

Panta Surge 63



Operating manual



PANTARHEI
Aquaristik im Rhythmus der Natur



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Thank you for choosing the Panta Surge.

The Panta Surge has been developed to precisely simulate natural water flow patterns in aquariums and aquaculture applications. Unlike conventional flow pumps, it generates a controlled, laminar flow rather than a turbulent one. This allows natural conditions to be reproduced in a particularly gentle and fish-friendly manner.

Thanks to the precise design and calculation of all relevant components as part of the flow simulation, the Panta Surge achieves outstanding efficiency and highly resource-efficient performance. In this respect, it continues to set new standards.

Bitte lesen Sie diese Bedienungsanleitung vor der ersten Inbetriebnahme sorgfältig durch. Sie enthält wichtige Informationen für den sicheren Betrieb der Panta Surge sowie zum Schutz von Personen



01) Scope of delivery

- Panta Surge 63 (1 piece)
- Controller (1 piece)
- Touchscreen pen (1 piece)
- Power supply (1 piece)
- Power cord (1 piece)
- Operating manual (1 piece)

02) Safety guidelines

a) General safety guidelines

Only connect the device in aquaria, garden ponds and in their protection zones to an electrical outlet with residual current device (earth leakage circuit breaker) with a rated current of not more than 30 mA an (DIN VDE 0100). If you have any questions concerning this, please contact an electrically skilled person. If persons are in the tanks or ponds,



Before installation and commissioning, please observe the following instructions:

- The electrical connection is made to a safety socket outlet with a mains voltage of 100-240 V~ 50/60 Hz; fuse at least 10 A.
- Only use in closed rooms for aquarist applications!
- The controller and the power supply must not come into contact with water. 
- In case of visible damage to the cables, the drive must not be operated. Do not attempt to 



- repair the cable yourself.



- Do not use the cable for carrying or pulling the drive. The cable must not be used for mounting the drive.
- The pump must only be operated underwater. Dry running will destroy the bearings. In the event of non-compliance, warranty and liability claims will expire.
- This device is not intended to be used by persons (including children) with reduced physical, sensory or mental capabilities or a lack of experience and/or knowledge – unless these persons are supervised by a person responsible for their safety or they receive instructions by this person on how to use the device.



- The operator is responsible for the compliance of local safety regulations.
- Within the working area, the user is liable to third parties for damages caused by the use of the device.
- The pump is exclusively suitable for pumping seawater and freshwater. Pumping corrosive, flammable or explosive liquids is not permitted. The temperature of the pumped liquid must not exceed 35 °C (95 °F).
- The working temperature of the device is between 5 °C and 35 °C (41 - 95 °F).
- Do not work with a device that is damaged, incomplete or modified (without the permis-



sion of the manufacturer). Before commissioning, ensure by an expert that the required electrical protective measures are available. mung des Herstellers – umgebauten Gerät.

- Please read the instructions in the operating manual concerning the topic “Cleaning and maintenance”. All measures beyond this, opening the pump and the switchboards in particular, are not permitted. Always contact the manufacturer in the event of repair.



b) Protection against electric shock



After setting up the pump, the mains plug must be freely accessible at any time during the operation.



Before commissioning your new pump, have an expert checked whether the

- grounding, protective multiple earthing and residual current-operated protective circuit work properly following the latest safety regulations

- electrical plug connections are kept dry

- Do not use the cables to remove the plug from the socket. Protect the cables against heat, oil and sharp edges. Do not bend the cables.
- Protect the cable and the electrical connections against humidity. Make sure that the cable and the electrical connections are in an area that cannot be flooded.
- When working on the device, remove the mains plug from the socket.
- The minimum immersion depth depends on the set pumping capacity.
- The maximum operating depth is limited by the cable length.



03) Intended use and scope of application

The Panta Surge is used to generate laminar flows in aquaria, ponds and similar waters. Energy-efficient circulating of water is a basic function in this connection. „Dead zones“ can thus be avoided. With the controller (or the optional USB interface) it is possible to generate wave simulations, in which both, wave height and length, can be adjusted. Thereby, wave height and wave length can be adjusted. This is used to simulate courses of rivers, tides and breakers. The Panta Surge is designed for use in freshwater and seawater.



04) General description

Panta Surge

Base Unit



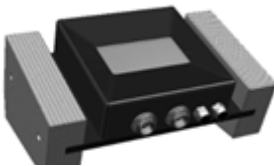
Straight Head



Angled Head



Controller



Power supply



a) Functional description

By rotation of the impeller, an area of low pressure is generated which sucks in the medium from behind through the fins of the basket and – past the flow conditioner – ejects it again at the front.



