

Operating manual

For SARG1 antifreeze system for monoblock heat pumps



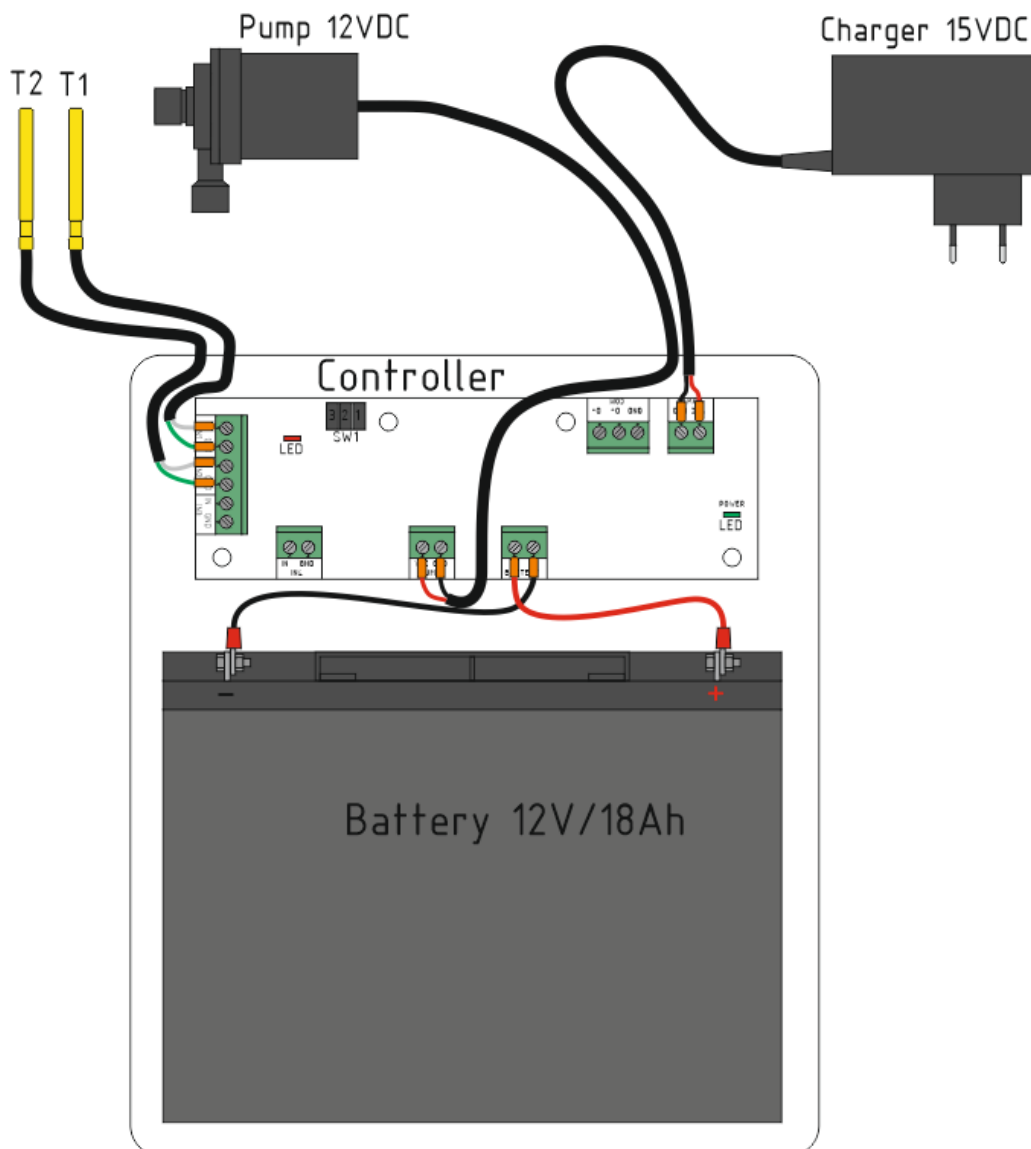
General information and safety:

The SARG1 anti-freeze system is used to reduce the possibility of freezing of the monoblock heat pump system. Correct installation and operation are prerequisites for correct operation of the unit.

