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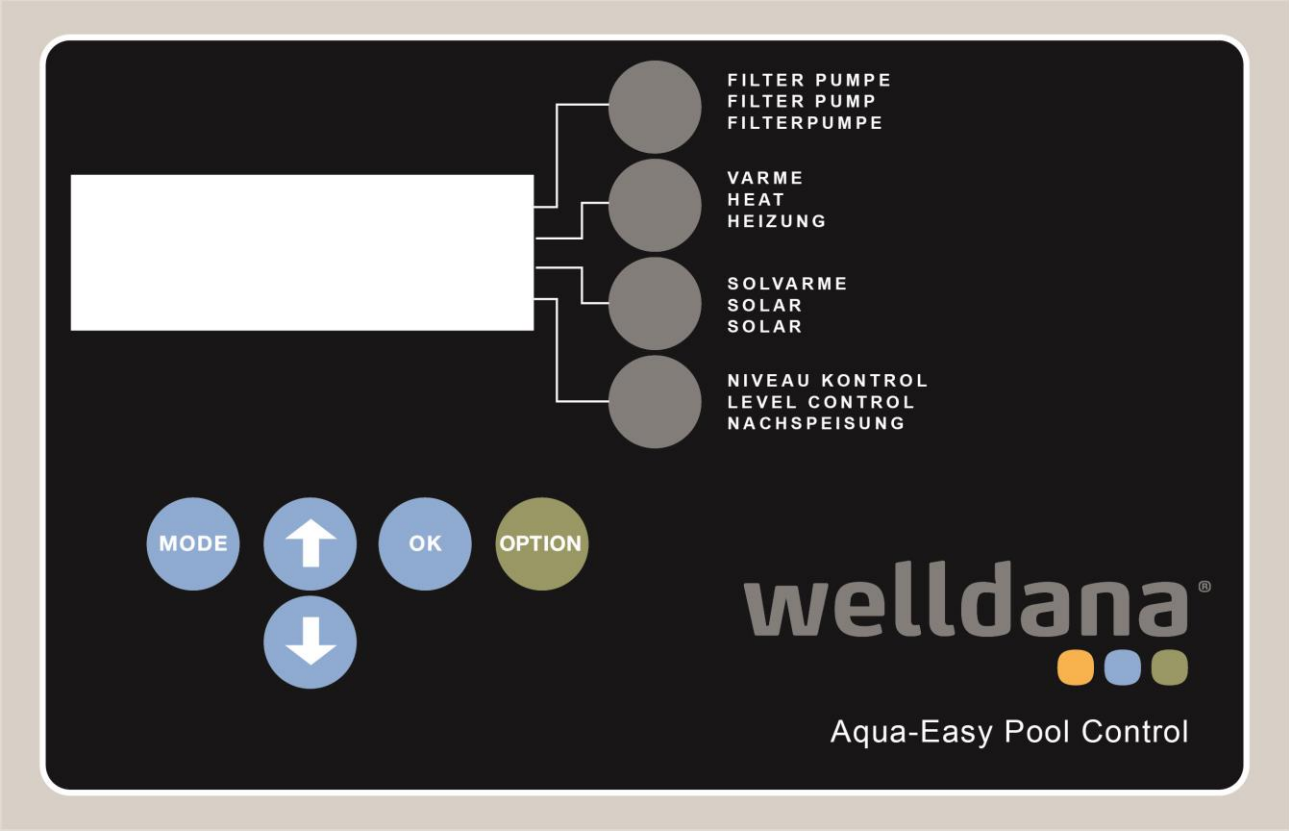
English
Version 1.0

Manual

AS Control 2



With the purchase of the AS Control 2 (ASC 2), you have an innovative, micro-processor operated switchbox which can efficiently control your swimming pool installation, with ease of use and energy savings as focal points. The ASC 2 can be used with any swimming pool, but is particularly interesting if your swimming pool is equipped with a frequency regulator or a pump with built-in frequency regulator. The ASC 2 has the functionality of ingeniously using 24 hour filtration, whereby various filter pump speeds can be programmed using the clock. The pump speed can also be automatically adjusted by activating and deactivating certain components which need a different pump speed at any given moment.

