User and installation manual

compact 600/12 V USB

Firmware version 1018
aquasuite version 2014

Current as of May 2014

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Gelliehäuser Str. 1, 37130 Gleichen

1. Safety precautions

The following safety precautions have to be observed at all times:

- Read this manual thoroughly and entirely!
- Save your data onto suitable media before working on your hardware!
- The pump must not be placed under water!
- The pump controller on the rear end of the pump must not get in contact with water!
- The pump may only be used inside a PC case!
- A short rattle noise upon start-up is normal. If the noise persists for a longer period of time, there might still be some air inside the pump chamber.
- The pump is not a suction pump. Make sure the pump chamber is filled with water prior to operation!
- The pump must never be operated without the rotor!
- The pump is not suited for dry operation!
- Operate only indoors. Not suited for outdoor operation!
- This product is not designed for use in life support appliances, devices, or systems where malfunction of this product can reasonably be expected to result in personal injury. Aqua Computer GmbH & Co. KG customers using or selling this product for use in such application do so at their own risk and agree to fully indemnify Aqua Computer GmbH & Co. KG for any damages resulting from such application!

2. Scope of delivery

The compact 600/12 V USB pump is not sold separately. The product containing the compact 600 pump determines the scope of delivery.

3. Overview of the pump variants

The three available versions of the compact 600/12 V USB pump differ in functionality. The mechanical layout of the pump and its electronic components are identical for all variants. So for instance the "standard" version also contains the internal temperature sensor but it is not activated.
The version of the pump can be determined by checking the “System” page in the aquasuite software version 2013. The pump version can be upgraded, upgrades are available through our web shop. For details on the upgrade process, please refer to chapter 12.3.
The following table shows the main differences between the standard, advanced and ultra version:

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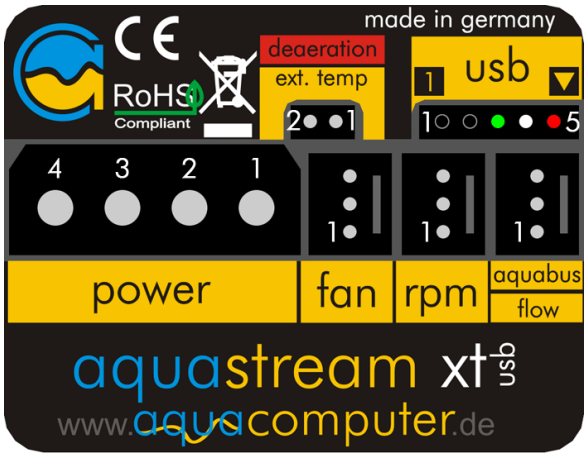
Function	Standard	Advanced	Ultra
Automatic maximum pump speed	•	•	•
Manual pump speed	•	•	•
Deaeration mode	•	•	•
Rotation detection	•	•	•
Configurable speed signal output	•	•	•
USB and aquabus interface	•	•	•
Manually configurable fan output	-	•	•
External temperature sensor connector	-	-	•
Internal water temperature sensor	-	-	•
Configurable calibration curves	-	-	•
Temperature controlled fan output	-	-	•
Flow sensor connector	-	-	•

4. Electrical connections

4.1. Connection panel of the compact 600/12 V USB pump



The pump controller board is integrated on the rear side of the pump. The controller board features connectors for power supply, fan, speed signal, aquabus interface or flow sensor, external temperature sensor and USB interface. Please note that depending on the version of the pump, some connectors may be without function.
ATTENTION: Completely turn off your power supply or disconnect the mains power cord from the wall outlet before connecting or disconnecting any cables to/from the device!

4.2. Connector "power"

Connect a power plug of your PC's power supply unit to this connector. Do not use excessive force but double check the polarity of the plug if you are having trouble to connect.

Pin assignment: Pin 1: +12 V
Pin 2: GND
Pin 3: GND
Pin 4: not connected

4.3. Connector "USB"

This connector is used for USB communication to the PC and for power supply. Connect to an internal USB header of your motherboard. Take special care to make sure the pin alignment matches your motherboard!