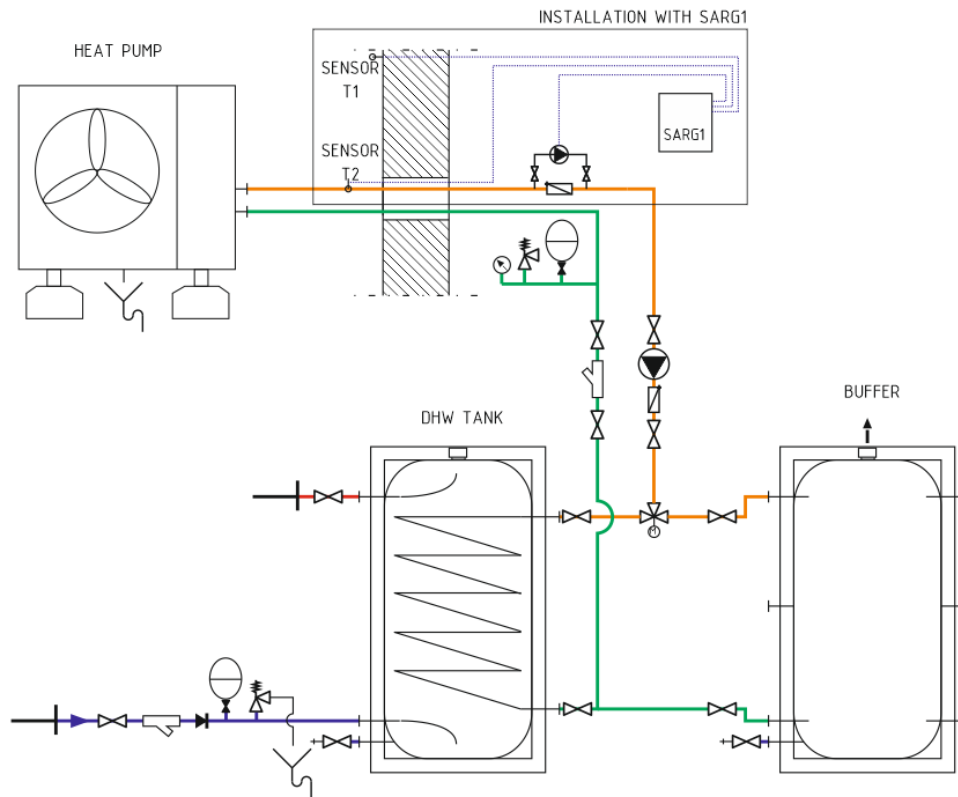


- The set may only be installed by a qualified person.
- Before carrying out any work on the power supply (connecting cables, installing the appliance, etc.), ensure that the appliance is not connected to the power supply.
- The appliance is not intended to be operated by children.
- The appliance must not be used for purposes other than it has been dedicated to.
- Lightning strikes can damage the controller and the power supply unit, therefore, during a thunderstorm it must be disconnected from the power supply by removing the plug from the socket.
- Due to the nature of the device and the safety of its use, the technical condition of the unit should be checked regularly.
- It is forbidden to operate the device in case of damage to its housing or damage to the battery or any of its components.

Supply modul:

