

USER'S MANUAL



AIR TO WATER HEAT PUMP

INDOOR UNIT - HYDROBOX

GSH-IRAD



“Original instructions”

QUICK SETUP

Descriptions of the controls



The upper bar displays time, successfully connected Sinclair Route (cloud) service and Ethernet connection.

Object section
Displays mode of heating / cooling, object temp., circulator state, object state, main switch operation heating / cooling

DHW section
Displays temp. of DHW, DHW circulator state, heating state, main switch DHW heating

Overview section
Displays important temperatures and parameters, operation states, outdoor unit power, icon of economic operation, access to main menu and expanded overview, witch contains error history, measure of supplied power and more ...

16:40:09 CLOUD ETH1

22.3°C 21.2°C

Outd. T 19°C
Outp. T 22°C
Equi. T 24°C
Circ. 30%

15 %

H/C DHW More.. Menu

Basic controls:

For basic controls of the heat pump use graphical touch panel.

Main menu (press button „MENU“)

	Main screen - summary. Used for switch on / off Heat pump, DHW heating. Displays the overview of most important values and allows entry to states and errors screen (button More... → State, errors) and entry to screen of supplied power measure (button More... → Calorimeter)		Graphs of important values Outdoor unit temperature, object temperature, output water temperature, DHW temperature, required output power.
	Heating / cooling parameters settings. This section allows to set equithermic curve, attenuation, follow energy tariff for heating / cooling, required temperature of object, bivalent source state and more...		Expanded parameter settings of heat pump. This section allows to set maximal power of outdoor unit, cooling parameters, Ethernet network settings and more...
	DHW heating parameter settings. This section allows set temperature of DHW, heating and circulation time schedule, follow energy tariff for DHW heating, bivalent source state and more...		This section allows to set parameters of pool heating and using of secondary source

Elements on display, which are possible to change values, switch ON/OFF or refer to next screen have got orange underlay. After pressing element is either displayed referred screen or is displayed panel for variable adjustment. Appearance of panel depends on type of variable.

Winter operation with DHW

On the main screen set icon and to ON (orange colored rectangle in upper right corner) . In settings set the required DHW temperature and delays of the DHW electric heating.

For 200l water tank set 40min, 300l - 60min, 400l - 90min. Equithermal curve in section pre-set in the case of radiators T - at -20°C to 50°C, T - at -8°C to 45°C, T - at +5°C to 40°C, T - at +15°C to 35°C, and in the case of floor heating T - at -20°C to 40°C, T - at -8°C to 35°C, T - at +5°C to 30°C, T - at +15°C to 25°C. Then adapt your required temperature by automatic correction of equithermal curve.

Winter operation without DHW

On the main screen set icon to ON and icon to OFF . Equithermal curve pre-set as in the case of „Winter operation without DHW“.

In heated rooms are cold or too warm

For example, if the room temperature is 2 degrees higher than required, enter the automatic correction eq. curve in object section to -3°C. When the difference in room temperature eg about 1°C lower than required, enter the correction + 2°C and so on. The maximum correction is +/- 3°C for one insertion. Remember that change takes effect after a certain time. For floor heating be aware of delays thermal exchanges in the rooms due to changes in water temperature 3-6 hrs.

Dear consumer,
thank you for purchasing the heat pump GSH-IRAD. We hope you will be satisfied with the device which shall bring heat comfort to your house. The pump is a quite complicated device therefore pay high attention to this manual, please. The manual shall make you familiar with using, placement, construction and further information.

IMPORTANT NOTICE



The heat pump GSH-IRAD is intended for reduced electricity rates for heat pumps (czech d56) or for convector heating rate (czech d46). A permission of an appropriate distributor has to be obtained before connecting to the energy grid. Only authorized company is allowed to carry out installation, connecting, and service. The warranty card is not valid without authorization.

1. COMPLETENESS



The GSH-IRAD heat pump is a split type. Indoor unit: GSH-IRAD
Outdoor unit: GSH-XXEARD
Outdoor temperature sensor
DHW temperature sensor
User manual
Warranty card

2. APPLICATION



Heat pumps GSH-IRAD are intended for heating of houses or small industrial buildings. The product shall be connected to low-temperature heating system, such as floor heating, wall or ceiling heating. Connecting of wall heating convectors is possible but maximum temperature of heating water is limited to 50 °C. (60 °C at type HP) However, efficiency is worse at this temperature (COP decreases). Heat pump can be also used for cooling. At cooling mode is output water temperature limited to condensing temperature. Heat pump is not suitable for cooling with water temperature under condensing temperature e.g. fancoil. Low temperature water causes condensation on inner equipment of indoor unit and thereby the damage. Suitable cooling system cooling ceiling, where condensation does not occur.

3. PRODUCT DESCRIPTION



Basic construction elements:

- Outdoor unit

It is made from a steel tin with anti-rust treatment which is reached by a powder varnish. Its heart is made by inverted double level compressor which is a novelty in the field of heat pumps guaranteeing reliability and longevity. The unit also contains an exchanger with anti-rust treatment and 30 years lifetime, fans with variable revolutions, electronic expansion valve, controlling and measuring elements.

- Indoor unit

Its main part is a board heat exchanger refrigerant / water. Another substantial part is TECO regulator with sophisticated software which controls operation of the pump and also controls temperature in the building. The regulator provides cascade regulation of the heat pump with bivalent supply. There is also a possibility to connect to the PC via web interface for comfortable and effective control of the heat pump. The unit also contains protecting, measuring and regulation elements.

4. SAFETY



The heat pump is an electrical appliance operating with voltage of 400V! It can be installed and maintained only by an authorized electrician. In case of fire do not extinguish with water or a foam extinguisher. Use only powder or carbon-dioxide extinguisher!

In case of refrigerant leakage turn off all circuit breakers placed inside of indoor unit. The refrigerant R410A is inflammable, non-explosive, non-toxic. Never try to stop the leakage on your own, as temperature very low (up to -50 °C). In case of a leakage indoor provide fresh air. If you breathe in its fumes or fire exhausts, take the injured person to the fresh air and call emergency. If the refrigerant is spilled on your skin, dry the place and keep it warm (e.g. by a duvet). If the refrigerant spills to your eyes, rinse with plenty of water and call emergency.

In case of fire disconnect from the power grid and extinguish by carbon-dioxide extinguisher.

In case of leakage of the heating water, switch off all circuit breakers placed inside of the indoor unit and contact the maintenance company written on the indoor unit label.

When manipulating with cooling pipes (maintenance) use skin and eyes protection aids (gloves, glasses).

Do not insert your hands or other subjects to the fan of outer unit, there is a threat of a serious injury!

Do not impose air vapping of the outdoor unit for a long time, there is a threat of hypothermia!