Pin assignment: Pin 1: not connected
Pin 2: GND (black)
Pin 3: D+ (green)
Pin 4: D- (white)
Pin 5: +5 V (red)

4.4. Connector "aquabus/flow"

Connector for communication with other Aqua Computer devices. For versions Standard and Advanced, the connector "aquabus/flow" is configured as an aquabus interface and can be used for instance to connect the pump to an optionally available aquaero fan controller. For these variants, a flow sensor must not be attached to this connector!

You can use the aquabus/speed signal cable included in delivery to connect the pump controller board to a suitable connector of a compatible device, for example an aquaero. USB and aquabus interface can be used at the same time, however not all control options of the compact 600/12 V USB are available using the aquabus interface.

If this connector is connected to an aquabus device, the port must not be configured as flow sensor input! Otherwise, the pump controller will be destroyed and all guarantees will be void!

For the Ultra variant, this connector can be configured for two different functions. Default configuration of this connector is an aquabus interface. Using the aquasuite software, this connector can also be configured to be a flow sensor input. Simultaneous use of the aquabus and flow sensor function is not possible! Please see chapter 12.4. for details on configuring the desired function.

Flow sensor and special interconnecting cable are optional accessories and not included in delivery.

Pin assignment: Pin 1: GND
Pin 2: aquabus SDA / flow sensor +5 V
Pin 3: aquabus SCL / flow sensor signal

Compatible aquabus devices:

- aquaero 6 XT (art. 53146)
- aquaero 6 PRO (art. 53145)
- aquaero 5 XT (art. 53125 and 53089)
- aquaero 5 PRO (art. 53090)
- aquaero 5 LT (art. 53095)

Compatible flow sensors:

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- Flow sensor with 5.6 mm nozzle (art. 53061)
- Flow sensor "high flow" (art. 53068)
- Connection cable for flow sensor (art. 53027)

4.5. Connector "rpm"

Depending on configuration, this header can be used as a generic speed signal. The speed signal can be configured (using the aquasuite software, see chapter 11.1.) to be deactivated in case of an alarm condition for monitoring purposes. For example, the aquabus/speed signal cable included in delivery can be used to connect this header to the CPU fan header of the PC's motherboard and depending on the motherboard and BIOS settings, an automatic emergency shutdown may be initiated on alarm condition. Please refer to the motherboard manual for details on functionality and BIOS settings.

Pin assignment: Pin 1: GND
Pin 2: not connected
Pin 3: speed signal/open collector max. 30 V / 100 mA

4.6. Connector "fan" (advanced and ultra version only)

Regulated fan output with speed signal processing. Maximum power output 5 Watts. Maximum power is dynamically limited through temperature monitoring to prevent damage to the pump controller board. If the internal electronics temperature sensor reading exceeds approximately 80 °C, the fan output is set to 100 % power to minimize power dissipation. If the sensor reading rises further to approximately 100 °C, the fan out put is set to 0 % power and effectively switched off. In both cases, the pump controller activates the manual control option for the fan output. This setting remains active until it is manually reset through the aquasuite software. However, the fan output is not short-circuit proof!

Pin assignment: Pin 1: GND
Pin 2: 0-12 V
Pin 3: Speed signal

4.7. Connector „temp"

Connector for a temperature sensor.
Compatible sensors:

- Temperature sensor inline G1/4 (art. 53066)
- Temperature sensor inner/outer thread G1/4 (art. 53067)
- Temperature sensor G1/4 (art. 53147)
- Temperature sensor plug&cool (art. 53025)
- Temperature sensor 70 cm (art. 53026)

5. Initial operation

Turn off your PC or remove the PSU mains cable if the PSU does not have a power switch. Remove all cables of the PSU (e. g. from non removable disks, optical storage drives or graphic cards). Take special care to disconnect the 4pin ATX12V power supply connector from the motherboard as well. Connect the power connector of the pump controller board to an available 4-pin power plug of the power supply unit.

To operate your pump while filling the system, you have to either start the PC power supply with an ATX bridging connector or attach the pump to a second power supply unit.
To start the power supply unit, plug the ATX bridging connector onto the ATX connector of the power supply unit. The power supply will immediately power up. To turn the power supply unit off again, simply unplug the ATX bridging connector again.
If your power supply does not power up after you have plugged on the ATX bridging connector, connect optical disk drives and hard disks to the power supply unit before plugging in the ATX bridging connector again.
To activate the deaeration mode, shorten the connector “deaeration / ext. temp” using the jumper included in delivery. **This must be done while the pump is running;** otherwise, shortening the pins will result in a reset of all configuration data. To exit deaeration mode, simply remove the jumper again. The pump will return to normal operation mode. Please note that activating the deaeration mode by jumper is only functional if the pump is configured to process USB data with higher priority than aquabus data. Configured with factory defaults, USB data has higher priority and activating the deaeration mode by jumper is therefore possible! See Chapter 12.4. for details on configuring USB/aquabus priority.