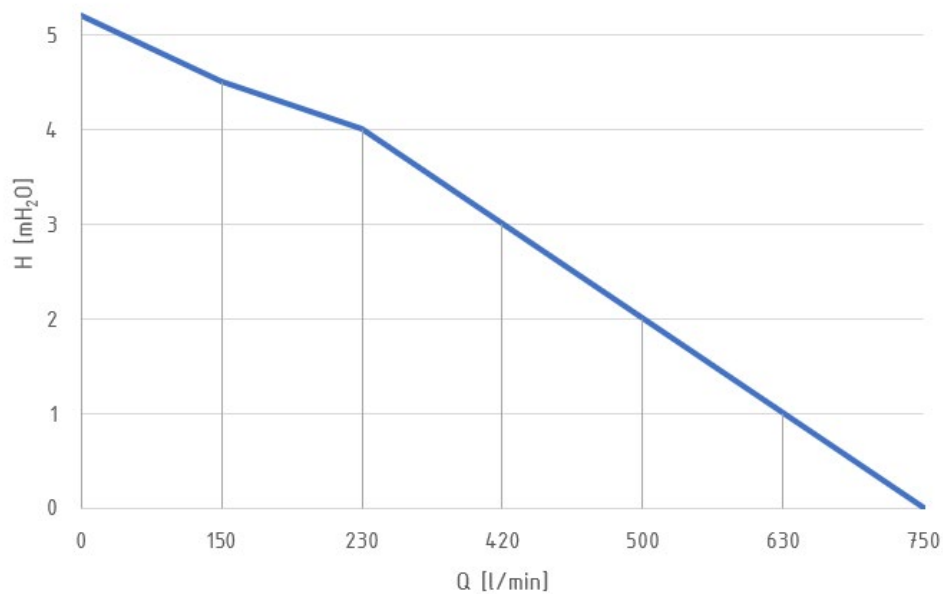


Example installation with SARG1 system.:



! During system installation, we must ensure the possibility of flow regardless of the position of the zone valve at the time of power failure. Therefore, in the case of systems with a buffer connected in series or without it, we can provide heat collection, e.g. from short floor heating loops not controlled by an actuator, or make a bypass to the hot water tank with a normally open solenoid valve, which will open after a power failure.

Characteristics of the circulation pump:



Bypass installation:

The included bypass must be installed in the supply or return on the pipe section between the buffer/DHW tank and heat pump, taking into account the correct flow direction. Both the flap and the pump body must be mounted horizontally for proper function as in the picture below. It is also advisable to install the system in such a way that the pump connection hose is below the level of the main pipe in order to allow easy de-aeration.

Careful and effective insulation of the pipeline outside will significantly extend the operating time of the system on battery backup. If possible and depending on the device to be protected, you can also insulate the condenser. Make sure that the bypass is well de-aerated and that there are no elements in the circuit that could block the flow of the circulating pump in operation!

An example of the correct bypass setting:



Examples of incorrect bypass setting:



Pump rotor vertical – difficult de-aerating.



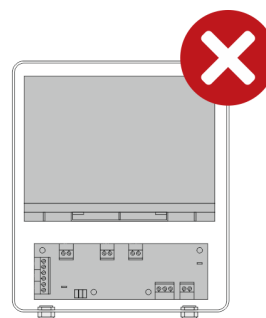
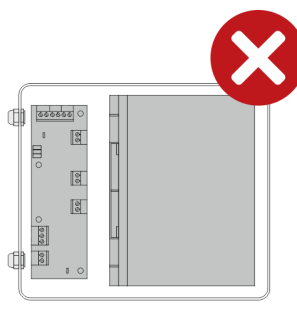
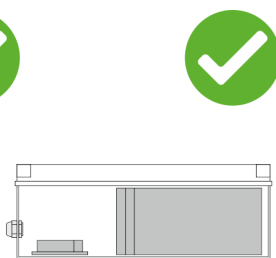
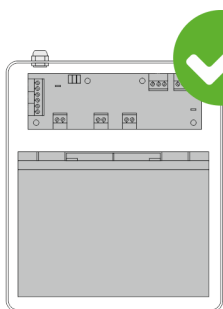
Difficult hose de-aerating.



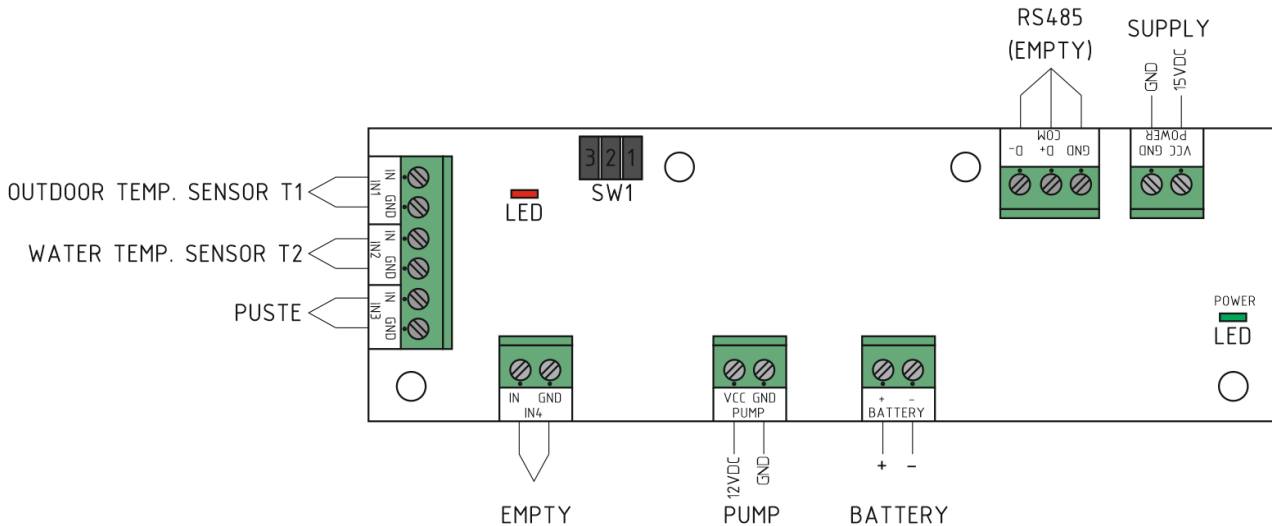
Risk of noisy flap operating.

