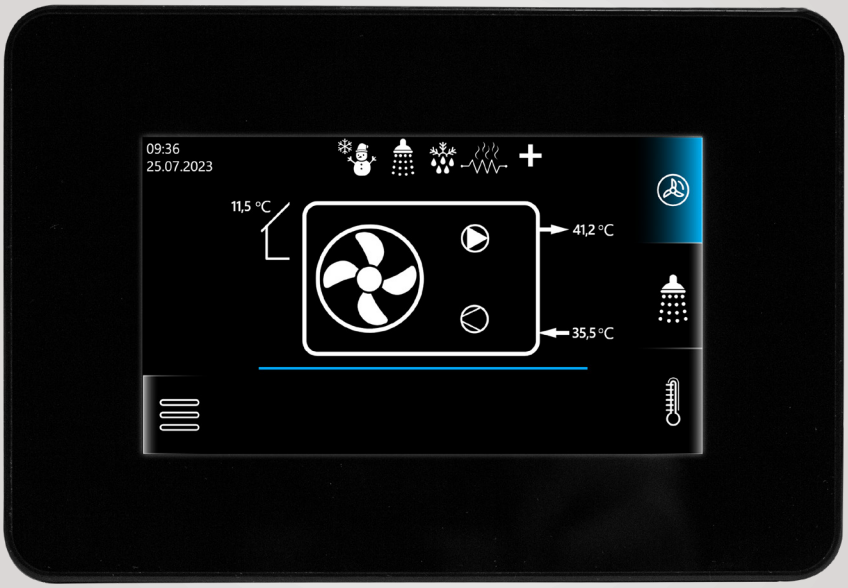
MAXA AIR CONDITIONING

Chillers and inverter Air/Water heat pumps with axial fans

# Controller manual

## Models

e-LITE



| | | | | |
|---|---|---|---|---|
| 01 | 15-02-2024 | M.S. | D.M. | Alignment to firmware S001.18 |
| 00 | 07-2023 | M.S. | D.M. | First issue |
| **Rev** | **Date** | **Author** | **Supervisor** | **Notes** |
| **Catalogo / Catalogue / Katalog / Catalogue MCO02530120000_01** | | | | **Serie / Series / Serie / Serie / Série e-LITE CHRONOTHERMOSTAT** |

The electrical and electronic products and any waste should not be disposed of with normal household waste, but disposed of according to WEEE law in accordance with the directives 2012/19/EU and 2003/108/EC as amended, inquiring thereof at the place of residence or with the retailer in the case where the product is replaced with a similar one.

# Contents

# 1. GENERAL INFORMATION

The e-LITE device is a Modbus remote control panel with colour LCD and capacitive touch screen.
This device can be used as a remote control panel for the machine. It is equipped with a local sensor for temperature detection.Remote control panel with the roles of:

- Reads heat pump informations
- Sets heat pump working modes and setpoints
- Access to all parameters configuration
- Weekly ambient chronothermostat
- Anti-legionella cycle
- Alarm log

**NOTES: It can be configured with only one machine, it is not possible to manage a network of units.**

## 1.1 TECHNICAL DATA

| | |
|---|---|
| **Supply voltage** | 12Vdc (±10%) |
| **Supply frequency** | 50/60 Hz |
| **Power** | 1.8 VA |
| **Insulation class** | III |
| **Protection rating** | IP20 |
| **Operating ambient temperature** | 0°C / + 50°C |
| **Operating humidity** | 5% ÷ 85% |
| **Ambient temperature for storage** | 0°C ÷ 65°C |
| **Ambient humidity for storage** | 5% ÷ 85% |
| **Overall dimensions** | 144.4 x 97.5 x 21 mm |
| **Display** | Color, graphical 480x272 pix, with touch panel. |
| **Transmission** | RS485 (ModBus RTU protocol) |
| **Standards** | EN 60730-2-9, EN 60730-1 |
| **Software update** | Only microSD HC card (max. 32GB, FAT32 files format) |
| **Air temperature probe** | Accuracy is +/- 0.5°C; Range 5°C – 35°C |
| **(1) Class of the device** | 4 |
| **(1) Control contibution** | 2% |

(1) According to REG UE 2013-811.

Technical data of the 12Vdc power supply, included in the box:

| | |
|---|---|
| **Supply voltage** | 230Vac |
| **Power** | 6 VA |
| **Overall dimensions** | 20 x 51 x 43 mm |

# 2. EXPLOITATION CONDITIONS

Do not expose the control panel to direct weather conditions (rain, sunlight) and vibrations higher than typical during wheeled transport. Do not use in conditions of condensation and protect from water.