6. aquasuite software

The Windows software aquasuite is an extensive software suite and can be used for configuration and monitoring. The software is not required for operation though. All configuration parameters can be saved into the device's memory, so after initial configuration, the speed signal connector can be used independently from an USB or aquabus connection (providing that power is supplied to the device).
Please note: Depending on the type of product you are using, some features may not be available for your device.

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6.1. Installation of the aquasuite software

For configuration and monitoring of compact 600/12 V USB pumps, the aquasuite software is available for download from our website www.aqua-computer.de. You will find the most up-to-date version in the support section of the website.
After downloading, install the aquasuite software. Depending on your selection during the installation process, the aquasuite software may start automatically upon restart or may be accessed through a symbol on your desktop or in the start menu.

6.2. Basic operation

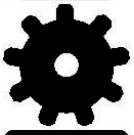
The program window is divided into two main areas. On the left side, a list of "overview pages", data logger, device pages and the basic configuration page of the software is displayed, the right side shows the details of the currently selected list element. The list can be hidden or restored by clicking the arrow symbol in the upper left corner.
List elements may be minimized or maximized for easier access by clicking the title bar. The title bars may contain various symbols that will be explained in the following chapter.

6.3. Symbols in the headlines

Click the plus symbol in the "Overview pages" headline to create a new overview page.

Clicking the monitor symbol will toggle desktop mode for this overview page. While desktop mode is active, the arrow in the symbol will have an orange color.

Clicking the padlock symbol will unlock or lock this overview page for editing.



Clicking the gear wheel symbol will access the basic configuration page of the selected list element.

In order to save all settings into a device, click the disk symbol in the headline.

This symbol indicates that communication with this device is not possible at the moment. Check USB connection and power supply of the device if necessary.

Clicking this symbol in the lower left corner of the aquasuite window will display the news feed on aquasuite updates.

7. Overview pages (aquasuite)

Current sensor readings and diagrams from all supported devices can be displayed in overview pages. For each device a pre-configured overview page is automatically generated the first time the device is connected to the PC. These pages can be individually modified and new pages can be created. Within one overview page, data from all connected devices can be accessed.

7.1. Desktop mode

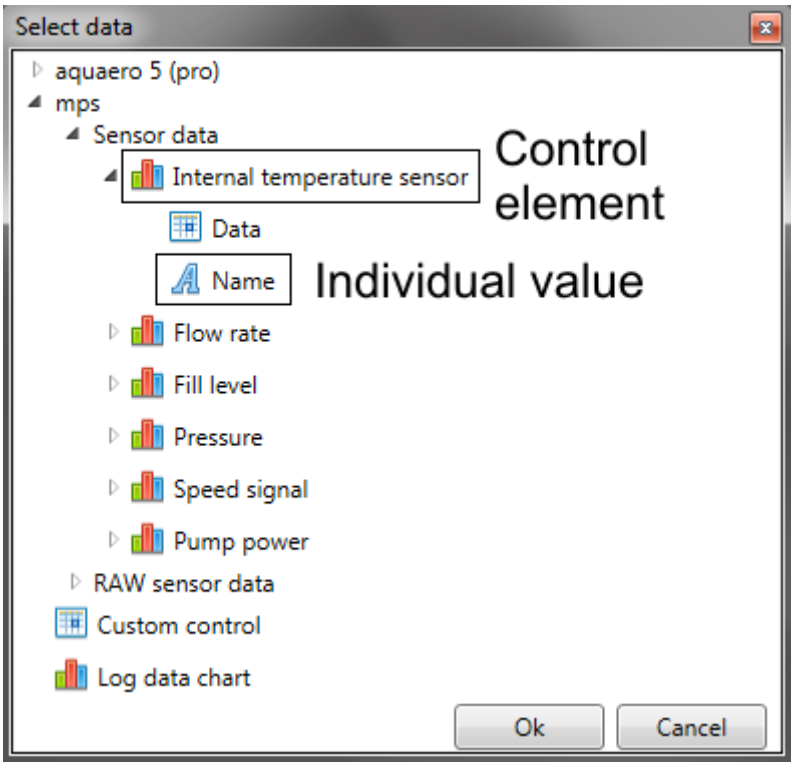
Each overview page can be displayed directly on your desktop. You can enable desktop mode for an overview page by clicking the corresponding symbol in the list of overview pages. Desktop mode can only be enabled for one overview page at a time. With desktop mode enabled, elements of the overview page may cover program symbols on your desktop, but mouse clicks are transmitted to underlying desktop symbols.
If a overview page is unlocked for editing while desktop mode is active, the page will be displayed in the aquasuite window for editing and the current desktop will be displayed as background for your convenience.