Supply modul installation:

Moduł zasilania pompy należy zawiesić na ścianie za pomocą kołków rozporowych z wkrętami zwracając uwagę na prawidłową orientację montażową, tj. akumulator w dolnej części, a sterownik w górnej. W sterowniku zweryfikować i ewentualnie podłączyć zasilanie pompy (PUMP) i czujniki temperatury T1 i T2 (IN1 i IN2). **Następnie należy podłączyć wtyczkę akumulatora (BATTERY) akumulatora** oraz włożyć ładowarkę do gniazdka. Supply module should be fixed to wall by using mounting screws, according to picture below. Ensure that all wires are connected, like pump into „PUMP” socket, both sensors T1 and T2 into “IN1” and “IN2” sockets. After that, battery plug should be inserted into „BATTERY” socket and then the charger connected to a wall socket.



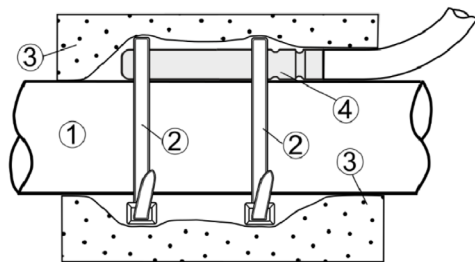
The module can only be installed indoors, in a dry and clean place, and the temperature in the room should not exceed 25°C or be lower than 15°C. Operation outside this range reduces the battery life and reduces its capacity. Do not install the device near heat sources, protect it from fire and sparks.



Supply module installation:

The outdoor temperature sensor T1 should be placed outdoors, away from sunlight, in a way that allows reliable identification of the ambient temperature (e.g. on an external wall or on the external part of an insulated pipeline).

The water temperature sensor T2 should be placed as close as possible to the heat pump on the outlet pipeline, directly on the pipe, under the layer of insulation or in a suitable capillary. In the case of pipes made of a material that conducts heat poorly, e.g. PP-R, it is recommended to find a different location for the sensor, e.g. on a metal fitting, and insulate it effectively. Each of the sensors wires can be extended to a total length of 15 meters using a 2x0.75mm² cable. When wires are leaded together with a bundle of power cables, it is recommended to use a shielded cable.



1 – pipe, 2 – zipper, 3 – insulation, 4 – water temperature sensor

CT10 (NTC 10K)	
°C	Ω
-30	175200
-20	96358
-10	55046
0	32554
10	19872
20	12488
30	8059
40	5330
50	3605
60	2490
70	1753
80	1256
90	915,4
100	677,3
110	508,30
120	386,60

It is essential to ensure that the sensors T1 and T2 are correctly identified. Incorrect connection of sensors may result in incorrect operation of the system and lack of antifreeze protection of the heat pump!

Operation and Diagnostics:

Control mode – when the temperature on the external temperature sensor T1 drops below 10°C, the control mode is activated, in which the temperature is checked once an hour and the circulation pump is started at the same time. As the outside temperature drops below 3°C, the periods of pump downtime are shortened in order to control the temperature of the water system more reliably.

Antifreeze mode – when the recorded temperature on the T2 water sensor drops below the critical value of 6°C, the circulation pump operates according to hysteresis.

Summer mode – the circulation pump is started once a day as part of the function preventing the rotor from blocking.