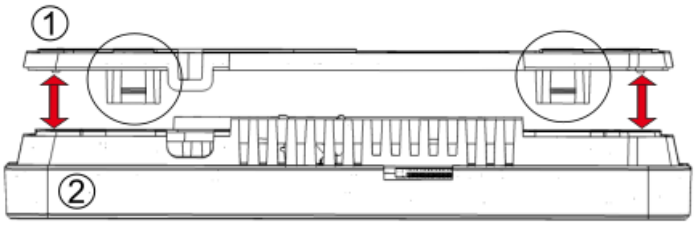
# 3. CLEANING AND MAINTENANCE PROCEDURES

The outer surface and maintenance of the control panel screen.

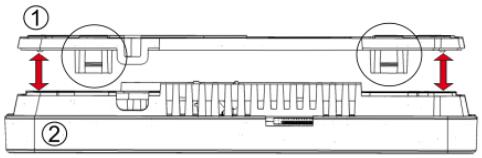
- The device should be cleaned with a soft, dry cloth.
- It is not allowed to clean the device with a flammable agent or substance (i.e. benzene or any kind of solvents) or a wet cloth. Such treatment can lead to malfunction of the device.
- It is not allowed to scratch the screen with nails or other sharp objects. It can lead to scratches or damage of the device.
- It is not allowed to clean the device by spraying water on it. If the water gets inside of the device it can cause a fire or lead to electrocution or damage the device.

# 4. INSTALLATION

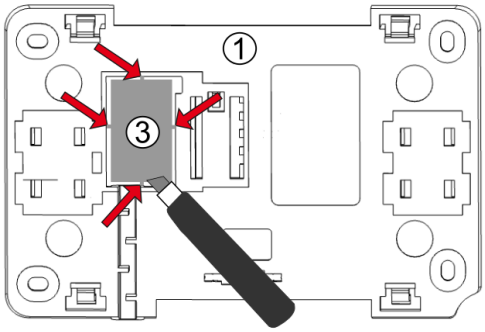
The control is intended to be installed on the wall or placing it on the flat surface, only in dry room. Panel cannot be used under water vapor condensation conditions and must be protected against water. Room thermostat must be installed on the height allowing its convenient use, typically 1.5 m over the floor.



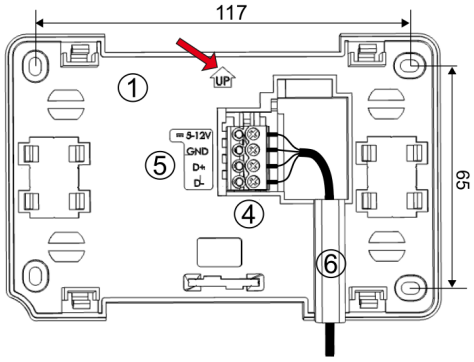

In order to reduce the interference of temperature measurement by the control panel, avoid sunny places with poor air circulation, close to the heating devices and places directly at doors and windows (typically at least 200 mm from the door edge).



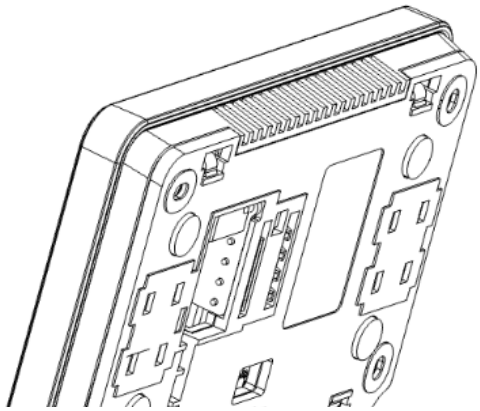

Control panel installation should be done according to the instructions below.
Disconnect the installation frame (1) from the back of room thermostat housing (2). The frame is attached to the panel housing with latches. Use a flat screwdriver to detach the frame.



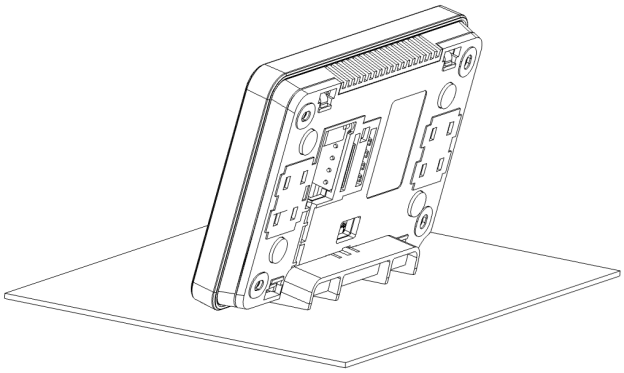

Using sharp tool cut out holes in four places of the cover (3) for the screw terminals.