Please follow the conditions set by standards:

EN 378-4:2008, art. 6.5

All parts of the cooling device, e.g. refrigerant, oil, filter, dehydrator, insulation material have to be recuperated, recycled, and/or disposed in an ecological way in connection with maintenance, repairing, or discarding.

EN 378-4:2008 art. 6.2

Used refrigerant which is not intended to be re-used has to be treated like material intended for safe disposal. It must be prevented from emissions to the environment.

EN 378-4:2008 Attachments A

Used recuperated oil from the cooling device which cannot be regenerated has to be stored in a suitable separate container and has to be treated like material intended for safe disposal.

EN 378-4:2008 art. 6.5

All components of the cooling device which contain the refrigerant and the oil have to be disposed in a proper way.

EN 378-4:2008 art. 6.6

All activities of recuperation and refrigerant re-using and its source have to be recorded in the cooling device diary (see EN 378-2).

5. STORAGE AND TRANSPORTATION CONDITIONS



Outdoor unit GSH-XXERAD

Dust-free, non-aggressive environment

Temperature - 20 - +35 °C

Humidity max 90%

Outdoor unit has to be stored and transported vertically in an original package, avoid damage of fragile parts

Indoor unit GSH-IRAD

Dust-free, non-aggressive environment

Temperature +5 to +45 °C

Humidity max 70%

6. PRINCIPLE OF OPERATION



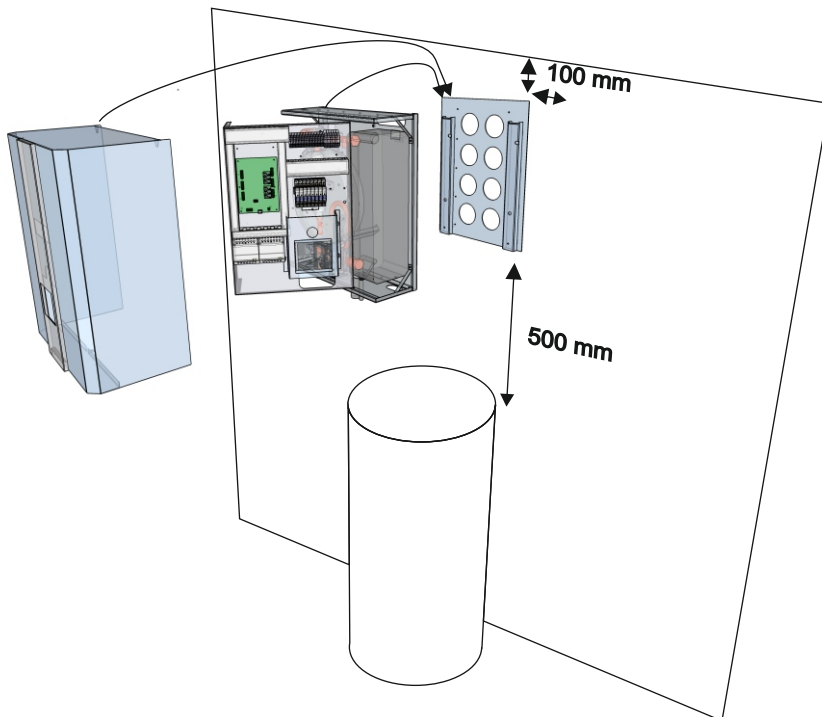
A heat pump is a device gaining low-temperature energy from a selected source and transforming it to a higher temperature level. A heat pump air-water system utilizes heat of surrounding air. Its core is a high-performance compressor which presses down the refrigerant in a hermetic circuit and expands it while using convenient features of the cooling medium. We use ecological refrigerant R410. On the input side (outdoor unit and the exchanger) outdoor air is pushed through heat transfer surface of exchanger by a fan. Inside of this exchanger circulates refrigerant, which passes through expansion valve, and rapidly cooled to a temperature lower than the ambient air. Refrigerant in exchanger heats up (e.g. from minute 17 to minute 10) and heat recovered is stored in refrigerant. Then is "compressed" by a compressor and distributed to the condenser (indoor unit). Inside of plate condenser of indoor unit refrigerant condenses and it transfers the heat into heating medium (heating water). Thereafter condensed refrigerant goes into expansion valve and the cycle repeats itself.

7. INSTALLATION

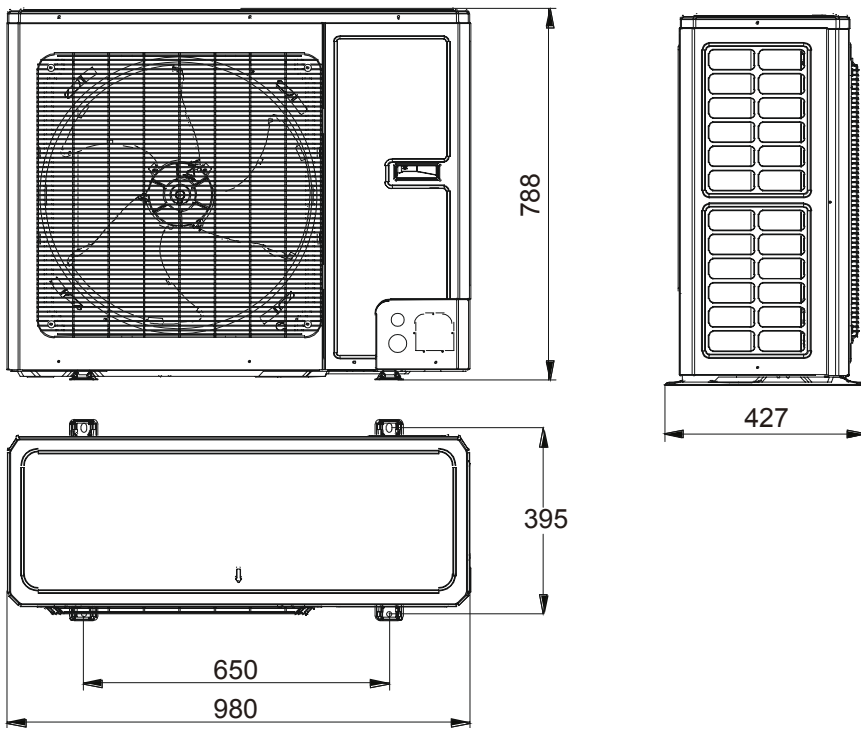


The device has to be mounted by an authorized company otherwise the device can be damaged or an injury can be caused. The indoor unit shall be fixed on the wall. Free access to the controlling and protection elements has to be provided (see the picture below). The outdoor unit shall be fixed by screws to the steel base supplied by the producer. The steel base is required for a proper defrost of the exchanger. The base shall be fixed to ideally to a concrete ground whose dimensions avoid falling the unit over during a gale.