05) Commissioning

a) Checks before commissioning

- Is there a ground fault circuit interrupter connected upstream of the device?
- Are all cables free from damage? Cables must not be kinked or damaged, including the insulation. The connections between the plug and the cable as well as between the cable and the unit must also be free of exposed or damaged areas.
- Are all flow grilles installed? The flow grilles also serve as protective guards against contact with moving parts. The unit must never be operated without these protective guards!
- Are there any objects inside the drive that could block the impeller?
- Are there still people in the tank?
- Make sure that the mains plug is disconnected before installing the drive in the tank.

b) Installation of the pump

1. Assembly:

- Mount the supplied spacers onto the main body using the enclosed screws and covers. It is recommended to sort the spacers by length and start with the longest ones, installing the shorter elements towards the top.
- Select the desired flow direction of the head depending on the installation location of the Panta Surge. If necessary, mount the internal retaining magnet inside the head using the double-sided adhesive tape, ensuring that the external magnet can be positioned appropri-



ately (e.g. on the glass pane, overflow shaft, etc.).

- Feed the (motor) plug and cable through the designated opening before proceeding with the rest of the assembly.
- Position the slotted cable grommet on the cable so that the narrow side faces the motor and the wide side faces the cable plug.
- Once all components have been fully screwed together, the screw heads can be covered with the appropriate covers.
- Then slide the slotted cable grommet as far as possible towards the motor so that it seals the opening in the head. Pull the cable slightly while doing so to ensure that the grommet cannot come loose by itself afterwards.

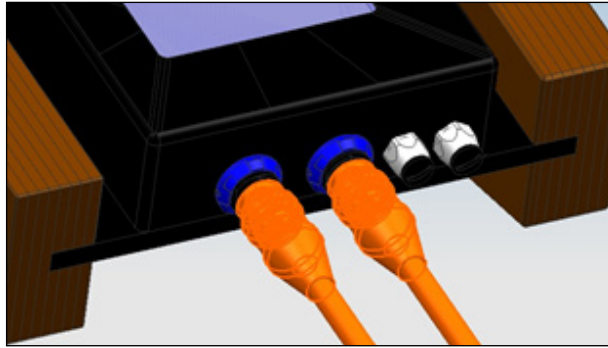
2. Installation:

- Position the Panta Surge so that the internal retaining magnet can be aligned with the external retaining magnet on the glass pane. The external magnet is waterproof and can also be used underwater.
- Route the cable to the controller with as few loops as possible and plug the connector into the designated socket on the controller (right).
- Place or hang the controller securely so that it cannot slip or move unintentionally.
- Now connect the power supply to the controller using the appropriate connector (left) and place the power supply securely on a dry, stable surface.
- Finally, connect the mains cable to the power supply first and then plug it into a socket protected by an RCD. The controller will then



start automatically.

Important Notes:



- Directly placing the magnets onto the magnetic mount may cause hand injuries due to crushing and may damage the tank. Therefore, place the external magnet on the glass pane at some distance from the internal magnet and only then slide it into the holding position above the internal magnet.
- The pump must be completely surrounded by water during operation. The drive should be installed sufficiently below the water surface to ensure that no air is drawn in from the surface during operation. Please note that the water level changes when simulating waves.
- The drive can be mounted directly above a solid bottom surface in the tank. With a sandy substrate, a vacuum-cleaner effect may occur. To prevent this, increase the distance between the drive and the bottom. Objects that are sucked in may exit the flow straightener at high speed and cause damage.
- Ensure that the intake guard is not covered by plants or similar objects.



- The cable must be protected from animals that could damage it.
- When switching the pump on for the first time, slowly increase the drive speed while observing the effects of the water flow in the tank. Is anything being sucked in? Are decorative objects or plants being displaced or thrown around? If so, select a different location for the pump or reduce the power as necessary.
- Selecting a wave simulation that is unsuitable for the tank (resonance) may result in damage to or destruction of the tank.



06) Controller instructions

a) Controlling the Panta Surge

The controller can be programmed with your finger, or a non abrasive touch screen pen. All touch surfaces can be easily reached with your finger. When activating a field it will be displayed with a black background. When the finger is removed it will be confirmed.

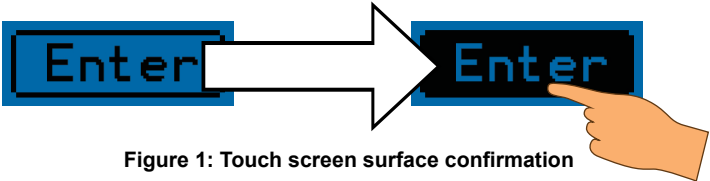


Figure 1: Touch screen surface confirmation

The following will explain the most important fields of the touch screen.

Caution: For maintenance ALWAYS disconnect the Panta Surge from the power grid. Do not use any of the foll wing stop functions to perform maintenance on the Panta Surge!







b) The information screen

The information screen displays information about the flow status of the Panta Surge. The upper part of the screen displays the flow mode. The center part of the screen will display the most important data about the flow mode.