In addition the ASC 2 can control all of the other components of your swimming pool. From heating (whether or not with solar panels), filtration and backwash to replenishment. In short, everything you can expect today from the beating heart of your swimming pool and what the swimming pool owner can rely on for relaxation and swimming pleasure.

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1. GENERAL DESCRIPTION OF FUNCTIONS

The AS Control 2 (ASC 2) is a very expansive control box for the control of a swimming pool. Many options are created with which the box can be perfectly set for all situations, regardless of the size of the pool and the needs with regard to automation of the various processes.

It is based on the programming of both the filter and backflush times. A maximum of 9 filter times can be programmed whereby you - NEW - can also choose the desired pump speed because the ASC 2 can be connected to a frequency regulator or to a pump with built-in frequency regulator. In order to be able to automatically backflush, an automatic valve is necessary.

In addition, the control box makes sure that the set water temperature is achieved an used if the swimming pool has a heating component. As an extra, it is possible to use solar heating (solar panels), whereby the warm water in the collection system is automatically selected if the temperature is higher than the water temperature.

NEW in the ASC 2 is is the option to **automatically replenish** via an electronic level regulation. The regulation can be made with the three different sensors (float operated switch, capacity sensor and NTC sensor). If there is an overflow of the swimming pool, a buffer tank regulator can also be connected to the ASC 2.

Tip: *We advise automating the backflush process because experience has taught us that the user does not perform the backflush process enough, so that the base of water treatment is already not in order. By automatically backflushing, the dirt is guaranteed to be filtered out and removed.*

DE ASCC 2 also has the option to switch an **external device** on or off automatically or manually using the programmable outlet. Think, for example, of lighting or a submersible pump. A dosing system can also be connected to the box, which will then dose if there is a need, and if the filter pump is running.

2. GENERAL USE

The ASC 2 is specifically developed for use in swimming pool installations. Read this manual completely before connecting the control box. Have a professional electrician connect the electrical installations. Always hand the ASC 2 in a dry environment.

For other applications or areas of use than listed above, the manufacturer has no liability to uphold the warranty.

3. OPERATION

3.1 OPERATING BUTTONS

The operation of the control box occurs via separate push buttons. On the right next to the display there are quick buttons with which the user can directly turn the relevant functions on or off. On the lower side of the front panel there are also navigation buttons.