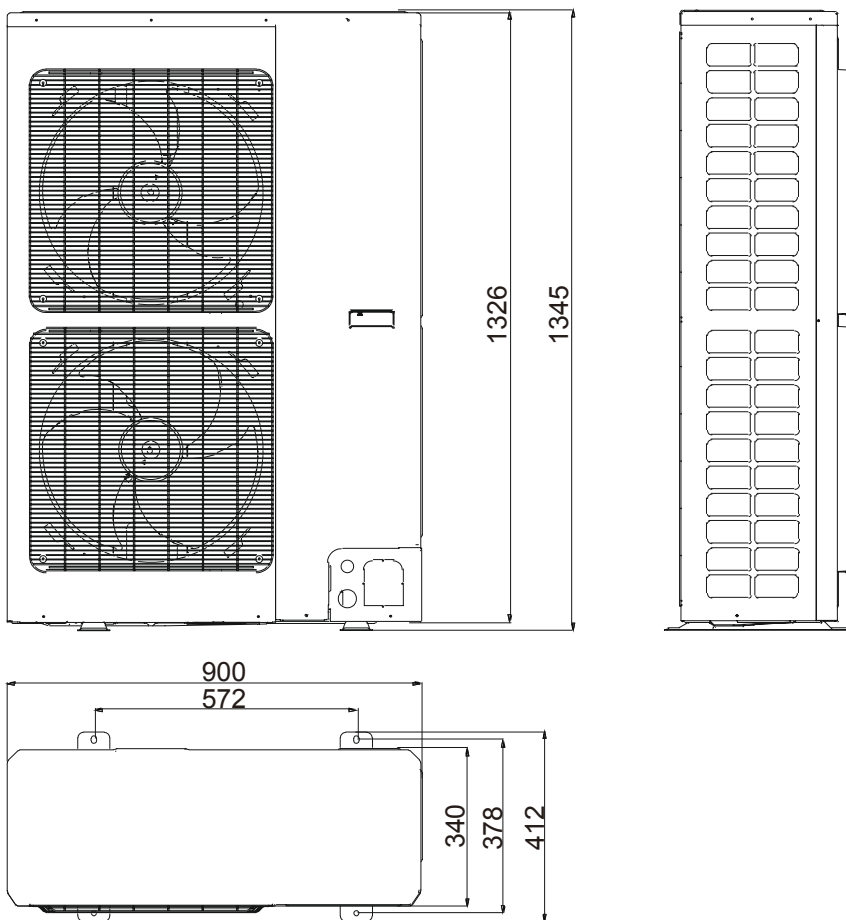
Free circulation of air and maintenance access shall be provided (see the picture below). Be aware that outdoor unit noise might disturb in the surrounding area and avoid it following proper standards.

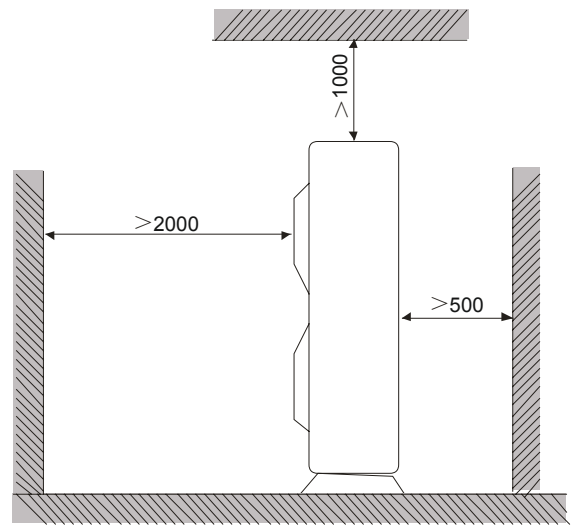
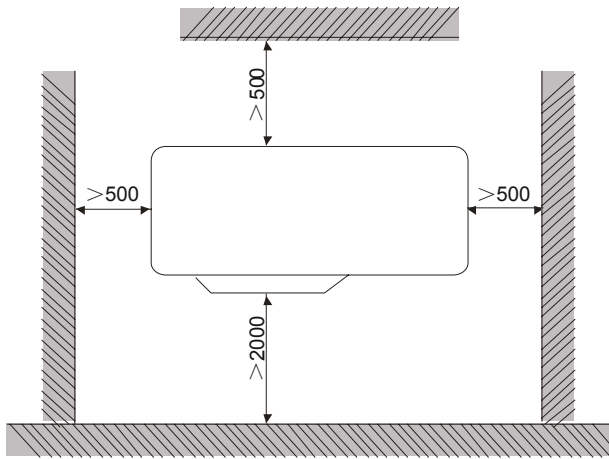


Outdoor unit GSH-70/80ERAD



Outdoor unit GSH-110/130ERAD





8. CONNECTING OF REFRIGERATION CIRCUIT



Only authorized service can connect the refrigeration circuit (see Installation).

WARNING!



Do not try to connect the circuit on your own! There is a threat of a serious injury. The refrigerant is under pressure of 4,5MPa and temperature is up to -50 °C.

BIVALENT SOURCE



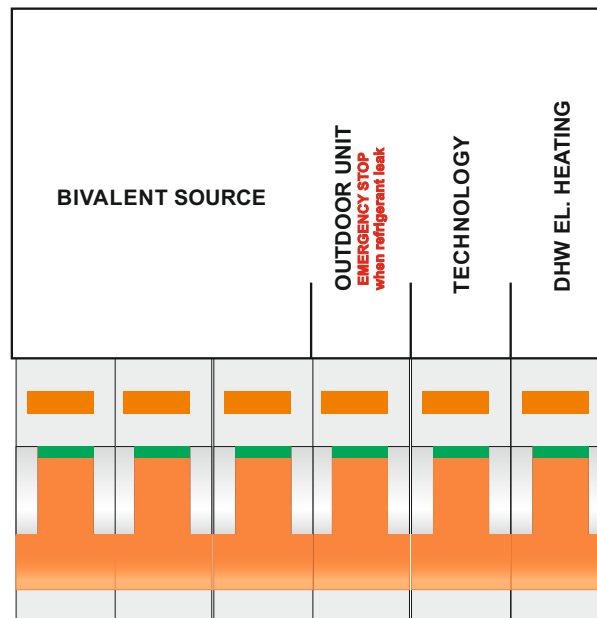
Heat pumps GSH-IRAD contain integrated electric boiler of capacity 6kW. The boiler compensates power loss of the heat pump at extreme conditions. When external bivalent boiler is used, it is necessary to equip it with all safety elements (temperature protection, pressure valve, el. protection). The added bivalent source is controlled by the heat pump only passively. It means it must contain its own regulation so that heating water temperature is not exceeded, e.g. for the floor heating.

9. FIRST START OF THE HEAT PUMP



It is necessary to put water into the circuit before you launch the heat pump. Reach basic pressure 1 - 1.5 bar. According to water column add 0.1 bar for every meter height of the heating system. Next, it is necessary to bleed the circuit thoroughly. The bleeding is done by the bleeding screw of the circuit pump or, alternatively, on the upper threaded piece of the board exchanger. When the circuit pump is switched on, the board exchanger shall be bled thoroughly. After that its noise is decreased. The circuit pump shall run for 10 minutes at least before the compressor is switched on. After watering and bleeding electric equipment shall be used.