Proper operation of the device is signaled by the lighting of the green LED indicating the presence of mains power and the flashing of the red LED (LED on for 1 second, pause for 3 seconds).

Alarm states are signaled by sound and by a sequence of flashes of the red diode corresponding to the given alarm state number. In the case of more than one active alarm, the first in sequence is signaled first, and then the subsequent ones. Alarms are signaled until the alarm is cleared or the cause of the alarm is removed (e.g. repair of a damaged sensor cable). In the case of a power outage (operation in battery backup mode), the sound signaling is switched off in order to ensure the longest possible operation of the system on emergency power supply.

No.	Sequence	Description	Action
1	short flash, 5 second pause (no beep)	power outage	in the event of a power failure, the message is informative, otherwise check the power supply
2	2 short flashes, 5 second pause (with beep)	short circuit detected on pump	check the correct connection of the circulation pump cable to the controller, otherwise possible failure of the circulation pump - contact the service
3	3 short flashes, 5 second pause (with beep)	open circuit detected on pump	check the correct connection of the circulation pump cable to the controller, otherwise possible failure of the circulation pump - contact the service
4	4 short flashes, 5 second pause (with beep)	charging voltage too high	possible failure of the charging controller - contact the service
5	5 short flashes, 5 second pause (with beep)	the battery was discharged below a critical value	possible damage to the battery due to deep discharge, it is recommended to check the capacity and replace it if necessary; alarm reset possible by removing jumper no. 2 on SW1 connector
6	6 short flashes, 5 second pause (with beep)	the T1 external temperature sensor damaged	check the continuity of the sensor wires, alternatively verify the resistance for NTC10k
7	7 short flashes, 5 second pause (with beep)	The T2 water temperature sensor damaged	check the continuity of the sensor wires, alternatively verify the resistance for NTC10k

! *In case of need to mute acoustic signal, there is a possibility of shutting of buzzer by removing jumper nr 3 on junction SW1.*
o *Hard reset is possible by removing jumper nr 2 in junction SW1 for 30 second (provided the cause has been removed).*

Storage:

Store the devices in a dry, cool (above 0°C) and clean place. Depending on the storage temperature, the batteries are self-discharging (up to 3% per month at 25°C – depending to temperature). The self-discharge rate increases at higher temperatures, and a refresh charge should be performed after more than 3 months of storage.

Maintenance, technical condition check and battery handling:

Before the start of the heating season, it is recommended to observe the operation of the system, i.e. the operation of the circulation pump, verify the correct venting of the system and order a specialist to test the battery capacity.

If the battery needs to be replaced, follow these guidelines:

- replace the battery by an authorized service center or an authorized electrician,
- remove metal personal items such as rings, bracelets, necklaces or watches when working with batteries,
- the charging voltage compensation algorithm is developed for batteries with a nominal voltage of 12V, VRLA type, AGM technology, with a capacity of 18-20Ah - lithium-ion and other types of batteries must not be used as substitutes!
- before replacing the battery, remove the charger from the mains socket and the plug (BATTERY) from the socket in the controller,
- when connecting a new battery pay special attention to the correct polarity (markings + and -), shorting the poles is strictly forbidden!
- a used battery cannot be thrown away and should be delivered to a dedicated disposal point,
- under normal operating conditions there is no possibility of contact with the electrolyte, however, damage caused by safety valves may result in leakage - then in case of contact with the skin, the place should be rinsed with plenty of water, and the damaged battery should be disposed of, remembering to use protective gloves and glasses.

Disposal and waste handling:

Caring for the natural environment is our priority. The awareness that we produce electronic devices obliges us to dispose of used electronic components and devices in a way that is safe for nature.

The household plays a very important role in contributing to reuse and recovery, including the recycling of waste equipment. The crossed-out wheeled bin symbol on the product means that the product must not be disposed of with other household waste in normal containers. This applies to both the device itself and accessories marked with this symbol. Such devices may contain harmful substances that were necessary for their proper functioning and safety. Appropriate handling of used equipment prevents potential negative consequences for the natural environment and human health, resulting from the presence of hazardous components and improper storage and processing of such equipment. It is the user's responsibility to take the used equipment to a designated collection point for the recycling of electrical and electronic waste. Packaging materials should be disposed of in accordance with their labeling and guidelines applicable locally. Penalties may be imposed in accordance with national regulations for incorrect disposal of waste.