7.2. Creating new overview pages and activating edit mode

In order to create a new overview page, click the plus symbol in the headline "Overview pages".
Existing overview pages can be unlocked for editing by clicking lock symbol in the page listing.

7.3. Adding new elements

If the currently selected overview page is unlocked for editing, a white plus symbol is displayed in the bottom right corner of the screen. Click the symbol to add a new element to the page and select the desired element from the following list. All available elements are displayed in a tree diagram, click the arrow or plus and minus symbols to access individual items. Please note that individual values can be selected as well as high-



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er-ranking control elements. Custom controls can be selected for example to import image files.
Confirm your selection by clicking “OK”. The new element will be displayed in the upper left corner and the configuration window is displayed. Configure the element as described in the next chapters.

7.4. Editing existing elements

If the currently selected overview page is unlocked for editing, right-clicking an element will access a context menu. To access the settings of an element, select “Settings” in the context menu or simply double click the element.
If you want to move an element, “drag” this element while holding down the mouse button. Release the mouse button when the element is at the desired position.

7.5. Settings of individual values

If the currently selected overview page is unlocked for editing, right-click an element and select “Settings”. You may also double click the element.
Font face, size and color as well as position, decimal places and unit can be configured for individual values.

7.6. Settings of control elements

If the currently selected overview page is unlocked for editing, right-click an element and select “Settings”. You may also double click the element. Apart from position, size and color, the style of the element can be selected and configured. The following styles are available:

- Headline only: Compact display as a headline.
- Text: Displays the numerical value in a box with a headline.
- Bar graph: Displays numerical value as well as bar graph.
- Chart: Displays the value in chronological sequence as a chart.
- Gauge: Displays the value as a analog gauge.

All display styles offer extensive configuration options, additionally statistical data such as minimum, maximum and average can be displayed.

7.7. Custom controls: Images, text, drawing elements

By using custom controls, simple drawing elements such as circles, rectangles and texts as well as images and more sophisticated elements can be added to an overview page. To do so, add a “Custom control” to an overview page. Switch to the “Display” tab in following dialog box, select the type of element to be created from the drop down menu and confirm your selection by clicking the “Load preset” but-

ton. Depending on the type of element, an additional dialog may appear before the code (XAML, Extensible Application Markup Language) of the new element is displayed in the lower part of the dialog window. You may want to customize the code. By clocking the "Ok" Button, the new control is saved to the overview page.
Example process to add an image: Select "Image" from the drop down menu and click the "Load preset" button. Select an image file using the following file selection dialog. The code is then displayed in the lower part of the dialog window an can be modified. Save the new control by clicking the "Ok" button. The picture will be displayed on the overview page.
More complex controls such as data bindings and animations are also available but will require some programming experience for configuration.

7.8. Log data chart

This element can be used to display charts on overview pages. The charts have to be created using the data log functionality of the aquasuite before they become available for overview pages. Please refer to the next chapter for details. Once a chart has been configured, it can be selected from the "Chart selection" list on the "Display" tab of the settings dialog.