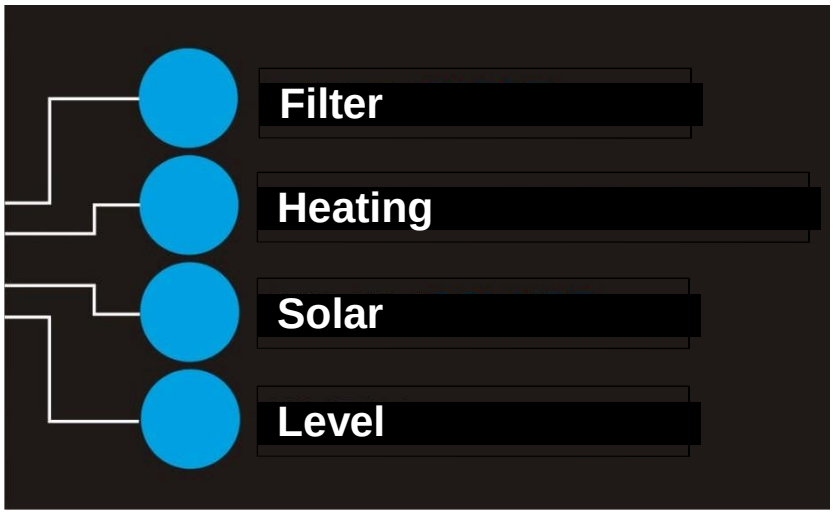

Figure 1. Quick Buttons of the ASC 2

Quick Buttons

The pump is switched on using the **FILTER** button. In the **OFF position (directly visible on the display)**, the filter, heating and solar energy components are deactivated. The **AUTO** position indicates that the on and off function of the filter pump is programmed with the time clock and that these times will be followed. In most cases, this position is selected. For the programming of the filter times, read all information in paragraph 3.4. If the filter position is **ON**, this means that the filter pump is continually switched on. This position is mostly used as a temporary deviation from the programmed filter times. Thus the filter pump can be set to **ON** if the pool is in use (if there are swimmers), while the filter pump falls outside of the programmed active times. After swimming, the filter pump can be switched back to **AUTO**.

With the number shown before the status of the filter pump (rule 1), the pump speed is indicated in which the filter pump is currently running. This only applies is a frequency regulator is connected. If this is not the case, speed 1 is displayed, but this has no other meaning. If the filter pump is **ON**, the pump speed can be adjusted using the arrow buttons.

Figure 2. Display with current values. The 1 in the yellow circle indicates the current pump speed.

Filter times 1 to 4 let the filter pump run during the set time(s) on medium speed. This is what we call "normal speed". These filter times have priority over the filter times 5 to 9, which must be use for the standard filter times.

The filter times 5 to 9 can be used to set a few hours per day to have the filter installation run on normal speed (1). We advise using this because it is good to run at a higher flow speed for a few hours per day.

If a filter time 1 to 4 is set, and this falls within the times of the filter times 5 to 9, priority is given to the first four filter times and switched to filter speed 2 from the moment that this is started. For a detailed description; see 3.5.

The **HEATING** button activates or deactivates the control of the heating mechanism. If there is a switch, then there is no reaction to changes or new switches during the set run time (hysteresis in the config menu). **Note:** If there are defect or if the water sensor is not connected, this function cannot be activated and the temperature display will disappear. If the heating is activated ON/ACT will appear on the display.

The **SOLAR** button activates or deactivates the control of the solar heating mechanism. **Note:** If there are defects or if the water sensor / solar sensor is not connected, this function cannot be activated. Here too, there will be no reaction to changes or a switch during the hysteresis time, the display will change between ON/ACT.

With the **LEVEL** button, the automatic replenishment of fresh water is turned on and off. If the swimming pool installation is equipped with a level regulator, it must be ON. If this is not the case, on OFF. Each time that the LEVEL button is pressed, there is a switch between ON and OFF. If it is ON, there is also a display of the maximum of how many minutes there will be replenishment. This time setting can be adjusted in the menu SYSTEM/REPLENISHMENT (see 3.10).

Navigation Buttons

In addition to the operation buttons (quick buttons), the ASC 2 has push buttons under the display. These are the **navigation buttons** which give access to the operations menu. You can navigate through the menu with the arrow buttons. Your selection is confirmed with the OK button. Then, with the arrow keys, the displayed value can be increased or decreased and then confirmed by pressing OK again. With the MODE button, you can access the main menu. With this button, you can always return to a higher level and ultimately get back to the main menu. The OPTION button can be used to turn another connected component (connected to the programmable outlet) on or off, such as the pool lighting.

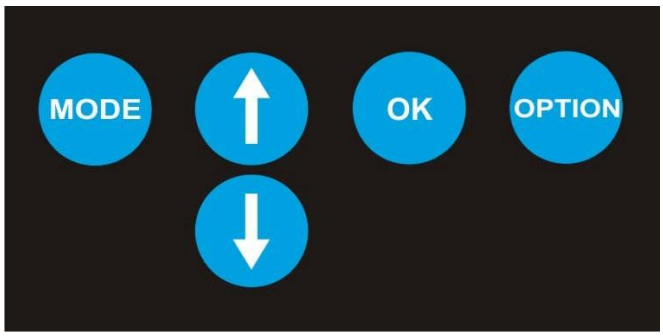

Figure 3. Navigation Buttons of the ASC 2

3.2 DISPLAY

The ASC 2 has a blue four line display. After turning on the regulation, the display shows the current time and date as well as the pool temperature and the solar temperature. The replenishment run time and the status of the programmable outlet are also visible (if applicable and after the LEVEL button is pressed). The current pump speed is also visible.