Connect the wires of a transmission cable, connecting control panel with the heat pump, to the screw terminal (4) as described on the plate (5).The cable connecting control panel with the heat pump can be recessed in the wall or can run over its surface – in such case the cable should be additionally placed in the cable channel (6) of the installation frame. The cable connecting panel with the heat pump cannot be conducted along with the cables of the building mains. The cable should not be routed near devices emitting strong electromagnetic field.



Drill holes in the wall and using screws (max. Ø 3 mm) fix the installation frame in the selected place on the wall, maintaining its proper position (UP). The spacing of holes can be determined by placing the frame on the wall. Next fix the panel to the installation frame using latches.



In order to place the control panel on a flat surface use a dedicated stand.

## 5. WIRING

You need two cables for the connection between the e-LITE remote control panel and the water chiller/heat pump unit:

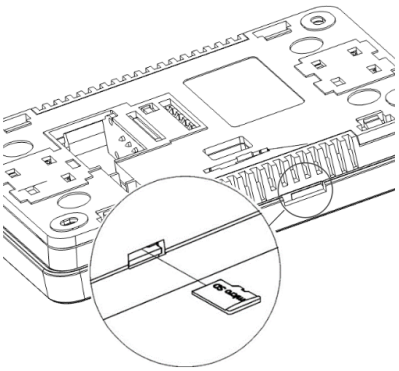
- 5X1mm2 twisted and shielded cable for Modbus communication D+/D-, PE, and 12Vdc power supply, which is included in the box.

NB: The shield of the cable must be connected to PE in both of its ends.

| DESCRIPTION | e-LITE TERMINALS | CHILLER/HEAT PUMP TERMINALS (see documentation relating to the heat pump) | 12 Vdc POWER SUPPLY | NOTES |
|---|---|---|---|---|
| POWER SUPPLY | VCC | | SEC, red, + | |
| | GND | | SEC, blk, - | |
| COMMUNICATION | D+ | X-5.2 (i-32V5) | | SHIELDED AND TWISTED CABLE |
| | | XC-2.2 (i-32V5 Midi) | | |
| | | XR+ (i-HPV5) | | |
| | | 1A (i-290) | | |
| | D- | X-5.1 (i-32V5) | | |
| | | XC-2.1 (i-32V5 Midi) | | |
| | | XR- (i-HPV5) | | |
| | | 1B (i-290) | | |
| SHIELDING | | PE clamp of the User terminal block | | |

## 6. SOFTWARE UPDATE

Software update is possible using only the microSD HC memory card (max. 32 GB, FAT32 files format) inserted into a slot in the control panel housing.



In order to replace the software, insert the memory card into the control panel slot - the software will be replaced automatically after inserting the card. The card should contain the new software in *.pfc format (the new software should be copied directly to the memory card, not to a subdirectory).

## 7. DISPLAY ICONS

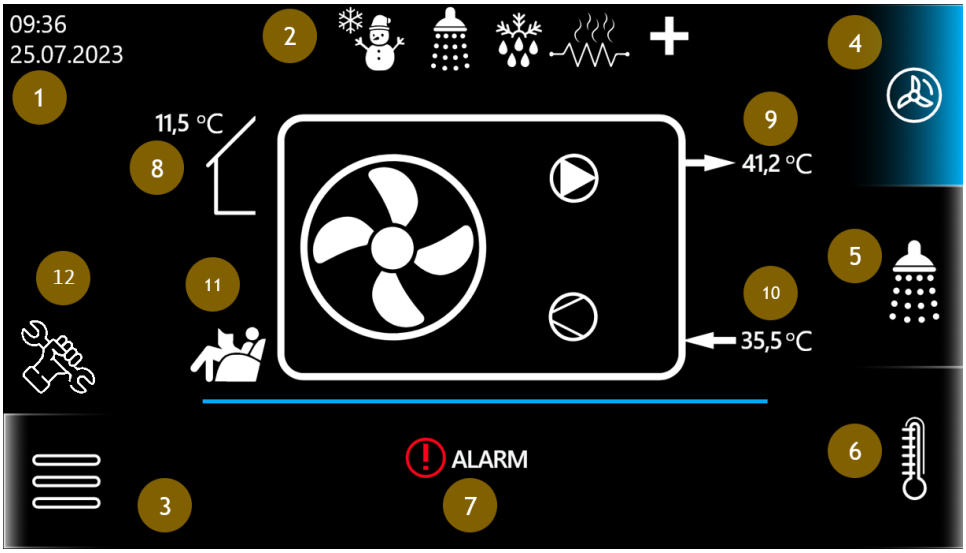
The following is the list of main icons with relative meaning.