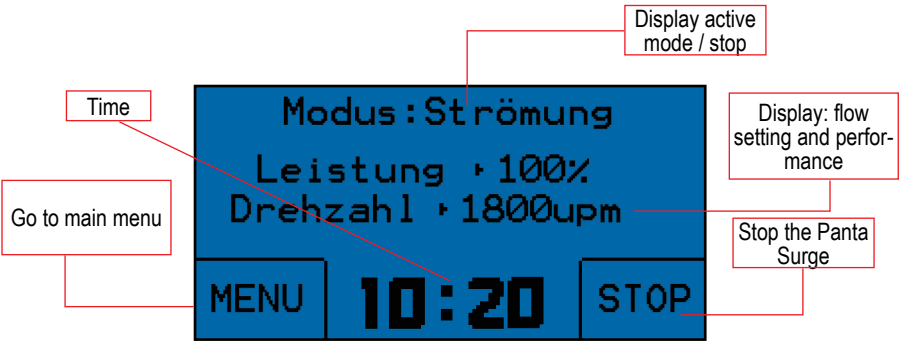


Figure 2: Information screen in flow mode

The STOP field on the screen will stop the Panta Surge. The display will blink when stopped. Pushing this field again will restart the Panta Surge.



When shipped the Panta Surge will arrive in STOP mode after it has been plugged in.



The MENU field will call up the main menu.

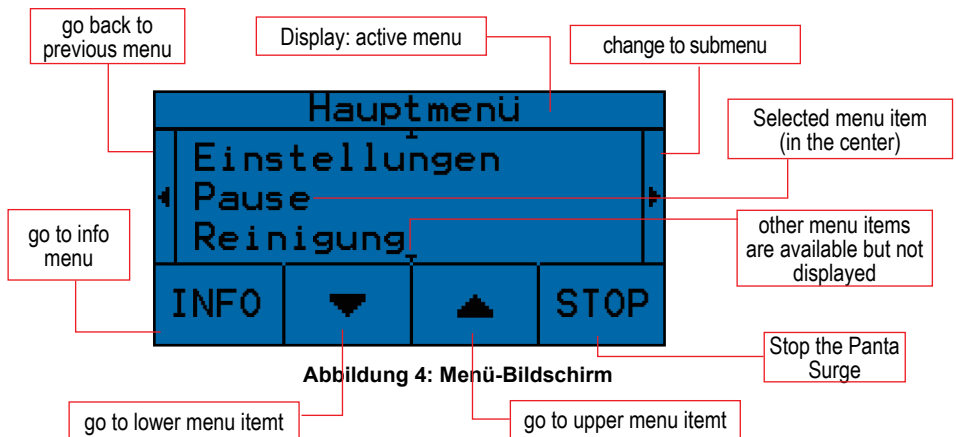
The center of the screen will allow you to quickly access the settings in the mode that has been selected.

Figure 3: quick access to the settings



c) The menu screen

The menu screen is used to change and display the settings of the Panta Surge.



Der obere Bereich des Bildschirms zeigt das aktuelle Menü an.



The upper portion of the screen displays the flow menu. The center portion shows the available submenus. The middle one of the submenus has been selected. To select a different submenu use the arrows at the bottom of the screen. The arrow at the right enters that submenu, the arrow button on the left returns to the menu above. To confirm this selection this item will get bigger to make them more visible.

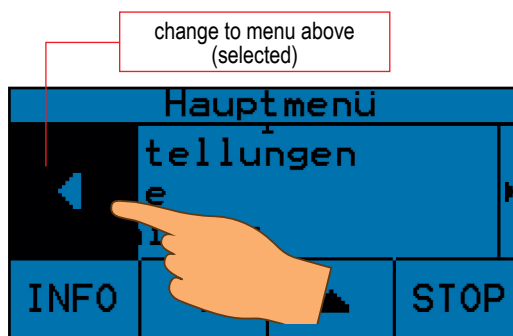


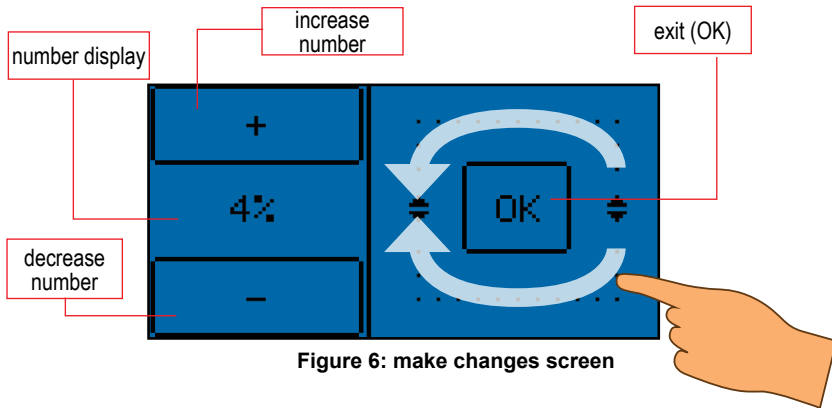
Figure 5: confirmed return button

The INFO button returns back to the info screen. The STOP button will stop the Panta Surge.



d) The „make changes“ screen

This screen is used to make changes to most of the settings.



