	kW
Thermostat-off mode	P_{TO}	0,0126	kW	Type of energy input	Electric		
Standby mode	P_{SB}	0,0124	kW				
Compressor cabinet heating mode	P_{CK}	0	kW				
Additional items							
Performance regulation	Variable			For air-to-water heat pumps: Rated air flow rate, outdoors	-	12 916	m^3/h
Sound power level, indoors/outdoors	L_{WA}	-/47,9	dB	For water-/brine-to-water heat pumps: Nominal brine or water flow rate	-	-	m^3/h
Emissions of nitrogen oxides	NO_X	-	mg/kWh				
For heat pump combination heater:							
Declared load profile	-			Water heating energy efficiency	η_{wh}		%
Electricity consumption	Q_{elec}	-	kWh	Daily fuel consumption	Q_{fuel}		kWh
Contact information	Acond a.s., Štěrboholská 1434/102a, 102 00 Prague 10 - Hostivař, Czech Republic						

Model(s):				Grandis-L18			
Heat pump air / water: (yes/no)				Yes			
Heat pump solution-water: (yes/no)				No			
Heat pump water-water (yes/no)				No			
Low-temperature heat pump (yes/no)				No			
Equipped with a supplementary heater (yes/no)				No			
Combined heater with heat pump: (yes/no)				No			
Application: (low temperature/medium temperature)				mid-temperature			
Climatic conditions: (colder/average/warmer)				average			
Item	**Label**	**Value**	**Unit**	**Item**	**Label**	**Value**	**Unit**
Rated heat output (1)	Prated	18	kW	Seasonal energy efficiency of heating	η_S	158	%
Declared heat output for partial load at indoor temperature 20 °C and outdoor temperature Tj				Declared heat factor or coefficient of primary energy ratio for partial load at indoor temperature 20 °C and outdoor temperature Tj			
Tj = -7°C	Pdh	15,92	kW	Tj = -7°C	COPd	2,49	-
Tj = +2°C	Pdh	9,69	kW	Tj = +2°C	COPd	3,79	-
Tj = +7°C	Pdh	6,23	kW	Tj = +7°C	COPd	5,35	-
Tj = +12°C	Pdh	7,05	kW	Tj = +12°C	COPd	7,97	
Tj = bivalent temperature	Pdh	18	kW	Tj = bivalent temperature	COPd	2,08	-
Tj = operation limit temperature	Pdh	18	kW	Tj = operation limit temperature	COPd	2,08	-
For air-to-water heat pumps: Tj = -15°C (if TOL <-20°C)	Pdh	-	kW	For air-to-water heat pumps: Tj = -15°C (if TOL <-20°C)	COPd	-	-
Bivalent temperature	T_{biv}	-10	°C	For air-to-water heat pumps: Operation limit temperature	TOL	-10	°C
Cycling interval capacity for heating	Pcych	-	kW	Cycling interval capacity for heating	COPcyc	-	-
Energy loss coefficient (2)	Cdh	0,9	-	Domestic hot water operating limit temperature	WTOL	75	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	P_{OFF}	0,0124	kW	Rated heat output (1)	Psup	0	kW
Thermostat-off mode	P_{TO}	0,0126	kW	Type of energy input	Electric		
Standby mode	P_{SB}	0,0124	kW				
Compressor cabinet heating mode	P_{CK}	0	kW				
Additional items							
Performance regulation	Variable			For air-to-water heat pumps: Rated air flow rate, outdoors	-	12 916	m^3/h
Sound power level, indoors/outdoors	L_{WA}	-/50,2	dB	For water-/brine-to-water heat pumps: Nominal brine or water flow rate	-	-	m^3/h
Emissions of nitrogen oxides	NOx	-	mg/kWh				
For heat pump combination heater:							
Declared load profile	-			Water heating energy efficiency	η_{wh}		%
Electricity consumption	Q_{elec}	-	kWh	Daily fuel consumption	Q_{fuel}		kWh
Contact information	Acond a.s., Štěrboholská 1434/102a, 102 00 Prague 10 - Hostivař, Czech Republic						

Model(s):				Grandis-L21			
Heat pump air / water: (yes/no)				Yes			
Heat pump solution-water: (yes/no)				No			
Heat pump water-water (yes/no)				No			
Low-temperature heat pump (yes/no)				No			
Equipped with a supplementary heater (yes/no)				No			
Combined heater with heat pump: (yes/no)				No			
Application: (low temperature/medium temperature)				mid-temperature			
Climatic conditions: (colder/average/warmer)				average			
Item	**Label**	**Value**	**Unit**	**Item**	**Label**	**Value**	**Unit**
Rated heat output (1)	Prated	22	kW	Seasonal energy efficiency of heating	η_S	142	%
Declared heat output for partial load at indoor temperature 20 °C and outdoor temperature Tj				Declared heat factor or coefficient of primary energy ratio for partial load at indoor temperature 20 °C and outdoor temperature Tj			
Tj = -7°C	Pdh	19,42	kW	Tj = -7°C	COPd	2,24	-
Tj = +2°C	Pdh	11,85	kW	Tj = +2°C	COPd	3,22	-
Tj = +7°C	Pdh	7,62	kW	Tj = +7°C	COPd	5,45	-
Tj = +12°C	Pdh	7,05	kW	Tj = +12°C	COPd	7,99	
Tj = bivalent temperature	Pdh	19,42	kW	Tj = bivalent temperature	COPd	2,24	-
Tj = limit operating temperature	Pdh	22	kW	Tj = limit operating temperature	COPd	2,07	-
For air-to-water heat pumps: Tj = -15°C (if TOL <-20°C)	Pdh	-	kW	For air-to-water heat pumps Tj = +15°C (if TOL < -20°C)	COPd	-	-
Bivalent temperature	T_{biv}	-7	°C	For air-to-water heat pumps: Operation limit temperature	TOL	-10	°C
Heating capacity in cyclic interval	Pcych	-	kW	Cycling interval capacity for heating	COPcyc	-	-
Energy loss coefficient ([2])	Cdh	0,9	-	Domestic hot water operating limit temperature	WTOL	75	°C
Power consumption in modes other than active mode				Supplementary heater			
Off mode	P_{OFF}	0,0124	kW	Rated heat output (1)	Psup	2,58	kW
Thermostat-off mode	P_{TO}	0,0126	kW	Type of energy input	Electric		
Standby mode	P_{SB}	0,0124	kW				
Compressor cabinet heating mode	P_{CK}	0	kW				
Additional items							
Performance regulation	Variable			For air-to-water heat pumps: Rated air flow rate, outdoors	-	12 916	m^3/h
Sound power level, indoors/outdoors	L_{WA}	-/52,5	dB	For water-/brine-to-water heat pumps: Nominal brine or water flow rate	-	-	m^3/h
Emissions of nitrogen oxides	NO_X	-	mg/kWh				
For heat pump combination heater:							
Declared load profile	-			Water heating energy efficiency	η_{wh}		%
Electricity consumption	Q_{elec}	-	kWh	Daily fuel consumption	Q_{fuel}		kWh
Contact information	Acond a.s., Štěrboholská 1434/102a, 102 00 Prague 10 - Hostivař, Czech Republic						

9 Links

In the event of a heat pump fault, visit https://acond.cz/tepelna-cerpadla/servis/ .