7.9. Export and import of overview pages

Elements and complete overview pages can exported from the aquasuite and can then be imported either on the same PC or on other PCs. For export as well as import, the overview page must be in edit mode.
To export a complete page, right click a free spot of the page and select "Export page" from the context menu. To export individual elements, select the element or elements, perform a right click and select "Export selected" from the context menu.
For import, right click a free spot of the page and select "Import page" or "Import items"from the context menu. Using "Import page", the current page will be deleted and only the imported page items will be displayed, using "Import items" will add the items from file to the current page without altering the existing items. During import, the elements will be assigned to devices using the following scheme:
If a device with identical serial number is found on the computer, no changes are made.
If no device with identical serial number is found on the computer, the element will be assigned to the first device found of identical type.
When importing complex pages with elements referring to more than one device, it is recommended to edit the device assignment in the file using a text editor prior to importing.

8. Data log (aquasuite)

Data from all connected Aqua Computer devices can be logged by the aquasuite. Logged data can then be analyzed by creating charts or be exported to files.

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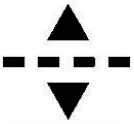
8.1. Log settings

The log settings can be accessed by clicking the “Log settings” element below the “Data log” headline in the listing. To log data, create a new log data set by clicking the plus symbol in the upper right corner of the settings window. Enter name, time interval and configure automatic deletion of old data to meet your requirements. You may then add the data sources to log by clicking the plus symbol in the “Data sources” window section. You may add an unlimited number of data sources to each log data set, the total number of log data sets is also unlimited.

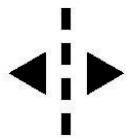
8.2. Analyze data

Logged data can be visually evaluated as charts. To do so, select “Analyze data” below the “Data log” headline in the listing. The chart will initially be empty, directly below the chart are eight buttons to modify the chart. In the lower section of the window, the chart data can be configured.
To add data to the chart, first select the “Data sources” tab in the chart configuration and select a data set to be displayed. If no data sources are available, you will have to configure the log settings as described in the corresponding chapter of this manual. Select the time period to be displayed on the right side of the window and add the data to the chart by clicking the “Add data to chart” button. Repeat this procedure if you want to display more than one data set in the chart.
You may modify the chart using the “Chart setup” and “Data series setup” tabs. Finally, you can use the “Chart manager” tab to save the current chart configuration and to load or delete previously saved configurations. All saved chart configurations will be available on overview pages for the “Log data chart” element.
The currently displayed chart can be edited by using the buttons directly below the chart and may also be saved as an image file. The button corresponding to the currently selected function is highlighted by an orange frame. Please refer to the following list for details on each function:

To save the currently displayed chart as an image file, click the floppy disk symbol and select a name and location in the following dialog.



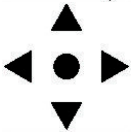
This function can be used to add horizontal lines to the chart. While this function is activated, simply click into the chart to add a line at the current cursor position.



This function can be used to add vertical lines to the chart. While this function is activated, simply click into the chart to add a line at the current cursor position.

This function can be used to add annotations to the chart. While this function is activated, simply click into the chart to add an annotation at the current cursor position. By clicking into the text box, you may edit the text. You may also drag the little circle beside the text box to move the connecting line to the desired position. Use drag and drop to move existing annotations.

This function can be used to remove lines or annotations from the chart. While this function is activated, simply click the element to be removed.



This function can be used to move the visible portion of the chart. Press and hold the mouse button while moving the cursor in the chart to select the position to be displayed, then release the button.

This function can be used to zoom in and out. Use the mouse wheel or select the area to be displayed. You can reset the zoom settings by double-clicking in the chart area.

This function will completely remove the chart.

8.3. Manual data export

Saved data can be exported from the data log into a XML file. To do so, select "Analyze data" below the "Data log" headline in the listing. Select the "Data sources" tab in the chart configuration and select a data set to be exported. If no data sources are available, you will have to configure the log settings as described in the corresponding chapter of this manual. Select the time period to be exported on the right side of the window and start the export process by clicking the "Export data" button. Enter a file name and path in the following dialog window.

8.4. Automatic data export

The automatic data export feature can be used to save data from the aquasuite into an XML file on the hard disk or in the RAM („memory mapped file") in a regular time interval. The automatic data export will always overwrite the previously saved data, so the file always contains only the most recent data set. Select "Automatic data export" below the "Data log" headline in the listing to access the settings screen. Create a new export data set by clicking the plus symbol in the upper right corner of the screen. Enter name, path and time interval to meet your requirements. You may then add the data sources to log by clicking the plus symbol in the "Data sources" window section. You may add an unlimited number of data sources to each export data set, the total number of export data sets is also unlimited.