The left center field displays the flow value. Above and below are buttons to increase or decrease the number by the smallest step possible. On the right side is a field that can be used like wheel, it is used to increase or decrease the value smoothly with no steps. The OK field in the center of the wheel is used to exit the make changes to settings screen.



e) Menu structure

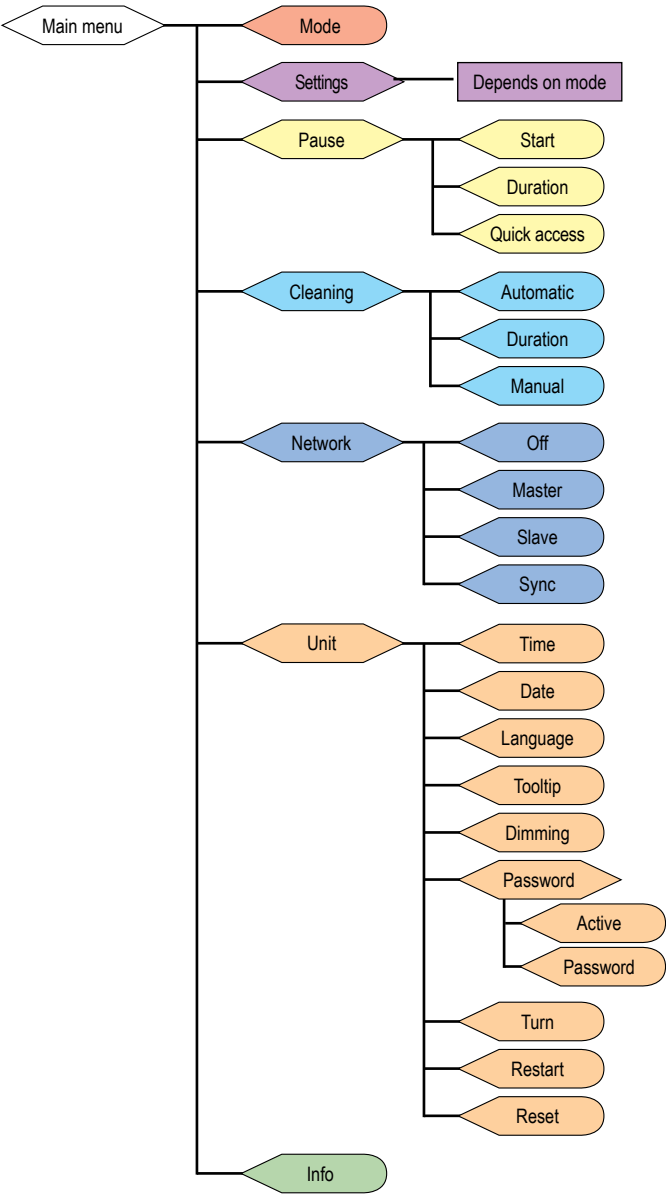


Figure 7: menu structure with original display settings

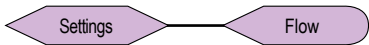


Figure 8: settings in flow mode

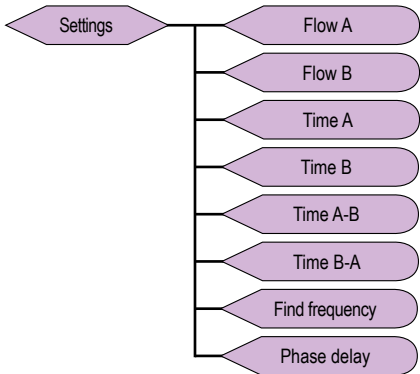


Figure 9: settings in wave mode, enter time

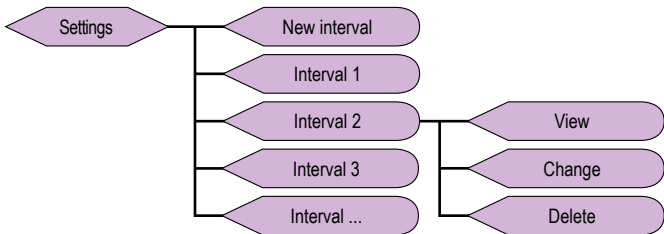


Figure 10: settings in profil mode



f) Operation

Initial start up

After the Panta Surge is plugged in for the first time you must set the language, time and date.