| ICON | DESCRIPTION | NOTES |
|---|---|---|
|  | Heat Pump screen | Opens the heat pump screen (startup screen). |
|  | DHW screen | Opens the DHW screen. |
|  | Thermostat screen | Opens the thermostat screen. |
|  | Menu | Opens the menu screen. |
|  | Heating mode | Heat pump in heating system. |
|  | Cooling mode | Heat pump in cooling system. |
|  | DHW mode | Heat pump in Domestic Hot Water mode. |
|  | Comfort mode | Comfort set-point enabled. |
|  | Economy mode | Economy set-point enabled. |
|  | Compressor | White fixed symbol: compressor Off.<br>White blinking symbol: compressor on call.<br>Azure fixed symbol: compressor working. |
|  | Circulator | White symbol: circulator Off.<br>Azure symbol: circulator On. |
|  | Alarm | List of active alarms. |
|  | ON/OFF | Turns On or Off the Heat pump. |
|  | Chrono scheduling | Turns On or Off the scheduling mode. |
|  | Defrost | Blinking symbol if the defrost is in call.<br>Fixed symbol if the defrost is in progress. |

| ICON | DESCRIPTION | NOTES |
|---|---|---|
|  | Anti-freeze heater | The anti-freeze heater is working. |
|  | Anti-legionella | Showed if the Heat pums is doing the anti-legionella cycle.<br>Fixed if the cycle is in progress. Blinking if the cycle is failed. |
|  | Mantainer | Maintenance level symbol active.<br>Pressing on this symbol disables the maintenance level. |

## 8. HEAT PUMP SCREEN

Heat pump settings main screen after the heat pump is turned on.

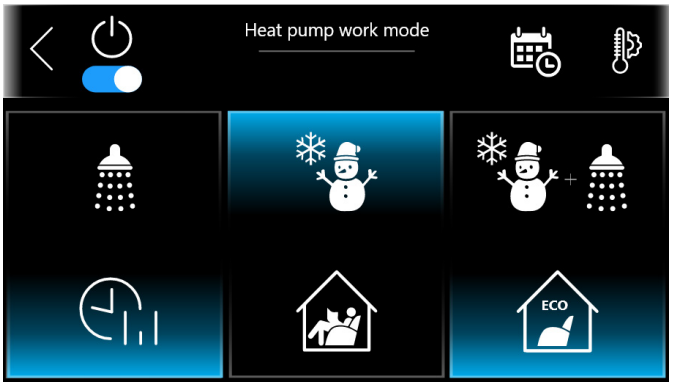



| Number | Description |
|---|---|
| 1 | Time and date |
| 2 | Heat pump status bar (Work modes, defrost, anti-freeze heaters, anti-legionella)<br>The message "NO COMMUNICATION" is shown, if there is no communication between heat pump main control board and e-LITE (in this case, check if the serial configuration is correct) |
| 3 | Main menu |
| 4 | Heat pump screen |
| 5 | DHW screen |
| 6 | Thermostat screen |
| 7 | Active alarms and active forcing |
| 8 | External temperature |
| 9 | Outlet water temperature |
| 10 | Inlet water temperature |
| 11 | Current heat-pump status |
| 12 | Active maintainer level |

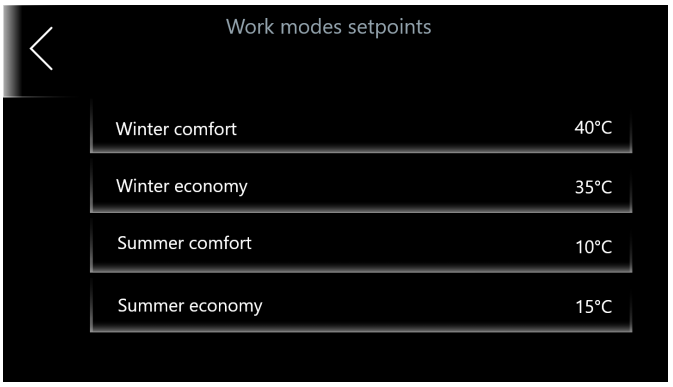
The possible status of the heat pump are the following:

| ICON | DESCRIPTION |
|---|---|
|  | Manual comfort set-point enabled. |
|  | Manual economy set-point enabled. |
|  | Manual heat pump in Stand-by mode. |
|  | Cronothermostat enabled, with active comfort set-point. |
|  | Cronothermostat enabled, with active economy set-point. |
|  | Cronothermostat enabled, with active stand-by mode. |
|  | Comfort set-point enabled, from digital input forcing (see heat-pump MCO, "second set-point from digital input"). |
|  | Economy set-point enabled, from digital input forcing (see heat-pump MCO, "second set-point from digital input"). |