9. Pump configuration (aquasuite)

Select "Pump" from the device list for the device to be configured.

9.1. Pump mode

In the upper area, current pump data (speed, voltage, current) is displayed as plain text as well as in a diagram.

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Select the desired mode of operation below the diagram. If “Automatic maximum pump speed” is selected, the pump will automatically operate at the highest applicable speed. The pump controller constantly monitors rotor orientation, electrical current, power dissipation and supply voltage to calculate optimum rotation speed. During power up, the pump may fall back to standard speed several times until the highest (stable) operating speed is determined. Using standard water cooling setups, this speed will normally be around 4000 – 5000 rpm depending on the resistance of the system. The maximum speed can be limited by changing the parameter “maximum pump speed”.
If “Manual speed settings” is selected, you can set the rotation speed of the pump manually. If the selected speed cannot be attained, the pump controller will use the highest stable rotation speed (below the set speed) just like in automatic mode.

9.2. Power settings

In manual speed mode, set the desired pump speed.
By clicking the button “Reset maximum pump speed”, the currently determined maximum pump speed will be reset and the pump will repeat the start-up process. The button is effective for both manual and automatic mode.
The parameter “Minimum pump speed” determines the minimum speed for both automatic and manual mode. If this speed is not attained during start-up, the maximum speed detection will be repeated until the minimum speed setting is attained. If this parameter is set too high, the pump will repeat the start-up process over and over again – therefore set to a speed at which the pump runs stable.
The parameter “Maximum pump speed” limits the maximum speed in automatic mode – the pump will not operate faster than this speed even if a higher speed setting would be possible.

10. Fan configuration (aquasuite)

Select “Fan” from the device list for the device to be configured.

10.1. Fan mode

In the upper area, current fan data (speed, power output, voltage) is displayed as plain text as well as in a diagram.
Select the desired mode of operation for the fan output below the diagram. If “Manual fan settings” is selected, the fan output can be set to a fixed value. In “Automatic temperature control” mode, the fan power will be dynamically adjusted depending on either the current water temperature sensor reading or an external temperature sensor.

10.2. Manual fan settings

When using manual mode, set the desired output power here.

10.3. Automatic temperature control

When using the automatic temperature control mode, select the sensor to be evaluated and set the desired target temperature. The controller speed setting should not be changed in normal setups.

10.4. Fan settings

When using the automatic temperature control mode, the output range can be limited in both directions ("Minimum power"/"Maximum power"). The check box "Hold minimum power" determines whether the fan will be switched off for low temperature sensor readings (box not checked) or remain active at the set minimum speed (box checked). Set minimum power to a value at which the connected fan reliably starts up.

11. Alarm configuration(aquasuite)

Select "Alarm configuration" from the device list for the device to be configured.

11.1. Speed signal/Output

Select the signal to be provided through the speed signal output. Available options are the speed signal of a connected fan or flow sensor, current pump speed or an artificial speed signal. The check box "Switch off speed signal in case of alarm condition" determines output behavior during alarm conditions.

11.2. Alarm reporting and alarm limits

Select the data sources to be monitored and set appropriate alarm limits. If the current reading is below the lower limit or higher than the upper limit, an alarm will be raised if the check box "Activate alarm evaluation" is set for this value. All sources that currently raise an alarm are highlighted with a red background color in the software.
Make sure only to use readings for alarm evaluation that are functional with your specific setup.

12. System settings compact 600/12 V USB (aquasuite)

Select "System" from the device list for the device to be configured.

12.1. Device information

The details displayed here might be required when you contact our service for support.

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12.2. Factory defaults

Click the button “Reset device to factory defaults” for a complete reset of all settings. You will have to completely reconfigure the device after resetting it to factory defaults!

12.3. Key management

In order to upgrade your compact 600/12 V USB pump to a higher version, you will need the serial number and the device key from the “Device information” section of this page. Order the desired upgrade from the Aqua Computer web shop and enter serial number and device key into the “Annotations” field during the checkout process. For your convenience, you can also click the button “Buy upgrade key” to display a help page with all necessary information.
After receiving your activation key from Aqua Computer, enter the key to the box labeled “Enter upgrade key” and click the “Apply” button. The pump needs to be restarted after entering the activation key. To do so, save all settings into the pump (by clicking the disk symbol in the device list) and shut down your PC. Wait for a few seconds before turning the PC on again.