These settings can be changed later in the info menu.

Selecting the mode

Select the desired mode in the main menu, in the change mode screen.



Changing the mode on the screen will change it without confirmation. The mode will operate with the flowly active settings.



In case of a power failure the pump will not restart on its own. The settings are saved and will be available after a power failure. When power is re-established the Panta Surge will be stopped.

Flow mode

Flow mode will generate an even flow (current) in the tank. After selecting flow mode select the strength of the flow (in %) in the settings menu, or the quick change field in the info menu.

If the pump is stopped (blinking STOP field in the info menu) the settings will take effect after the STOP button is pressed again. If not they will take effect right away.

It is best to change the flow while the pump is running, and it is easier to observe the changes in the aquarium.



You can stop the pump by selecting a flow of 0% or pushing the STOP field in the menu or info screen.

Always increase the flow slowly and carefully observe the changes for some time.



The "Flow" mode is selected by default when the unit is first commissioned or after a reset..



The flow mode is selected as a default for the first time you are using the pump, or in case of a reset. At 1% the pump is already running at 500 revolutions a minute, a lower value is not possible.



Wave mode

The wave mode is used to generate waves in the aquarium. After changing into the wave mode you can change the parameters in the settings menu or the quick change menu from the info screen. If the pump is stopped (STOP button in the info or menu screen is blinking) your settings will take effect when the pump is restarted after you push the STOP button again. Otherwise they will take effect immediately.

The Panta Surge generates waves by changing between two flow intensities. The flow intensities A and B can be varied between 1% and 100%.

The Parameters „Time A“ and „Time B“ are used to select the duration of each action.

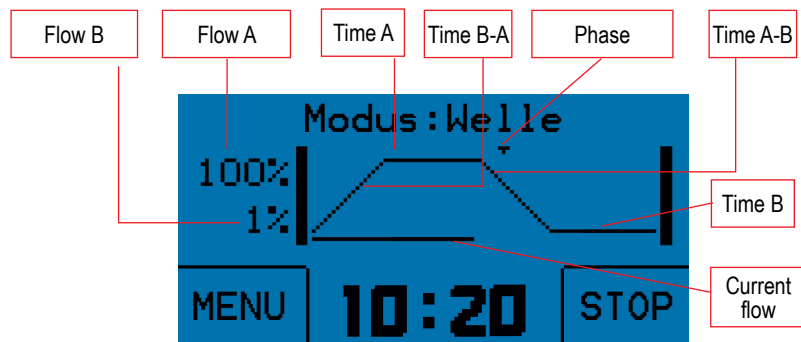


Figure 11: information screen in wave mode

The parameter „Time A-B“ defines the duration of the interval when the flow changes from „Flow A“ to „Flow B“.

The parameter „Phase delay“ is used when several controller and pumps are working in sync. It defines the delay in which the controllers wave is started later than the MASTER controller.



More information on connection several controller can be found under the chapter: „Connecting to the Panta Rhei CAN-Bus“..

To find the ideal frequency in your aquarium select FIND FREQUENCY in the settings menu. Now select the maximum flow strength. The wave frequency will then be lowered slowly. When the waves have reached an optimal frequency it can be accepted by pushing SELECT on the display.



Caution: depending on the layout of your aquarium waves can damage the contents, or spill water over the sides.



Profil mode

The profile mode is used to start or stop the wave or flow mode automatically. This allows waves or flow to be controlled individually for different time intervals.

To best understand the function of the wave and flow modes please read the sections „Flow mode“ and „Wave mode“.



After selecting the profile mode you can add, change or delete intervals in the settings menu (or the quick access menu from the info screen).

When adding a new interval the start and end time must be entered first. After this select the mode during this time period and the parameters.

Remember that the Panta Surge will change from one mode to another when it changes the interval. Make sure large waves do not splash water over the sides or destroy the aquarium.



ALWAYS test each of the settings for each mode you will use before adding it as an interval in profile mode.

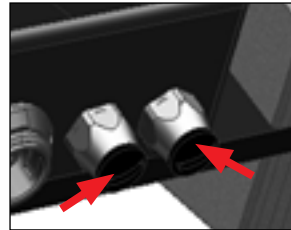




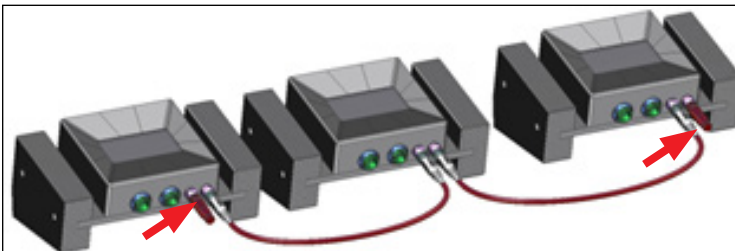
Connecting to the Panta Rhei CAN-Bus

Proceed as follows to connect several controller together:

1. Remove the protective caps from the Panta Rhei CAN-Bus sockets



2. Connect one controller to the next as shown in the figure below.
3. Connect a Terminating resistor to the open socket of the first and last controller (red arrows).