Description of protection elements of the heat pump

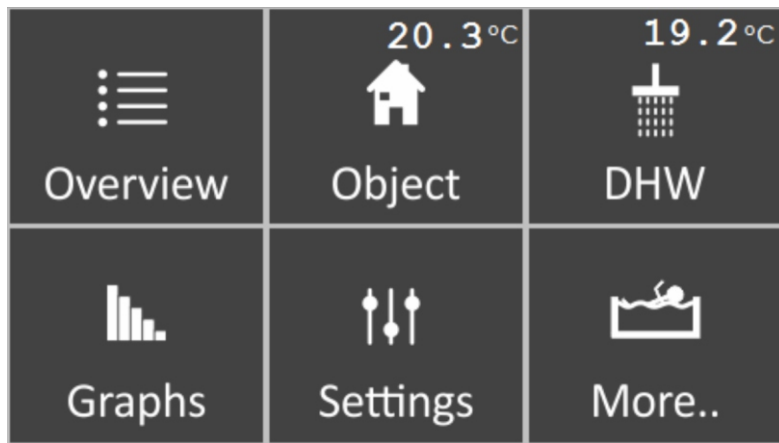


The heat pump breakers; one phase type

- BIVALENT SOURCE - protection of bivalent source
- OUTDOOR UNIT - protection of outdoor unit
- TECHNOLOGIE - protection of technology (regulator, 3-way valve, circ. pump.....)
- DHW EL. HEATING - protection of DHW electric heating

10. Settings and service of regulator GSH-IRAD Unity Color

Description of the control panel GSH-IRAD



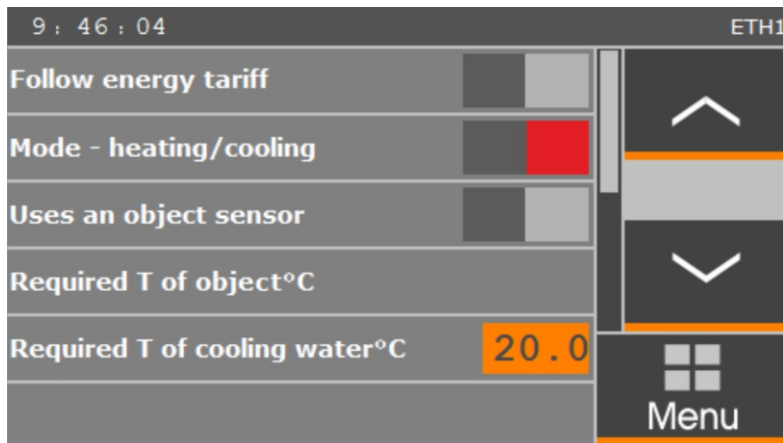
Basic controls:

For basic controls of the heat pump use graphical touch panel.

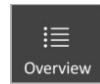
Main menu (press button „MENU”)

<p>Overview</p>	<p>Main screen - summary. Used for switch on / off Heat pump, DHW heating. Displays the overview of most important values and allows entry to states and errors screen (button More... → State, errors) and entry to screen of supplied power measure (button More... → Calorimeter)</p>	<p>Graphs</p>	<p>Graphs of important values Outdoor unit temperature, object temperature, output water temperature, DHW temperature, required output power.</p>
<p>Object</p>	<p>Heating / cooling parameters settings. This section allows to set equithermic curve, attenuation, follow energy tariff for heating / cooling, required temperature of object, bivalent source state and more...</p>	<p>Settings</p>	<p>Expanded parameter settings of heat pump. This section allows to set maximal power of outdoor unit, cooling parameters, Ethernet network settings and more...</p>
<p>DHW</p>	<p>DHW heating parameter settings. This section allows set temperature of DHW, heating and circulation time schedule, follow energy tariff for DHW heating, bivalent source state and more...</p>	<p>More..</p>	<p>This section allows to set parameters of pool heating and use of secondary source</p>

Elements on display, which are possible to change values, switch ON/OFF or refer to next screen have got orange underlay. After pressing element is either displayed referred screen or is displayed panel for variable adjustment. Appearance of panel depends on type of variable. In section of object, DHW, graphs, settings and more are variables arrayed to vertical lists divided to parties.



- Overview - main screen



The upper bar displays time, successfully connected Sinclair route (cloud) service and Ethernet connection.

9 : 04 : 50		ETH1	
20.3 °C	19.1 °C	Outd. T 19 °C	0 %
		Outp. T 22 °C	
		Equi. T 45 °C	
		Circ. 30 %	
H/C	DHW	More..	Menu
<u>Object section</u> Displays mode of heating / cooling, object temp., circulator state, object state, main switch operation heating / cooling	<u>DHW section</u> Displays temp. of DHW, DHW circulator state, heating state, main switch DHW heating	<u>Overview section</u> Displays important temperatures and parameters, operation states, outdoor unit power, icon of economic operation, access to main menu and expanded overview, witch contains error history, measure of supplied power and more ...	

Status icons



- Heatpump operation. For heating / cooling / DHW heating is used heat pump.
- Secondary source operation. For heating is used secondary source. For DHW heating is used heat pump.
- Defrost. Outdoor unit defrosts. DHW heating is interrupted.
- Too low temperature of outdoor air. For heating is fully used bivalent source (internal electric heater).
- Economic operation. Displayed when output water temp. is lower than 45°C and the power is lower than 50%.
- DHW heating is blocked by time schedule
- Antilegionella. DHW tank is heated by electric heater because of legionella disinfection

Meaning of text shortcuts

- Attenuation** - attenuation is active, parameter settings in section Object
- High tariff!** - operation is blocked by electricity supplier
- DHW heat.** - DHW heating by heat pump
- DHW el. heat.** - DHW heating by electric heater
- Drying** - floor drying program is active
- Pool heat.** - pool is heated by heat pump
- Bival 1st. 2st.** - bivalent source operation (1st. - first stage (2kW), 2st. - second stage (4kW))
- Outd. T** - outdoor air temperature
- Outp. T** - output water temperature
- Equi. T** - temperature computed by equithermal curve for primary circuit
- Circ.** - circulator power
- Obj. T** - object temperature
- IQ corr.** - IQ correction - correction applied to equithermal curve by object temperature

- Overview - main screen



Section - More...