Figure 4: Display ASC 2

3.3 MAIN MENU

By pressing the **Mode** button, you arrive at the main menu of the control box. The main menu starts with the menu option "**Filter Control**", where the filter times can be set. By pressing the arrow button ↓ you progress to the following (main menu) option. This is the "**System**". By pressing ↓ you arrive successively arrive at the menu options **"Backflush"**, **"Solar"** and **"Heating"**. With the arrow keys, you can browse through the various options of the main menu. By pressing OK, you confirm the menu selection and arrive at the first submenu of the relevant main menu. By pressing the **Mode** button again, you return to the main menu. By pressing Mode again, you leave the main menu and the current indication screen in visible again.

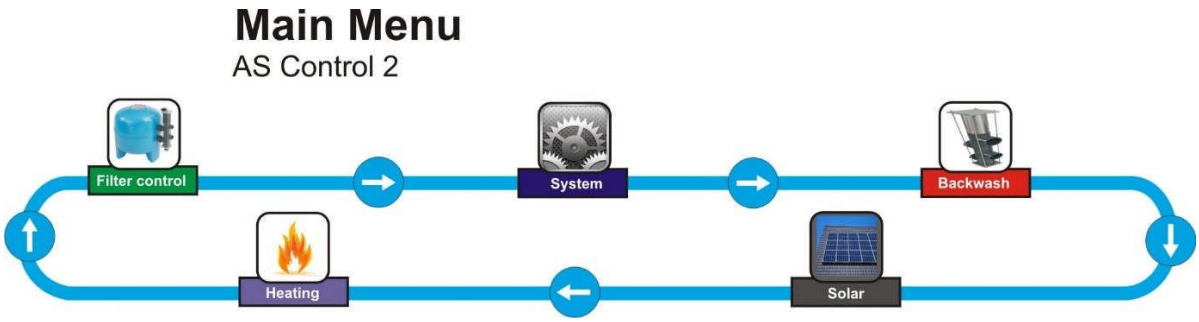

Figure 5: Main Menu of the ASC 2

Note: The **"Backflush"** menu option is only visible if the backflush menu is activated using the system settings (System→Configuration→Code→backflush). The **"Solar"** menu option is only visible if a solar sensor/sun sensor is connected to the terminal strip. In short; if you are not using an automatic backflush valve and/or solar heating, you will not see these menus in the main menu.

3.4 FILTER CONTROLS

➔ Filter Controls

In the menu option "**Filter Control**" the **filter times** an the **motor protection** can be set or changed. The filter times which are programmed here are followed properly if the AEPC2 is in the **AUT** position. This position can be selected via a the quick button **FILTER**.

There are a total of 9 on and off switch times to be programmed, of which switch times 1 to 4 are meant for NORMAL filter speed (= speed 2 = 36 Hz) and 5 to 9 are the switch times which automatically run on the lowest filter speed (= speed 1 = 30 Hz) (= ECO position).

If an overlapping filter time is programmed, the pump will switch over to the ECO speed (1) if it involves filter times 5 to 9. If an overlapping time is programmed for filter times 1 to 4, the filter pump will continue to run at normal speed (2).
If the programmed filter time 1 to 4 overlaps with a filter time 5 to 9, the filter time 1 to 4 has priority with regard to the speed, and the pump will run at normal speed from the start time of this filter time.

If the filter pump is manually switched **ON** via the **FILTER** quick button, the relevant filter speed will be displayed before the **ON** value. Example **1 ON** means that the filter speed is low (30Hz). By pushing the up arrow button at that moment, the speed can be increased to maximum speed 3 (50 Hz). By pushing the down arrow button, the speed can be reduced to minimum 1 (30Hz).