Each socket can be used for „in“ or „out“ so the order in which they are connected is not important!.

There are four options for the Panta Rhei CAN-Bus connection:

„OFF“, „SYNC“, „SLAVE“ and „MASTER“ When connecting several controller, one must be configured as MASTER. The controller will control the others (depending on their option setting).

If a controller is configured as MASTER, a small crown will be in the time display.



Figure 12: MASTER-Symbol in the time display



If a controller is set to SLAVE, it will take the settings of the MASTER automatically. The information screen will display SLAVE and the settings transmitted by the MASTER. If the connection is interrupted the controller will continue to operate in this mode.

Figure 13: SLAVE-Modus



If a controller is set to SYNC, it will copy the exact time and start/stop wave settings of the MASTER, but will otherwise function independently. Complex settings of the wave or profile mode can be reproduced with this setting (i.e. wave phases, of time dependent flows). If a controller is set to SYNC and connected to a MASTER the time display will show an S.



Figure 14: SYNC-Symbol in the time display



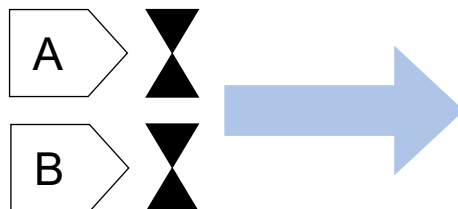
Application example:

The following examples are shown with just two pumps to simplify the diagrams, but the same programming applies for any number of connected pumps. Panta Rhei CAN-Bus system makes adding additional controller very easy.

Flow and wave mode with several Panta Surge:

In this example the parallel usage of two Panta Surge are used to generate a stronger flow or wave. The SLAVE setting is used to achieve this pattern.

Required settings:



Panta Surge A: *Connection* → *Master*
 Mode → *Flow*
 Settings → *Flow* → 55%

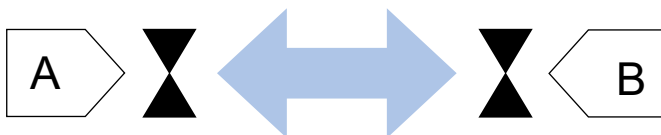
Panta Surge B: *Connection* → *Slave*

In this configuration the flow of Hydro Wizard® A can be changed and Hydro Wizard® B will reproduce the same settings, wave or flow. The master controller can be set to flow, wave or profile mode.

**Back and forth wave action:**

In this example two opposing Hydro Wizard® are used to generate a wave. Hydro Wizard® A should run in the first half of the time segment with 100% power, and Hydro Wizard® B in the second segment with the same power.

To achieve this use the phase synchronization in SYNC mode.

Required settings:

<i>Panta Surge A:</i>	<i>Connection</i>	→	Master	
	<i>Mode</i>	→	Wave	
	<i>Settings</i>	→	Flow A	→ 100%
	<i>Settings</i>	→	Flow B	→ 1%
	<i>Settings</i>	→	Time A	→ 2,0s
	<i>Settings</i>	→	Time B	→ 2,0s
	<i>Settings</i>	→	Time A-B	→ 0,1s
	<i>Settings</i>	→	Time B-A	→ 0,1s
<i>Panta Surge B:</i>	<i>Connection</i>	→	Sync	
	<i>Mode</i>	→	Wave	
	<i>Settings</i>	→	Flow A	→ 100%
	<i>Settings</i>	→	Flow B	→ 1%
	<i>Settings</i>	→	Time A	→ 2,0s
	<i>Settings</i>	→	Time B	→ 2,0s
	<i>Settings</i>	→	Phase delay	→ 2,0s
	<i>Settings</i>	→	Time A-B	→ 0,1s
	<i>Settings</i>	→	Time B-A	→ 0,1s

If several Panta Surge are connected in wave mode with a phase delay it is important that the sum of Time A, Time B, Time A-B, and Time B-A are equal. The individual values can be changed as long as this rule is followed.