2. circ	- secondary circuit mixing valve opening
2. equi.	- temperature computed by equithermal curve for secondary circuit
2. outp.	- output water temperature for secondary circuit
Outdoor temp.	- outdoor temperature
Comp.	- compressor speed
Vent.	- ventilator speed
Hours in use	- number of operation hours of heat pump

Section - Calorimeter

Water flow	- water flow through indoor unit
Actual power	- actual power supplied by heat pump
Supplied power	- power supplied since last calorimeter reset
Circulator power	- actual circulator power
Water pressure	- water pressure inside of system
Out./In.	- water temperature output / input

Section - Status Errors

Code of states and errors - four-digit code (read from left)

- 1. digit: 1 - Freeze protection (output water temperature dropped below safe limits)
2 - Insufficient water flow (water flow dropped below safe limits)
3 - Outdoor unit disorder
4 - Low water pressure (water pressure dropped below 0,9 Bar)
5 - Faulty temperature sensor MX (communication unit)
- 2. digit: 1,2 - Faulty output water temperature sensor
3,4 - Faulty input water temperature sensor
- 3. digit: 1,2 - Faulty pool temperature sensor
3,4 - Faulty secondary circuit temperature sensor
- 4. digit: 1,2 - Faulty outdoor temperature sensor
3,4 - Faulty object temperature sensor
5,6 - Faulty DHW temperature sensor
7,8 - Faulty accumulative tank temperature sensor

First two digits from left indicate critical error, in which is heat pump operation stopped or limited.

Autoreset - Function of error autoreset. If the error disappears, heat pump is again put into operation. This could happen maximum 5 times, autoreset function is deactivated thereafter.

Error history- Error history records last 10 errors.

- Object



pg. 1 Follow energy tariff - follow electricity supplier energy tariff for heating / cooling of object

Mode - heating / cooling - heating / cooling mode switch

Use an object sensor - switch specifies, if an object temperature sensor is used for equithermal curve correction (IQ equitherm)(for this option must be indoor temperature sensor connected)

Required T of object - target object temperature for IQ equitherm and target object temperature for cooling

Required T of cooling water - required cooling water temperature; heat pump is designed for cooling above condensing temperature (cooling ceilings, etc.)

pg. 2 Output water correction - correction, which is applied to actual computed value of equithermal curve; it is used for short-term output water temperature correction (e.g. to cover unexpected energy loss or profit)

IQ correction gain - If the indoor temperature sensor is used for object temperature regulation, the equithermal curve is corrected by IQ correction function. This function must be always set correctly.

IQ correction - displays actual computed value of IQ correction

IQ correction = ((Object T - Required T of object) * IQ correction gain) + temp. computed by equithermal curve

Prim. equitherm. T - actual temperature computed by equithermal curve for primary circuit and access to equithermal curve settings

Equithermal curve - name explanation

Equithermal regulation is the kind of temperature regulation, where output water temperature from heat source (heat pump) is set by outdoor temperature. The lower outdoor temperature means higher output water temperature. It deliver significant savings in conjunction with a heat pump, which quickly lose efficiency as the heating water temperature rises. If the equithermal regulation is properly set up guarantees temperature comfort in the rooms in the form of temperature stability without fluctuations.

In GSH-IRAD heat pump are used two tools for comfort settings of equithermal curve:

1. Neo Equitherm - Automatic correction write down desired adjustment of heating water temperature without you have to think about which value and how much to change.
2. IQ Equitherm - Automatic fine tuning of equithermal curve by difference of required and actual temperature of living space. This tool is suitable for heating systems with good dynamics (radiators, fancoils, ceiling heating, etc.) At heating systems with bad dynamics (floor heating, wall heating) is recommended to use regulation by standard equithermal curve only .

The recommended procedure for setting equithermal curve:

1. Set default values of heating water of equitremal curve approximately as follows:

Floor heating:	
outdoor temp. (fixed value)	heating water temp.
-20°C	38°C
-7°C	33°C
6°C	28°C
19°C	22°C

Radiators:	
outdoor temp. (fixed value)	heating water temp.
-20°C	55°C
-7°C	45°C
6°C	35°C
19°C	23°C

2. For example, if the room temperature is 2 degrees higher than required, enter the automatic correction eq. curve in object section to -3°C. When the difference in room temperature eg about 1°C lower than required, enter the correction + 2°C and so on. The maximum correction is +/- 3°C for one insertion. Controller itself modifies equithermal curve by actual outdoor temperature. If another correction is needed, you enter it the same way. In this manner you set all the equithermal curve and another change will not be necessary. Remember that change takes effect after a certain time.
3. If the equithermal curve is set correctly, you can use IQ equitherm, which monitors set and actual temperature of room and in case of difference automatically changes heating water temperature. It is suitable to cover unexpected temperature gain (sun, fireplace, more people in room, etc.) or losses (wind, higher humidity of outdoor air, etc.).

Correct settings of equithermal curve of heat pump is very important and benefit for really noticeable cost savings for heating.

Description of sections

- Object



pg. 2 Sec. equitherm. T - actual temperature computed by equithermal curve for secondary circuit and access to equithermal curve settings (same principle as the primary circuit)

Attenuation time schedule - attenuation settings for output water temperature and potential outdoor unit power limit after a certain time. Two time zones for every day. Inside of the time zone heat pump works normally and outside of time zone is in attenuation. When attenuation is active (outside time zone), output water temperature is decreased by the value set on last page of attenuation time schedule. If the attenuation is set to 0°C, time schedule has not got any influence to output water temperature except outdoor unit power (if is enabled). Outdoor unit power limit you can set in Settings -> Outdoor unit max power and switch Only in the attenuation must be set to ON.

- DHW



pg. 1 Required DHW temperature - required DHW temperature (recommended 44-48 °C)

Required DHW hysteresis TUV - required hysteresis (define temperature difference when starts DHW heating)

DHW el. heating delay - define time to DHW heating by heat pump; after this time is DHW heated by electric heater and heat pump is used for object heating.

Disinfection - switch ON / OFF DHW tank disinfection; on a fixed time (Saturday 1:00 - 10:00) tank is heated by electric heater to selected temperature

Required DHW disin. temp. - required tank temperature for legionella disinfection (min 60°C)

Follow en. tariff for DHW heating - DHW heating is blocked by electricity supplier high energy tariff

pg. 2 DHW circulation - DHW circulator operation control (if is installed)

Circulation time schedule - DHW circulator time schedule (two time zones per day)

DHW heating time schedule - DHW heating time schedule (one time zone per day)