Warranty and complaint procedure for the SARG1 antifreeze system for monoblock heat pumps

1. The warranty for the device is 24 month from the date of sale, but no longer than 30 months from the date of production, excluding the battery.
2. The warranty conditions for the battery installed in the device comply with the manufacturer's warranty conditions and are described in detail in the paragraph Battery warranty
3. Free warranty repairs of devices are performed only at the RedGrey service site.
4. The advertised devices are delivered to RedGrey by the Recipient - it is possible to order a courier for a fee to collect the prepared shipment
5. RedGrey does not provide field intervention services, including commuting, equipment replacement and other service activities necessary to fix the failure.

I. Conditions of starting complaint process are:

- sending a completed complaint protocol to the email address serwis@redgrey.pl by the reporting person;
- sending a copy of the proof of purchase;
- sending photo documentation of the advertised device.

II. Complaint proces procedure:

- providing RedGrey with data related to the complaint;
- contact of the RedGrey service with the installation company or the Distributor in order to determine the validity of the complaint, costs, method and date of warranty replacement and the place of delivery of the device elements sent from the RedGrey warehouse;
- contact of the RedGrey service with the installation company or the Distributor in order to determine the validity of the complaint, costs, method and date of warranty replacement and the place of delivery of the device elements sent from the RedGrey warehouse;
- information from the installation company or the Distributor about the performed warranty replacement;
- the referenced items are sent back to RedGrey from the installation company or Distributor
- RedGrey checking the validity of the complaint:

ACCEPTED COMPLAINT – information for the person submitting the complaint

- invoice correction for the replaced part (the condition for issuing the correction is sending the damaged part back).
- shipment of a new part - if it was not done earlier.
- closing the complaint.

REJECTED COMPLAINT – information for the person submitting the complaint

- if the complaint is unjustified, issuing an invoice by RedGrey to the company / person who submitted the complaint, in accordance with the price list for the delivered elements as well as shipping costs and costs of expertise.
- closing the complaint.

III. The warranty exceptions:

- damage resulting from installation inconsistent with the manufacturer's recommendations;
- damage resulting from improper transport
- damage caused by the user's fault, mechanical damage, overvoltage;

IV. Price list in case of rejected complaint

- Expertise - 50,00 EUR + cost of the replaced parts
- Shipping costs – 30,00 EUR.

V. Battery Warranty

This warranty applies to sealed, maintenance-free lead-acid (VRLA) batteries. The Techtru company ensures that the delivered batteries will be of good quality, without defects in material and workmanship. Batteries complained about during the warranty period will, at the discretion of

TECHTRU, be reconditioned or replaced with new ones free of charge. This warranty only covers defects that arise in the battery during the manufacturing process.

Warranty conditions:

1. The battery will not be considered defective if its capacity does not drop to 80 [%] of the rated capacity during the warranty period.
2. The warranty applies only to batteries intended for buffer operation (emergency power supply). Cyclic batteries are not covered by this warranty.
3. The warranty period will be reduced by 50 [%] for each 8 [°C] of permanent increase in the battery operating temperature above the rated operating temperature of 25 [°C].
4. Each battery must be stored, charged, discharged, operated and serviced in accordance with the written instructions contained in the catalog card and in the Quick Operation Manual for batteries (available on <https://techtru.pl/produkty/securbox-akumulator-vrla-agm-12v-18ah/>).
5. At least every 12 months from installation, perform periodic maintenance of all batteries in accordance with the recommendations in the Quick Operation Manual (available on <https://techtru.pl/produkty/securbox-akumulator-vrla-agm-12v-18ah/>). The presentation of documented measurement results from each required periodic service is a condition for accepting the complaint.
6. **TECHTRU is not responsible for:**
 - a. batteries with an illegible serial number;
 - b. damage caused by improper charging or installation;
 - c. mechanical damage to the container, cover and pole terminals (clamps) during transport, storage, installation, commissioning and operation of batteries;
 - d. damage caused by fire, elevated temperature (overheating), explosion or freezing;
 - e. damage caused by misuse or neglect;
 - f. damage resulting from the action of force majeure.
7. The basis for accepting the complaint is the presentation of the purchase invoice and delivery of the faulty battery with the original marking of the batch number with a description of the exhibition.