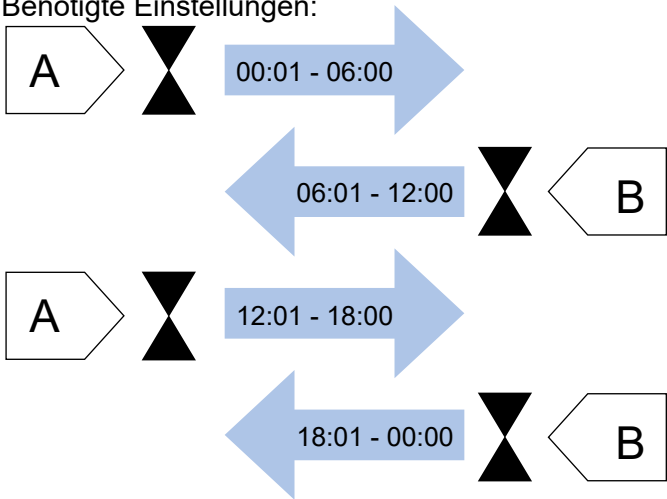


Tide Simulation:

In this example Hydro Wizard® are used to simulate the natural flow of tides. Hydro Wizard® A will run with one set of parameters from 00:01 to 6:00 and from 12:01 until 18:00, while Hydro Wizard® B will run from 06:01 until 12:00 and from 18:01 until 00:00.

To achieve this, the time must be synchronized in the SYNC mode

Benötigte Einstellungen:



- Panta Surge A:

Connection

Mode

Settings

Start

End

Flow

→

→

→

→

→

→

Master

Profile

New interval

00:01

06:00

100%
- Panta Surge B:

Connection

Mode

Settings

Start

End

Flow

→

→

→

→

→

→

Sync

Profile

New interval

06:01

12:00

100%



<i>Panta Surge A:</i>	<i>Connection</i>	➔	<i>Master</i>
	<i>Mode</i>	➔	<i>Profile</i>
	<i>Settings</i>	➔	<i>New interval</i>
	<i>Start</i>	➔	<i>12:01</i>
	<i>End</i>	➔	<i>18:00</i>
	<i>Flow</i>	➔	<i>100%</i>
<i>Panta Surge B:</i>	<i>Connection</i>	➔	<i>Sync</i>
	<i>Mode</i>	➔	<i>Profile</i>
	<i>Settings</i>	➔	<i>New interval</i>
	<i>Start</i>	➔	<i>18:01</i>
	<i>End</i>	➔	<i>00:00</i>
	<i>Flow</i>	➔	<i>100%</i>



07) Cleaning function

The cleaning function is reached from the main menu.

The cleaning function will help to clean off debris (like plants) that has stuck to the intake of the pump. To achieve this, the pump will spin in the opposite direction for a short time.

The frequency of the automatic cleaning function can be set in the menu. It is also possible to change from short time to long time cleaning.

The manual cleaning function allows you to select forward and reverse flow strength.



Caution: Using the cleaning mode for other purposes can damage the Panta Surge



Caution: The cleaning mode does not replace the regular cleaning!



08) The pause / feed timer

The pause / feed timer stops the Hydro Wizard® and automatically resumes the programmed settings after an elapsed time (i.e. during feeding).

The feed timer function can be reached from the main menu. Select the beginning of the pause, stop the pause, and duration of the pause. The quick access menu can activate a quick access button that will be displayed during a STOP in the info screen.

Caution: Never use the pause / feed timer to perform maintenance or cleaning the Panta Surge!





09) Geräte Einstellungen

In the main menu item “Device”, settings for the operation and appearance of the control display can be configured.

The “**Tooltip**” menu item is used to activate the display of additional information for selected menu items. Tooltips are displayed at the bottom of the screen.

The “**Dimming**” menu item is used to adjust the reduction of the display backlight when the touch-screen is inactive. Touching the screen restores the display to full brightness.

The “**Password**” submenu is used to protect the settings against unauthorized changes.

When the password function is activated, a password must be entered to switch from the information screen to the menu screen.

When the password function is activated, quick access to the settings of the active mode is not available. The factory-set default password is “1111”.

The “**Rotation**” menu item is used to rotate the screen by 180° if the control box is operated with the cable outlet facing upwards.

The “**Restart**” menu item is used to define the behavior after the power supply has been restored. If set to “Off”, the Panta Surge will not start automatically. If set to “On”, the operating state prior to the power failure will be restored.

The “**Reset**” submenu is used to restore all settings to their factory defaults.

The “**Language**” menu item is used to change the language.



Caution: Pump will automatically restart when connected to power supply if RESTART is set to ON!



The **“Scaling”** menu item is used to reduce the maximum flow value and adapt it to the tank. This is particularly useful in Master-Slave operation to optimize the flow distribution in the tank.

The **“Energy Saving”** menu item is used to set the power reduction in energy-saving mode. In large-scale installations, the device can be switched to energy-saving mode via the Panta Rhei CAN bus in order to reduce power consumption, e.g. in emergency or battery operation.

Warnings

Warnings are displayed on the information screen during operation. When a warning occurs, the screen flashes to indicate the warning. (The screen may also flash when the Panta Surge is connected to a PC via PantaLogic.)