- Graphs



Graphs of important values

pg. 1 Output water

pg. 2 Required power

pg. 3 Outdoor temperature

pg. 4 DHW temperature

pg. 5 Object temperature

Description of sections

- Settings



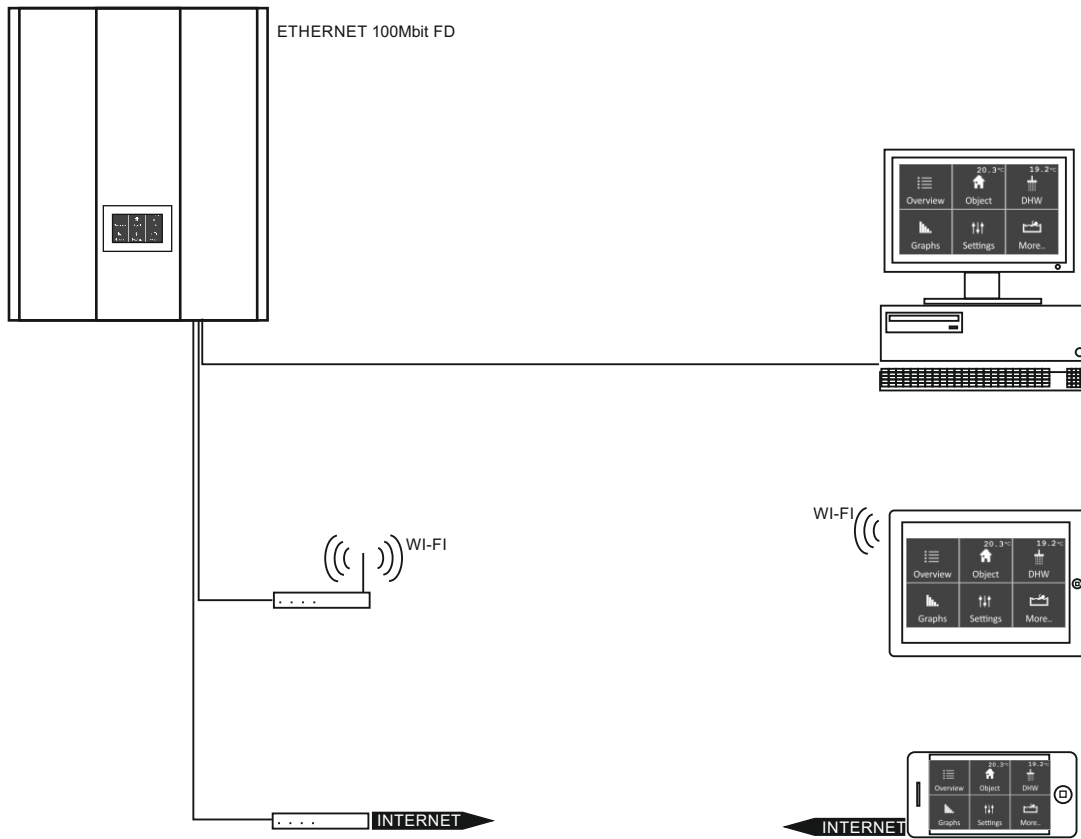
- pg. 1** **Current limit per 1 phase** - at one phase units may experience overloading when runs together with bivalent source; this function cause that first stage of bivalent source will not be used for bivalent operation
Secondary circuit - define if the secondary circuit control is used (external mixing valves)
Outdoor unit max power - enable to set outdoor unit maximal power (mainly used for noise reduction)
Only in the attenuation - outdoor unit power limit is active only when attenuation is active
Bivalent operation - if the outdoor temperature is lower than this limit, for heating is used bivalent source only
Cooling water - output water temperature in cooling mode (keep temperature above dew point (ca. 18°C and more) is necessary)
- pg. 2** **Date / time** - date and time settings
Webserver - name - webserver login name
Webserver - password - webserver login password
Saved data - heat pump operation saved data (access is possible only from PC)
Network settings - ethernet network connection settings
- pg. 3** **Service access** - access only for service engineer

- More

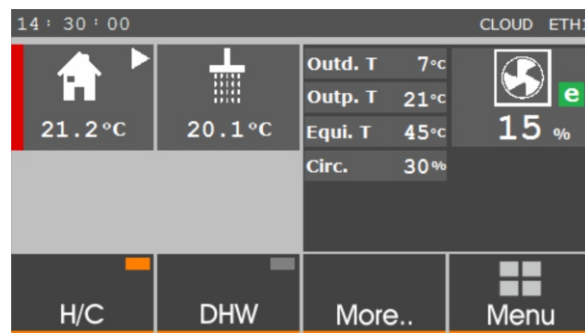


- pg. 1** **Secondary source** - enable use of secondary source (solid fuel boiler, solar panel, etc.)
Secondary source tank temp. - actual temperature in secondary source accumulation tank
Secondary source hysteresis - if the accumulation tank temperature is higher than temperature computed by equithermal curve + hysteresis, the heat pump is stopped and secondary circuit starts. Thereby is heat transferred from accumulation tank to object.
Pool - pool heating switch ON / OFF
Pool temperature - actual pool temperature
- pg. 2** **Required pool temperature** - required pool temperature
Required pool hysteresis - pool heating hysteresis
Temp. of pool heating water - temperature of output water for pool heating
Pool heating time schedule - time schedule for pool heating (one time zone per day)

10. SERVICE EXTENSIONS POSSIBILITIES



WEB SERVER SERVICE



To connect to the heat pump web site the controller must be plugged into an Ethernet network and configured correctly. Then you can access the web interface from the computer Internet browser with support of XML standard. Enter IP address of heat pump into your browser address bar. The computer must be on the same physical Ethernet network. If you want to control heat-pump from the Internet network, contact your internet provider. The default IP address of a heat pump is "192.168.134.176". The username is "eneore" and password is "eneore". This address and other settings can be changed in the "Settings" in the heat pump controller.

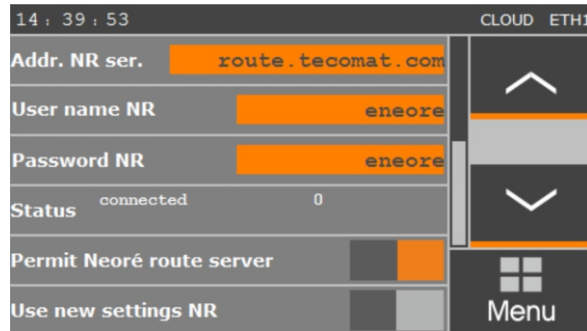
Operation of the heat pump via a Web server control is intuitive and has the same character as the control panel of the controller.

SINCLAIR ROUTE SERVICE



Sinclair Route is new service of GSH-IRAD heat pump, which secure user access to web server through the Internet network without need of public IP address and exactly router mapping. The heat pump needs only Internet connection as well as any computer.

For GSH-IRAD heat pump connection to Sinclair Route, you have to contact yours heat pump supplier, or apply for opening an account by email at info@sinclair-solutions.com. Sinclair Route is a paid service. After paying a one-time fee you will receive user name and password, which is needed to insert to heat pump web server settings(Settings ->Network settings).



IMPORTANT NOTICE



That the Sinclair Route service is available, is needed to router, which is used for heat pump Internet connection, have got enabled outgoing TCP port 8080.