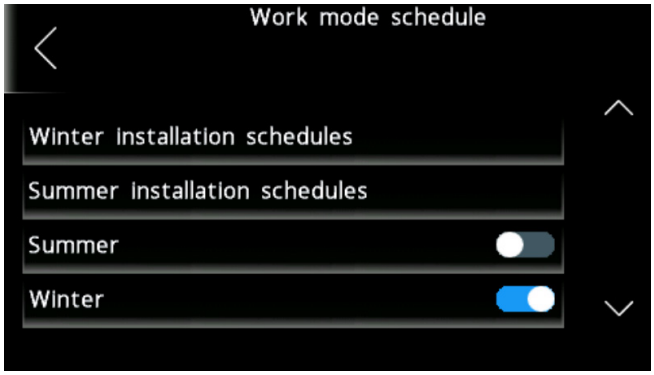
Pressing the  symbol, the heat pumps work modes are displayed:



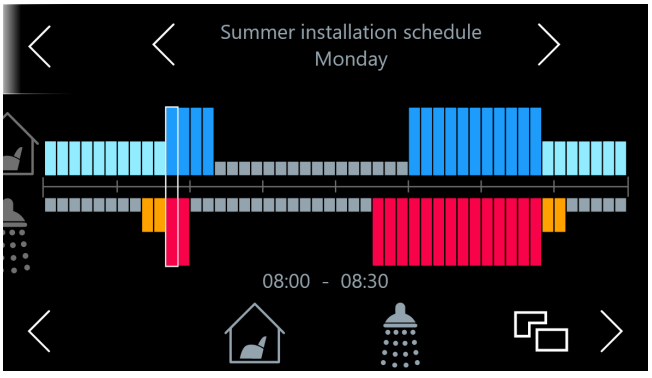

Tapping  symbol, the setpoint settings are displayed:




Tapping  symbol, the season and scheduling menu are displayed:

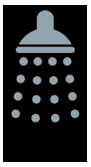
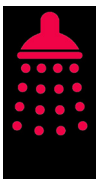



By tapping on the season switches, the selected season is activated for the heatpump and the thermostat function.
Pressing Winter or Summer installation schedules, the scheduling screen is showed:

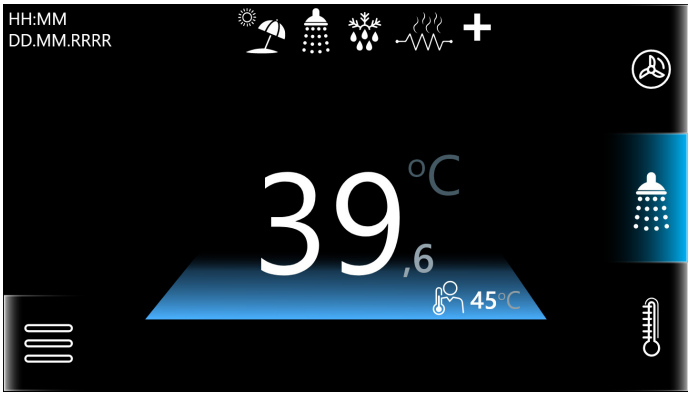


The strip represents the day, that is divided in 48 parts. Each part is 30 minutes. It is possible to change the day, with the > and < arrows.
The upper part represents the plant water outlet enabling, the lower part represents the Domestic Hot Water enabling.
The azure, lower strips represents cooling mode, Eco setpoint.
The blue, higher strips represents cooling mode, comfort setpoint.
The orange, lower strips represents heating mode, Eco setpoint.
The red, higher strips represents heating mode, comfort setpoint.
The gray strips represents disables mode.

The "copy symbol"  , allows to select the days of the week, where we want to have the same program of the showed day.
It's possible to scroll in left and right position, modifing every single area, by enabling the next symbles (by pressing the respective symbols):

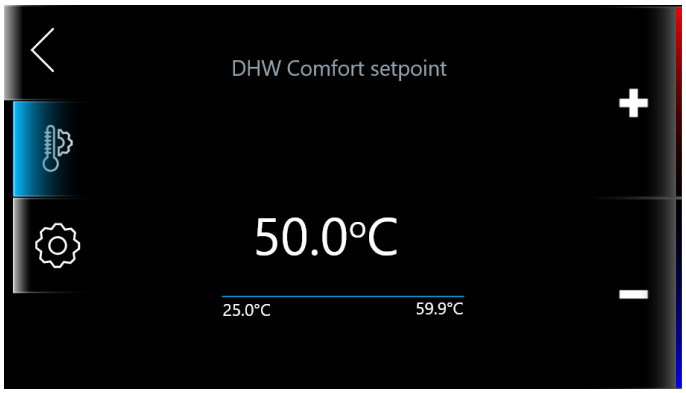
| ICON | DESCRIPTION |
|---|---|
|  | Heat pump (water outlet configuration) OFF. By scrolling, the heat-pump plant water outlet configuration is disabled. |
|  | Heat pump (water outlet configuration). By scrolling,the heat-pump plant water outlet configuration, in cooling mode with comfort set-point is enabled. |
|  | Heat pump (water outlet configuration). By scrolling,the heat-pump plant water outlet configuration, in cooling mode with economy set-point is enabled. |
|  | Heat pump (water outlet configuration). By scrolling,the heat-pump plant water outlet configuration, in heating mode with comfort set-point is enabled. |
|  | Heat pump (water outlet configuration). By scrolling,the heat-pump plant water outlet configuration, in heating mode with economy set-point is enabled. |
|  | Heat pump DHW OFF. By scrolling, the heat-pump DHW configuration is disabled |
|  | Heat pump DHW COMFORT. By scrolling,the heat-pump DHW configuration with comfort set-point is enabled. |
|  | Heat pump DHW ECO. By scrolling,the heat-pump DHW configuration with economy set-point is enabled. |