12.4. aquabus configuration and flow sensor

For ultra versions of the compact 600/12 V USB pump, the “aquabus/flow” connector of the pump controller can be configured as an aquabus interface or as a flow sensor input.
If the connector is configured as aquabus interface, the aquabus address of the compact 600/12 V USB controller can be selected. Each aquabus device has to be configured to a unique aquabus address. If a single compact 600/12 V USB pump is used, this step may be skipped. Addresses 10 and 11 are available for compact 600/12 V USB pumps.
The next setting determines which interface (USB/aquabus) of the pump controller is to be processed with higher priority. This setting is only effective if both USB and aquabus interface are connected at the same time. Additionally, you can select a temperature sensor that can then be read out by an attached aquabus device.
If the “aquabus/flow” header is configured as a flow sensor input, you will be able to set up the flow sensor input in the lower region of the screen and the current sensor reading will be displayed.
If you make changes to the bus address or reconfigure the general functionality (aquabus/flow sensor), the pump must be restarted for the changes to take effect. To do so, save the configuration (by clicking the disk symbol in the device list) and shut down your PC. Wait for a few seconds before turning the PC on again.

12.5. Sensor settings

If you detect inaccuracies in the temperature sensor readings, you can make corrections here. In general, this should not be necessary.

13. Basic settings (aquasuite)

Click the entry „Settings“ below the headline „aquasuite“ to access basic settings for language, units and start-up of the software.

13.1. Language

Select a language from the drop down menu. After changing the language setting, the software will have to be restarted.

13.2. Units

Select the units to be used for temperature and flow values from the drop down menus. After changing these settings, the software will have to be restarted.

13.3. Application start-up

You may customize start-up behavior to suit your preferences. You may also select to hide the task bar symbol of the software when minimized.

13.4. Service administration

The service (background service) configures special USB settings for all connected Aqua Computer devices and should therefore always be active.

14. Troubleshooting

14.1. Restore factory defaults

There are two options to reset the pump controller to factory defaults. Restoring factory defaults may be useful if the pump is not properly operating or if erroneous settings have been saved into the pump.
Factory default can be restored using the aquasuite by clicking the “Reset device to factory defaults” button on the “System” screen.
Alternatively, factory defaults can be restored by jumper which may be necessary if USB communication is affected. To do so, shut the computer down completely and place the jumper included in delivery onto the “deaeration /ext. temp” header of the compact 600/12 V USB controller. Power on the computer and then remove the jumper again.

14.2. Replacement parts

Part numbers of genuine replacement and accessory parts for the compact 600/12 V USB pump:

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Description	Aqua Computer part number
aquabus/speed signal cable	93111
ATX adapter for starting the power supply unit	93112
Pump controller PCB	95103

15. Technical details and care instructions

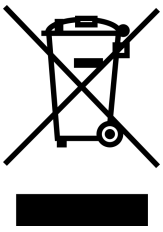
15.1. Flow sensors, pressure sensors

Power supply voltage:	12 V DC ±5 %
Power supply current:	ca. 500 to 1500 mA
Fan output voltage:	0-12 V (depending on load)
Fan output current:	max. 0.4 A / max 5 W
Speed signal connector:	open collector max. 30 V / 100 mA
Ambient temperature range:	10 to 40 °C (noncondensing)

15.2. Care instructions

Use a dry and soft cloth for cleaning. All electronic components and headers must not get in contact with coolant or water!

15.3. Waste disposal



This device has to be disposed of as electronic waste. Please check your local regulations for disposal of electronic waste.

15.4. Contact Aqua Computer

We are always happy to answer questions regarding our products and to receive feedback. For answers on frequently asked questions, please also check our web-site www.aqua-computer.de. You might also want to visit our forums and discuss our products with experienced moderators and thousands of members – available 24/7. To get in direct contact with our customer support team, we offer several options:

email: support@aqua-computer.de

Address: Aqua Computer GmbH & Co. KG
Gelliehäuser Str. 1
37130 Gleichen
Germany

Tel: +49 (0) 5508 9749290 (9-16 h Central European Time)
Fax: +49 (0) 5508 9749291

Aqua Computer GmbH & Co. KG
Gelliehäuser Str. 1, 37130 Gleichen