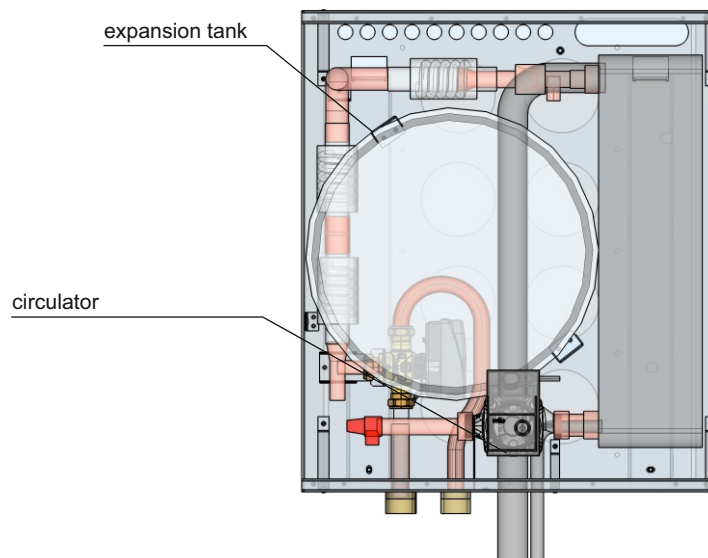
12. MAINTENANCE



This heat pump because of its construction requires really low maintenance. The basic maintenance will be provided by service company once a year. During this service will be checked all crucial parts of the heat pump. Especially the amount of refrigerant in circuit and refrigerant circuit function.

It's important to check outdoor unit exchanger. You can clean it using garden washer with hot water. This way you will clean it from raid of insects and any ice.

Don't use high-pressure cleaners and any mechanical aids like brush etc. The exchanger is very soft and could be damaged. Before cleaning of exchanger switch off the main circuit breaker in inside unit



The inside unit needs minimal maintenance. Use a damp cloth for cleaning its top cover and follow caution if the heat pump is running and energized. We recommend to do indoor unit maintenance outside the heating season.

Check an activity of circulator before the heating season. Especially if it is not jammed. Once a year let checked expansion vessel function, safety valve and heating water filter clogging.

You should better leave all these jobs to service company..

Disconnect heat pump from the mains voltage before you remove its cover. In other case threatening injuries and eventually death because of electric shock.





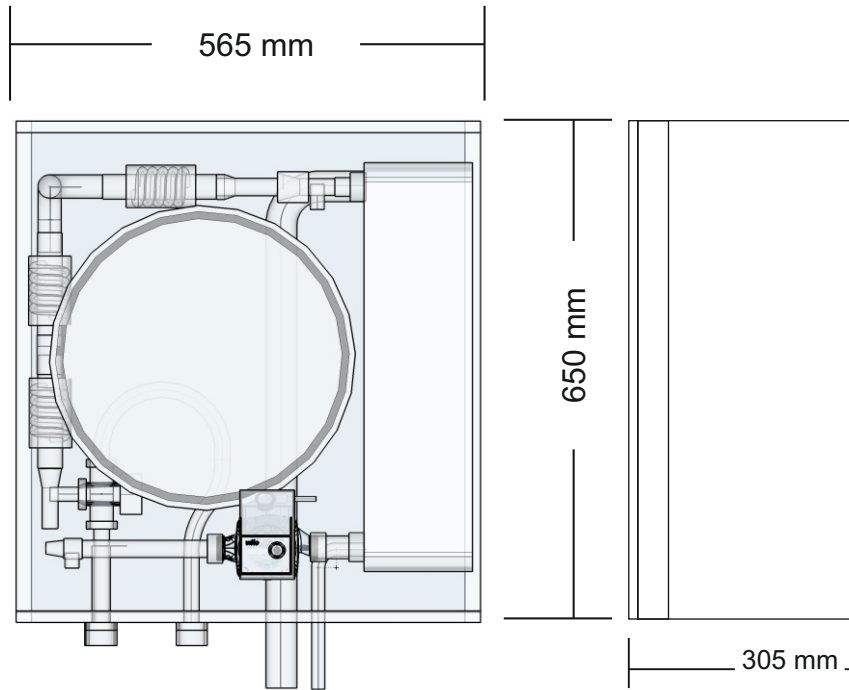
Protective function		Description	Note / variable
Freeze protection	Static (output water temperature lower than 5°C)	If the indoor unit is connected to power supply, output water temperature is monitored. When it is lower than 5°C, so circulator and first stage of bivalent (2 kW) are switched ON. When temperature exceeds 5°C, protection is switched OFF. This protection is active also when heating / cooling is not switched ON. Protection is solid and works only when indoor unit is connected to power supply and breaker of technology is switched ON. Outdoor unit is not used.	
	During operation (adjustable in service access)	When during heating temperature become lower than set temperature (15°C default), outdoor unit is shut down. Output water heating takes over bivalent source. After exceeded output water temperature of 15°C, bivalent source continues in heating for another 30 minutes. Then heating control continues in the usual manner. This protection is mostly activated when defrost and water flow is insufficient (eventually when is low energy accumulated inside of system).	T freeze protect - service access Error autoreset max. 5 times
Flow control	Flow monitoring by outdoor unit power	For compliance declared effectivity and ensuring safe operation sufficient water flow is necessary. Minimal water flow is defined by relationship among outdoor unit power and required power of circulator. Values of minimal water flow are in graph of minimal water flow for different types of units on page 32.	Outdoor unit power - service access Error autoreset max. 5 times
	Critical flow monitoring 200 l / hr	If during circulator operation water flow falls below 200 l/hr (fixed value), critical error is signaled and automatic circulator bleeding program is started. Bleeding occurs cyclically, 10 seconds stop, 10 seconds 100% of power until water flow is restored.	
	Flow change during defrost and cooling	During defrost is water flow automatically increased to 100%. When cooling, circulator is not controlled proportionally, but always running at full capacity 100%.	
Water pressure control	Heating / cooling water pressure control (adjustable in service access)	If water pressure falls below defined level, critical error is signaled and heat pump operating is stopped.	Min. water pressure - service access Error autoreset max. 5 times

Protective function		Description	Note/variable
Sensor control	Critical sensors - output water, input water	If temperature sensor is out of range (-50 to 120°C) critical error is signaled and heat pump stops operation.	Error autoreset max. 5 times
	Other sensors	Error is signaled, but have not got any influence to primary heat pump operation. Only the relevant sections of control system are deactivated. E.g. if DHW temperature sensor is faulty so DHW heating is deactivated.	
Outdoor unit error	Outdoor unit reports error	Error is signaled, but have not got any influence for primary heat pump operation. If the heat pump does not supply power, bivalent source is used automatically.	
Preheat compressor	Compressor preheat after power outage	After voltage restoration is used bivalent source for limited time (settings at service access). Outdoor unit is in compressor preheat mode. In default mode is not active (zero time is set). In the standard installation is not required to use. At installations with often power cut is recommended to set compressor preheat.	Preheat comp. - service access
Output water temperature limits		Limitations of range of water temperature user settings (default 20 to 60°C).	Minimal temperature of output water / Maximal temperature of output water - service access
Compressor restart	Compressor protection against frequent starts	When supplied power is higher than object loss, the heat pump began cycling. This function protect unit against frequent starts of compressor. (default settings: 10 min / 5%)	Compressor restart, Compressor restart threshold - service
Hysteresis cooling water limit	Protection against low water temperature in cooling	If cooling water temperature falls below set temperature reduced by temperature of hysteresis cooling water limit, outdoor unit stops operation and cooling is interrupted.	T Hysteresis cooling water limit - service access
Autoreset max. 5 errors	Autoreset limitations	If the critical error repeats 5 times, error autoreset is deactivated and the heat pump goes to stop state. Display the last fault	Error autoreset max. 5 times