## 9. DHW SCREEN

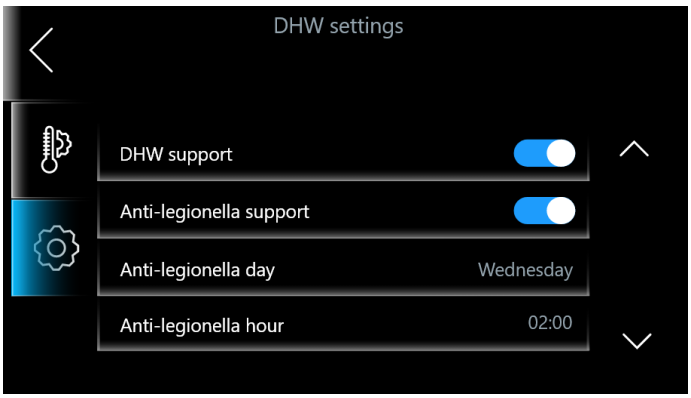



In the center of the screen the temperature measured by the DHW probe is showed. On the right, below, the set-point temperature is showed.
By tapping on this screen, the DHW set-point edit screen is showed.

NOTE:
When the DHW is disabled, the next message is showed: "Domestic Hot Water support turned OFF. Press here to go to settings.".
By tapping, the next screen will be displayed:




By pressing the gear symbol, it is possible to set the anti-legionella scheduling:




The DHW enable switch enables/disables the domestic hot water function.
The anti-legionella enable switch enables/disables the scheduled or manual disinfection cycle functionality.
Select the day and time at which to run the weekly cycle.
The anti-legionella start switch enables manual forcing of the disinfection cycle.
The time in which the request for the anti-legionella cycle is sent is one hour. During this period, the DHW temperature must be higher than r27 [°C] (DHW setpoint during anti-legionella cycle), for r26 [minutes] (anti-legionella cycle duration).

The positive or negative results of the anti-legionella cycle, are stored in the Alarm History menu.

**NOTE:**
See the heat pump MCO, to configure and enable all the resources requested by DHW.

**NOTE 2:**
For the anti-legionella support, DHW support and all the requested resource must be enabled. See the heat pump MCO, to configure and enable all the resources requested by anti-legionella.

## 10. THERMOSTAT SCREEN


Thermostat function, uses the e-LITE internal probe, to measure the room temperature. By activating this function, the internal probe will be used to switch on or off the heat pump.
The thermostat call will be sent to the heat pump if:

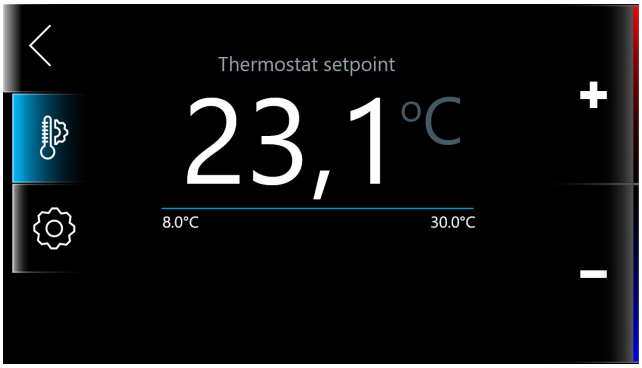
- The unit is in cooling or heating
- The internal probe temperature hasn't reach the setpoint yet

For details of the behaviour of the machine in absence of the room call, refer to the machine specifications.

**NOTE:**
See the heat pump MCO, in order to set the types of regulation when the ambient probe is satisfied.
In the center of the screen the temperature measured by the internal probe is showed. On the right, below, the actual set-point temperature is showed.