***Tip:** We advise you to think carefully about which times of the day/week you want to keep which filter times. Then program the switch time 1 (to 4 if desired) and switch time 5 (to 9 if desired) for the NORMAL and ECO speeds respectively. For more information on the filter speeds, see paragraph 3.5.*

➔ Switch Time 1

The desired switch times can be easily programmed from the menu option filter control → by selecting switch time one with the **OK** button. The time will begin to flash. Now you can set the time with the arrow buttons. To save the changed value, press the **OK** button. If nothing needs to be changed, press the **MODE** button. The old values remain unchanged. For each switch time, you can indicate whether this applies to all days (AL) or to a specific day of the week. When the times and days are selected, you return to the previous menu option with the **MODE** button, to return to the main menu.
Note: the switch times can also be programmed over midnight (00.00); such as from 22:00 to 05:00.

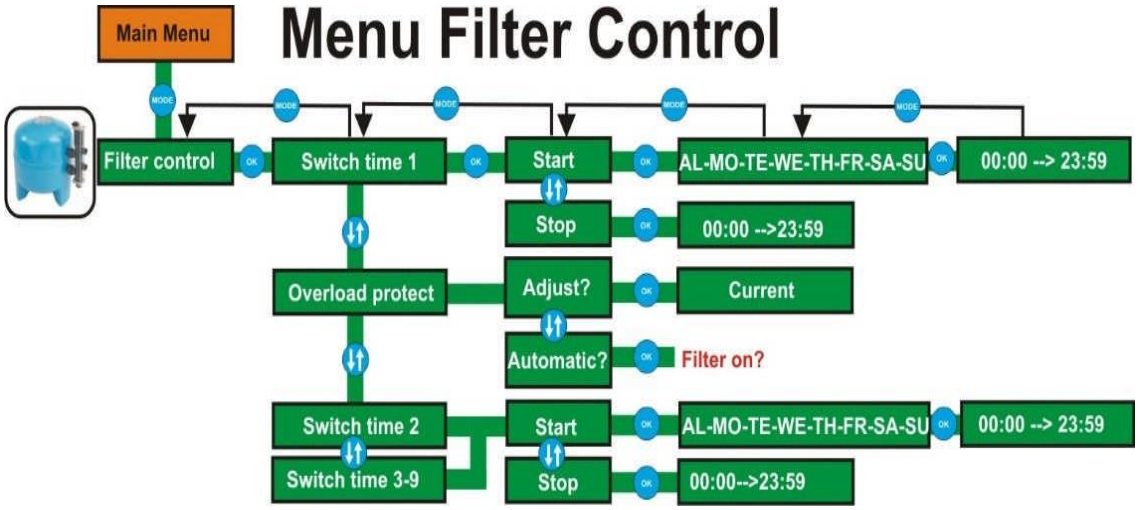

Figure 6: Filter Control Menu ASC 2

3.5 FILTER SPEEDS

3.5.1 INTRODUCTION

The ASC 2 offers the option to automatically program the various filter speeds using the time clock. That is a unique and wonderful function of the control box which connects to the contemporary ideas of how to decide on the number of filter hours per day. In the past, the filter pump is usually switched on for a bout 8 hours per day on the maximum capacity of the filter pump. This is sufficient, in principle, to get the desired circulation capacity. There are also disadvantages if one lets the filter pump run at maximum capacity 8 hours per day. New technological developments in the area of filter and pump technology make it possible to approach the number of filter hours per day differently, and also the speed at which this happens. The ASC 2 connects to these new options.