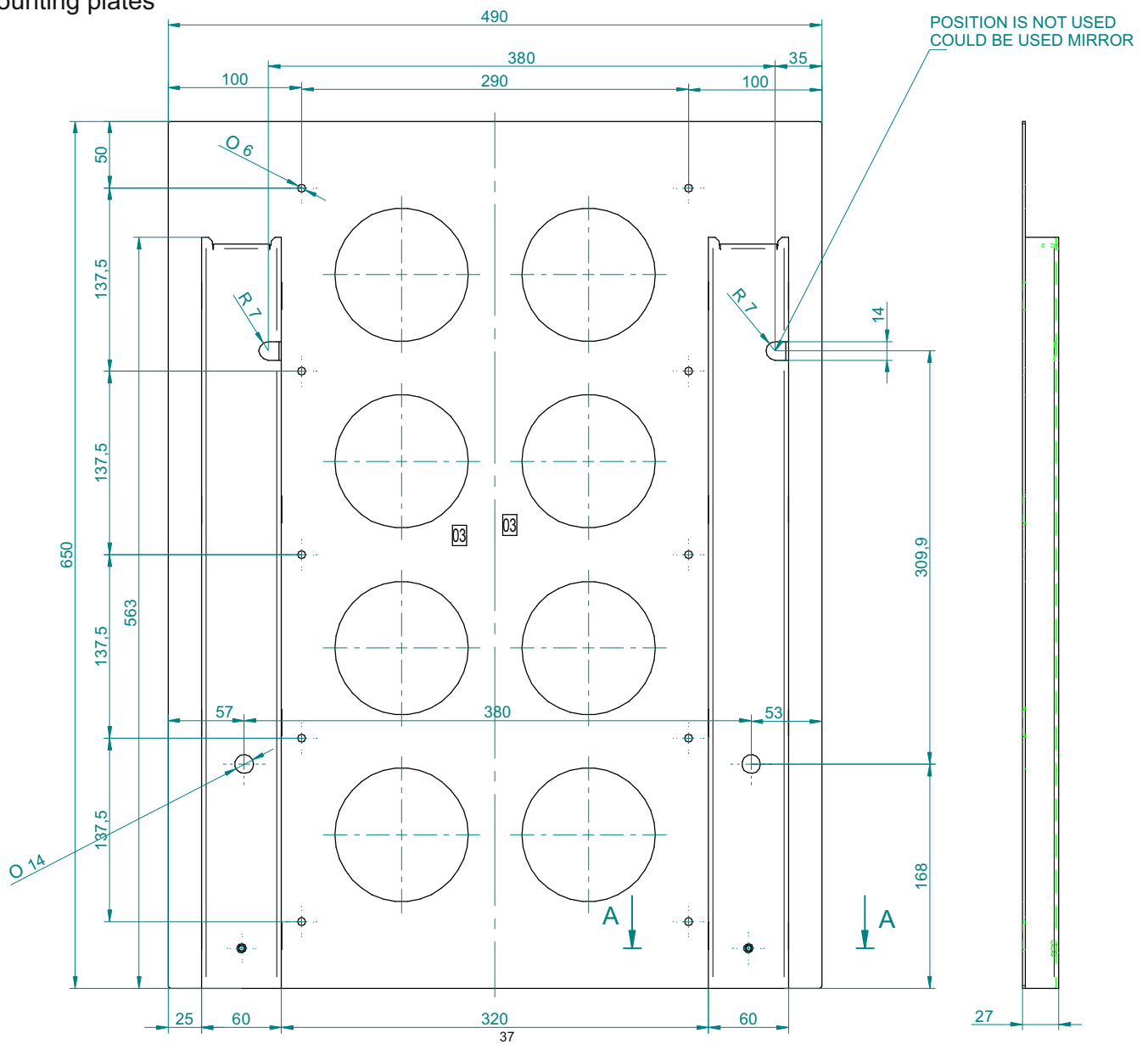
DIMENSIONS



Indoor unit



Mounting plates





States and errors

Section - Status Errors

Code of states and errors - four-digit code (read from left)

- 1. digit: 1 - Freeze protection (output water temperature dropped below safe limits)
2 - Insufficient water flow (water flow dropped below safe limits)
3 - Outdoor unit disorder
4 - Low water pressure (water pressure dropped below 0,9 Bar)
5 - Faulty temperature sensor MX (communication unit)

- 2. digit: 1,2 - Faulty output water temperature sensor
3,4 - Faulty input water temperature sensor

- 3. digit: 1,2 - Faulty pool temperature sensor
3,4 - Faulty secondary circuit temperature sensor

- 4. digit: 1,2 - Faulty outdoor temperature sensor
3,4 - Faulty object temperature sensor
5,6 - Faulty DHW temperature sensor
7,8 - Faulty accumulatrice tank temperature sensor

First two digits from left indicate critical error, in which is heat pump operation stopped or limited.

Autoreset - Function of error autoreset. If the error disappears, heat pump is again put into operation. This could happen maximum 5 times, autoreset function is deactivated thereafter.

Error history- Error history records last 10 errors.

NOTE CONCERNING PROTECTION OF ENVIRONMENT



This product must not be disposed of via normal household waste after its service life, but must be taken to a collection station for the recycling of electrical and electronic devices. The symbol on the product, the operating instructions or the packaging indicate such disposal procedures. The materials are recyclable in accordance with their respective symbols. By means of re-use, material recycling or any other form of recycling old appliances you are making an important contribution to the protection of our environment. Please ask your local council where your nearest disposal station is located.

INFORMATION CONCERNING USED REFRIGERANT MEDIUM

This unit is containing fluorinated gases included in the Kyoto protocol. The maintenance and the liquidation must be carried out by qualified personnel.

Type of refrigerant: R410A

The composition of the cooling medium R410A: (50% HFC-32, 50% HFC-125)

The quantity of the refrigerant: please see the unit label.

The value GWP: 2088

GWP = Global Warming Potential

In case of quality problem or other please contact your local supplier or authorized service center.

Emergency number: 112

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