## 10.1 THERMOSTAT SETPOINT SETTINGS

By tapping on the measured temperature, the thermostat set-point edit screen is showed:

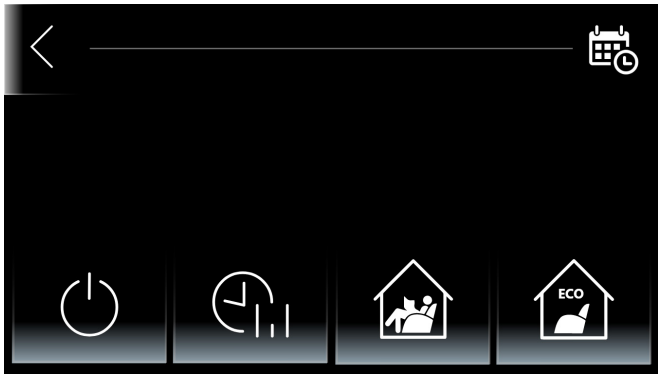



By tapping on the gear symbol, the Thermostat settings are showed:

| Function | Description | Range |
|---|---|---|
| Winter comfort preset | Comfort setpoint temperature for Winter mode. | Depending on heat pump parameters (see heat pump MCO) |
| Winter economy preset | Economy setpoint temperature for Winter mode. | |
| Summer comfort preset | Comfort setpoint temperature for Summer mode. | |
| Summer economy preset | Economy setpoint temperature for Summer mode. | |
| Thermostat histeresis | After the air setpoint is reached, the thermostat call will be sent to the heat pump again, when the air temperature will:<br>in heating mode: decrease lower than "air setpoint - Thermostat hysteresys"<br>in cooling mode: encrease higher than "air setpoint + Thermostat hysteresys" | 0°C - 5°C |
| Panel temperature correction | Correction from the temperature readed by the room probe | -5°C / +5°C |

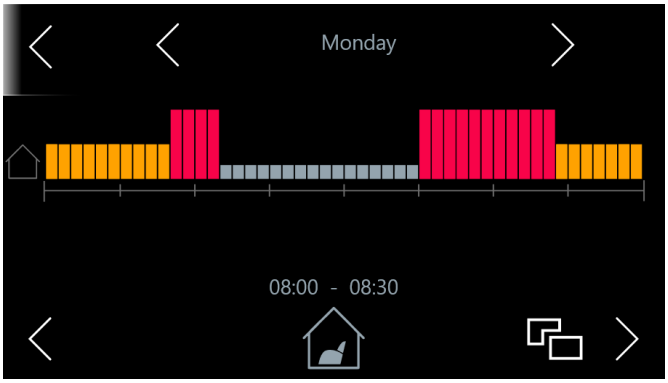
## 11. THERMOSTAT WORK MODE SETTINGS

On the main thermostat screen, tapping the status symbol below on the left, the thermostat work mode settings are shown:




| ICON | DESCRIPTION | NOTES |
|---|---|---|
|  | ON/OFF | Turns On or Off the Thermostat function |
|  | Chrono scheduling | Turns On or Off the Thermostat scheduling mode |
|  | Comfort mode | • Switch to the comfort thermostat set-point in manual mode<br>• Showed if the crono schedule is active and in comfort mode |
|   | Economy mode | • Switch to the economy thermostat set-point in manual mode<br>• Showed if the crono schedule is active and in economy mode |

By pressing  symbol, the season and scheduling menu are displayed:




The strip represents the day, that is divided in 48 parts. Each part is 30 minutes. It is possible to change the day, with the > and < arrows.
The azure, lower strips represents cooling mode, Eco setpoint.
The blue, higher strips represents cooling mode, comfort setpoint.
The orange, lower strips represents heating mode, Eco setpoint.
The red, higher strips represents heating mode, comfort setpoint.
The gray strips represents disables mode.

The "copy symbol"  , allows to select the days of the week, where we want to have the same program of the showed day.
It's possible to scroll in left and right position, modifing every single area, by enabling the next symbles:

| ICON | DESCRIPTION |
|---|---|
|  | Room temperature OFF<br>By scrolling, the room temperature thermostat function, is disabled. |

| ICON | DESCRIPTION |
|---|---|
|  | Room temperature with comfort setpoint, in cooling mode.<br>By scrolling, the room temperature with comfort set-point, in cooling mode is enabled. |
|   | Room temperature with economy setpoint, in cooling mode.<br>By scrolling, the room temperature with economy set-point, in cooling mode is enabled. |
|  | Room temperature with comfort setpoint, in heating mode.<br>By scrolling, the room temperature with comfort set-point, in heating mode is enabled. |
|   | Room temperature with economy setpoint, in heating mode.<br>By scrolling, the room temperature with economy set-point, in heating mode is enabled. |

## 12. MAIN MENU

From the home screen, by clicking in the menu symbol (below on left), the main menu is shown:

## 12.1 DIAGNOSTIC INFO

In this area, input and output values and work counters of the heat pump are shown.