3.5.2 NEW APPROACH

It is generally known that a lower filter speed can have a positive effect on the amount of contaminate particles which are caught in the filter (= filter performance). Halving the speed leads to maximizing the performance four times over. In addition, a low pump speed also leads to great energy savings. Halving the speed leads to an approximate 66% cost savings while the capacity (water circulated in cubic metres) is only reduced by 30%. The information above makes it clear that a lower speed will lead to better filtration for lower costs. Because we want to attain a certain circulation capacity, we must switch on the filter pump for multiple hours per day. Because we have to backflush the filter once a week, for which the maximum capacity is required, this means that we must use various pump speeds. This is achieved by connecting the pump to an external frequency regulator or by using a pump with a built-in frequency regulator (= variable speed pump, VSP).

3.5.3 IDEAL SITUATION

The ideal starting point is the filter pump being switched on 24 hours a day. This is the best for water circulation and thus the quality of the water. By running the filter pump on a lower speed, there are extra advantages:

- Energy savings
- Better water quality
- Less strain on the pump = less wear and tear
- Better heat transfer from the solar panels to the swimming pool water
- Lower noise level

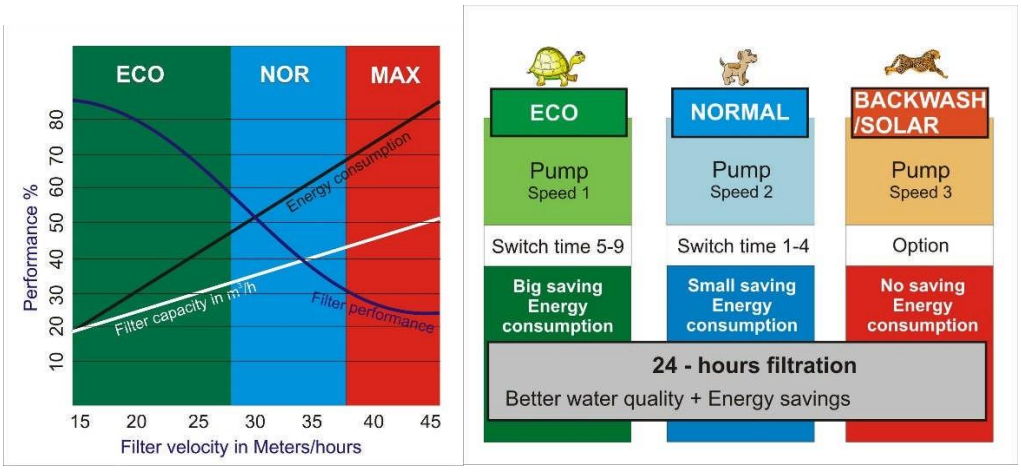

Figure 7: Filter speed in relation to filter performance and energy costs

The above means that the filter pump can run on low speed for most of the day, which will result in the aforementioned advantages. It is advised to run the filter pump on a higher speed for a number of hours (between 3 and 6 hours per day) to achieve optimal flow for one part of the day. Preferably, you must increase the flow at that part of the day that you would normally swim, because the swimming pool suffers from the most contamination at that time.

In a normal situation, it is sufficient to use two speeds per day for 6 days a week. We assume 24 hour filtration with, for example, 18 hours on a low speed (30Hz) and 6 hours on a bit higher speed (36 Hz). On the seventh day, the same occurs, but a backflush cycle is added.