Warning: Blockage”: The impeller is not rotating. Check whether the impeller is blocked.

“Impeller Error”: The impeller is rotating too fast. Check whether the blades are intact and whether they are operating in the water.

“Warning: Overload”: The power consumption is temporarily too high. Check whether the impeller is blocked.

“Overload Stop”: The power consumption has increased excessively, causing the Panta Surge to stop in order to prevent damage. Check whether the impeller is blocked.



10) Cleaning and maintenance

The Hydro Wizard® operates largely maintenance free. Should it increase its energy consumption the cause is usually calcium deposits on the bearings. Depending on the water chemistry this effect can vary greatly.

To clean the bearings they must be submerged in Panta Clean solution:

- Mix 35 g of Panta Clean with 10 l of water in a bucket.
- Fully submerge the pump in the solution.
- Set the pump in flow mode at 2% power.
- Leave the pump running for one hour.
- Now discard the solution and run the pump on more hour in clean fresh water.

This protocol should be performed twice a year as a precaution.

Frequently check the condition of the cable to make sure that movement or animals have not damaged it.

a) General cleaning

Remove plants or other objects that have been sucked onto the intake at least once a week (or if needed more often). Sediment that has settled on the housing can be removed with a soft brush.



Do not clean the pump, or parts in the dish washer. The plastics are not dish washer safe!



11) Troubleshooting

Problem	Possible Cause	Solution
pump will not start	no power	• plug the pump in • check house/GFI fuse
	speed display says „zero“	read the manual section for the controller
	the impeller is blocked	• unplug the pump • remove the blockage
	pump is not plugged	plug the pump into the controller
	After a power failure, the speed is set to “zero”	Up-regulate the speed again
pump suddenly stops	the impeller is blocked	• unplug the pump • remove the blockage
	power failure	check GFI/ house fuse
	After a power failure, the speed is set to “zero”	Up-regulate the speed again
the pump is no longer generating a flow	the intake basket is clogged	clean the intake basket
loud noise	a wing of the impeller has broken off	unplug the pump and replace the impeller
display impeller fault	Panta Surge operates outside the water	Operate Panta Surge inside the water
	Impeller defect	unplug the pump and replace the impeller



For any other problems please get in contact with Panta Rhei Service. Repairs can be made only by Panta Rhei or authorized dealers!



12) Disposal and environmental protection

The pump should not be discarded with the regular trash, it should be disposed of according to local regulations, please check with your local authority. [RICHTLINIE 2002/96/EG].





13) Warranty provisions

a) Extent of warranty

This limited warranty is applicable from the date of purchase for all new products from Panta Rhei GmbH purchased for your own normal use and not for reselling. Panta Rhei GmbH guarantees that a product covered by this warranty, apart from the exceptions listed below, is free from material and manufacturing defects.

b) Warranty period

The warranty period is limited to one (1) year and starting from the date of purchase. The exact warranty period depends on when and where the product was purchased. A valid purchase receipt is required to prove a warranty entitlement.

c) Warranty exclusions

The following are not covered by this warranty:

Use for other than the intended purpose, accidents or changes to the hardware or software, unauthorized modifications, an unsuitable physical or operational environment which does not meet the product specifications, inexperienced maintenance or defects caused by a product for which Panta Rhei GmbH is not responsible.

There is no warranty entitlement for products whose nameplate has been removed or modified.

Panta Rhei GmbH offers no other guarantees whatsoever, including, but not limited to, implied agreements of conditions relating to the merchantability or suitability for a particular purpose.



In some jurisdictions a restriction of implied agreements is not admissible so this restriction may not be applicable to you.

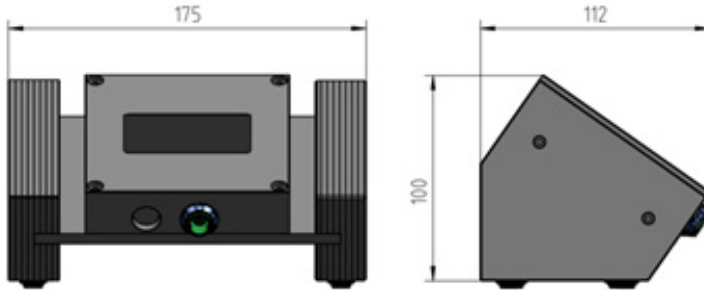
Panta Rhei GmbH is not obliged to replace products which are not covered by this limited warranty.



14) Technical data

- a) Dimensions
(all dimensions in mm)

Controller





15) Optional accessories

For further information, please contact our sales representatives or visit:

<https://www.panta-rhei-aquatics.com>

16) Spare parts

All spare parts for the Panta Surge are available directly from Panta Rhei.

For further information, please contact our sales representatives or visit:

<https://www.panta-rhei-aquatics.com>





Panta Surge 63

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