**NOTE:** Here you can also find Firmware version of the main control board and of the e-LITE.

## 12.2 ALARM LIST

Active alarm list. For detailed heat pump alarms, see the heat pump MCO.

Tapping the reset symbol  , all the alarms that are no more active, will be reset.

## 12.3 ALARM HISTORY

Alarm historical, with date and hour of alarm start, and alarm stop.
In this list, the results of the anti-legionella cycle are saved in the following events:

- start of anti-legionella cycle,
- positive cycle result,
- negative cycle result.

## 12.4 UNIT SERIAL NUMBER

Heat pump serial number.

## 12.5 GENERAL SETTINGS

- Time and date
- Language
- Day brightness: percentage of display brightness, while using the e-LITE.
- Night brightness: percentage of display brightness, in stand-by mode
- Touch sound: enables or disables the tapping sound.
- Time Zone: time zone. Do not change the factory setting.
- Modbus: configuration of the modbus parameters for the interface with the heat pump. Set Slave ID, Baudrate and Parity of the heat pump to which the e-LITE is connected on this menu.

## 12.6 SERVICE MENU

This menu allows to access to the heat pump configurations and functions.
Password request is displayed (heat pump passwords).
User password: 0000.
Based on the level, different menus are shown.

### 12.6.1 UNIT SETTINGS

The visualized parameters, depends on the setted password, as described in the heat pump MCO (Par chapter).

### 12.6.2 UNIT FORCING

Note that the menu is password-protected.

- Reset alarm history in panel:resets e-LITE alarm history.
- Reset alarm history: resets heat pump alarm history (stored on main control board).
- Reboot control board: reboots the heat pump main control board (enabled only when compressor is in stand-by).
- Defrost: forces a manual defrost (see conditions to enable defrost, in heat pump MCO).
- Plant deareation: activation of the circulator to force a plant deareation. Tapping on it, the function will be activated. With the active function, a tap on the name of the forcing, will disable it. Note that the command is only accepted by the heat pump if its status is OFF. The heat pump stops this forcing if the function mode change from OFF to a different mode, even if the entire forcing time has not yet elapsed.
- Pump forcing: This function is used to manually activate the system pump for recirculation with the pump at 100% for 1 hour.Tapping on it, the function will be activated. With the active function, a tap on the name of the forcing, will disable it. Note that the command is only accepted by the heat pump if its status is OFF. The heat pump stops this forcing if the function mode change from OFF to a different mode, even if the entire forcing time has not yet elapsed.
- Solar pump forcing: This function is used to manually activate the solar pump. Tapping on it, the function will be activated. With the active function, a tap on the name of the forcing, will disable it. Note that the command is only accepted by the heat pump if its status is OFF. The heat pump stops this forcing if the function mode change from OFF to a different mode, even if the entire forcing time has not yet elapsed.
- Factory reset: This function returns the e-LITE to factory settings.

**NOTE:** When a forcing is activated, the main screen will be displayed.

### 12.6.3 UNIT UPDATE

Note that the menu is password-protected.

- FIRMWARE UPDATE: update the main control board firmware

1. Copy the upgrade files to the root directory of a USB pen-drive;
2. Set the unit to Stand-by and switch off the unit by setting the main switch to the OFF state;
3. Insert the USB pen-drive into the USB port on the control board;
4. Power on the unit by setting the main switch to the ON state;
5. Press on the firmware update switch. Selecting this item starts the automatic firmware update procedure, on the e-LITE advances the progress field indicating the transferred Kbytes. When the count ends, the firmware is successfully loaded.
6. Once the installation is complete, the board returns to normal operation and the machine is ready to be commissioned again;
7. Turn the unit off by setting the main switch to the OFF state;
8. Wait 5 minutes for complete discharge of the condensers;
9. Remove the pen-drive from the USB port;
10. Power on the unit by setting the main switch to the ON state.

- PARAMETERS UPDATE: update the main control board parameters

1. Copy the parameter files to the root directory of USB pen-drive;
2. Set the unit to Standby and switch off the unit by setting the main switch to the OFF state;
3. Insert the USB pen-drive into the USB port on the control board;
4. Power on the unit by setting the main switch to the ON state;
5. Press on the firmware update switch. Selecting this item starts the automatic firmware update procedure, on the e-LITE advances the progress field indicating the transferred Kbytes. When the count ends, the firmware is successfully loaded.
6. Once the installation is complete, the board returns to normal operation and the machine is ready to be commissioned again;
7. Turn the unit off by setting the main switch to the OFF state;
8. Wait 5 minutes for complete discharge of the condensers;
9. Remove the pen-drive from the USB port;
10. Power on the unit by setting the main switch to the ON state.

- PAR EXPORT: export the main control board parameters and alarm historical.
- PROGRESS: progression status.

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