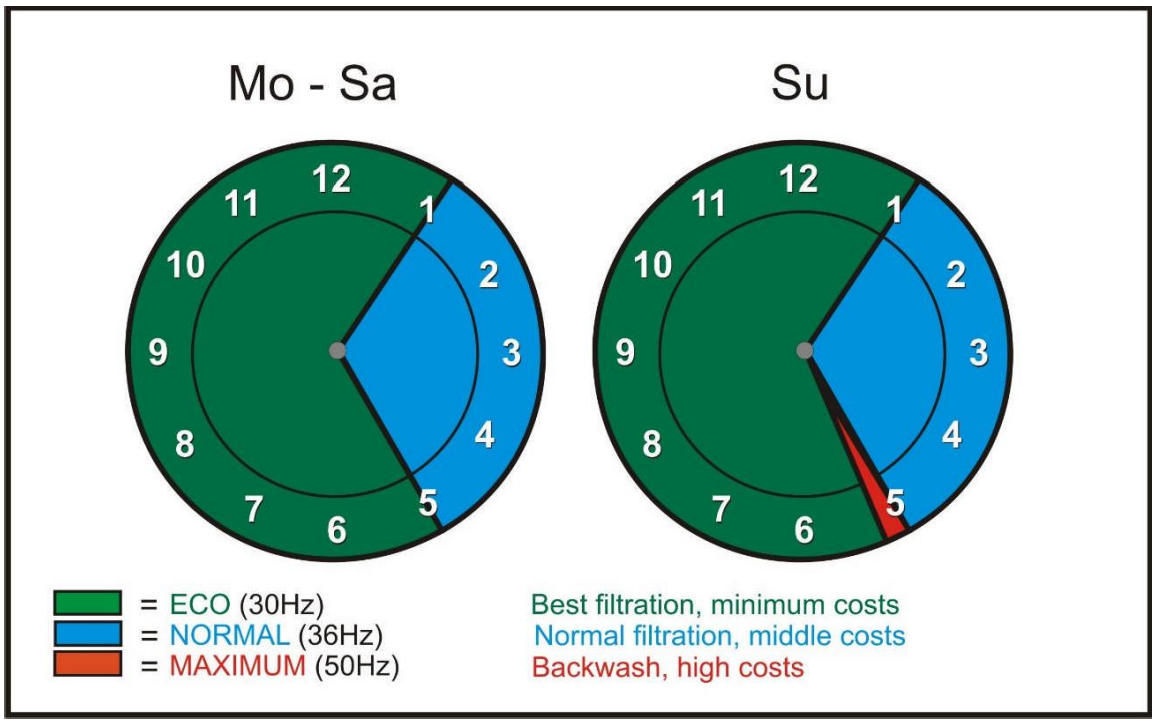

Figure 8: Example of a weekly programme with 2 filter speeds and a backflush cycle.

In addition to programming for filter and backflush times + pump speeds using the time clock, it is also possible to make priority switches, whereby there is an automatic switch to another pump speed. This can be used if the user wants to swim and the cover is opened. At that time, it may be desirable to increase the pump speed while the speed is actually low according to the programming. Another situation might be that your are using the solar heating. At the time the solar heating is switched on, it is possible that more pump capacity is needed.

Depending on the relevant situation and the desires and requirements of the users, the ASC 2 can be programmed differently, whereby a maximum of 9 different filter times can be programmed.

3.6 MOTOR PROTECTION

➔ Motor Protection

The three phase current or alternating current filter pump is protected from damage from overload **by an adjustable motor protection of (0.7-9.9A)**. For a pump with higher power requirements than 9 Ampères, an external relais with a motor protection switch must be added.

***Note:** The motor protection must be set up before use. The power used (nominal power) of the filter pump must be measured under strain and checked with a power meter. (Ampère calipers)*

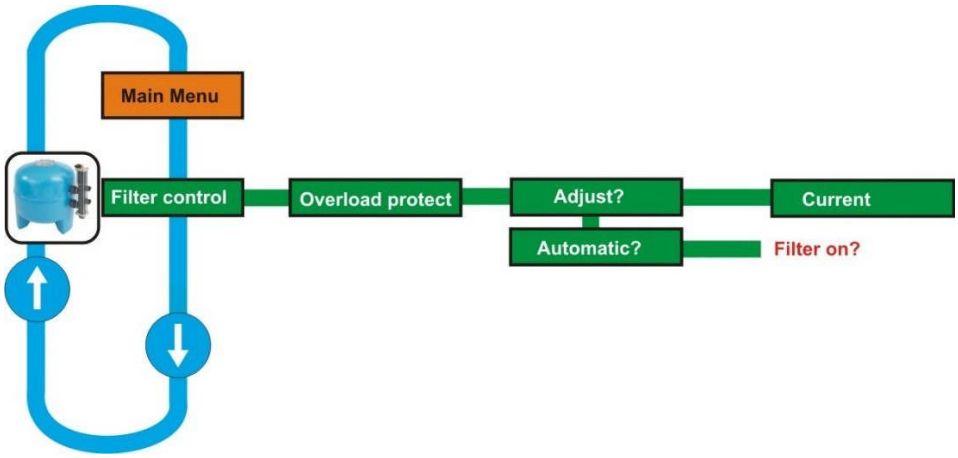

Figure 9: Setting the motor protection

The relevant value for the nominal power is listed on the identification plate of the filter pump.
Note: **NEVER set the nominal power higher than 10% of that listed on the identification plate.** If the motor protection is activate, **ERR** will show on the display of by the filter button. By pressing **OK**, the message is deleted, after remedying the malfunction, the installation can be turned on again with the **Filter** button. It is also possible to **automatically** set the motor protection by the AS Control 2. If this option is selected, one must manually switch on the filter pump. After the reading, the value must be confirmed by pressing the **OK** button.

3.7 HEATING

The minimum water temperature of the swimming pool water is continually monitored and managed if there is a connected and well-functioning conventional heat source, because this energy source is always available, contrary to the weather-dependent solar heating.

➔ **HEATING**
The **Heating** function can be selected via the main menu (ODE) and the arrow keys.
➔ **Minimum Temperature** Press **OK** to access the heating menu. You can check the set minimum temperature. By pressing the **OK** button, this value can be changed. **Settings Range: Temp Min. </= Temp. Opt**.

Note: *Always set this minimum temperature lower than the optimum temperature! The optimal temperature is set in the solar menu.*

The temperature will start to blink and the set minimum temperature can be changed with the arrow buttons. To save the changed value, press the **OK** button. If nothing needs to be changed, press the **MODE** button. The old values remain unchanged.
If there is no solar sensor connected and the desired temperature must be set higher than possible, the water sensor can be connected instead of the solar sensor.
The **solar** menu will appear when you press on the mode. The **Temp. Opt.** can be set to the desired value. After that, the sensor should be reconnected to the water sensor and you can set the desired temperature in the heating menu.

Note: *At temperatures > 28ºC, components of the swimming pool or the swimming pool controls may sustain damage and/or a shortened life cycle.*

Temperature data are only indications. Slight deviations are possible (+/- 2ºC).

3.8 SOLAR

The optimal pool water temperature (optimal temperature) can be achieved with a connected an working solar energy system if the weather conditions allow it. If the solar function is **ON**, this is displayed as active (**ACT**), and any connected frequency regulator will automatically be switched to the second pump speed (2).

➔ SOLAR

The solar function can be switched on and off directly with the **SOLAR** button. **ON** appears when the device is switched on, and **OFF** is shown when it is switched off. The **Solar** menu option can be selected with the **MODE** button. Confirm this choice with the **OK** button to return to the solar menu.

➔ Optimal Temperature

You can check the optimal/desired temperature. By pressing the **OK** button, this value can be changed. **Settings Range: Temp. Opt. >/= Temp. Min.**

Note: *Always set this optimal temperature higher than the minimum temperature!*

The temperature starts to blink and can be changed using the arrow keys. To save the changed value, press the **OK** button. If nothing needs to be changed, press the **MODE** button. The old values remain unchanged.

Note: *At temperatures > 28ºC, components of the swimming pool or the swimming pool controls may sustain damage and/or a shortened life cycle.*

Temperature data are only indications. Slight deviations of (+/- 2ºC) are possible.

3.9 BACKWASH

The backwash (automatic) function can be switched on by the installer in the configuration menu (System→Configuration→Code→backwash) You can control an Besgo backwash valve using this function. You can set the backwash - rinse cycle using this menu. The accessory Besgo valves are connected in the switch box. (see connection terminals; Chapter 6).

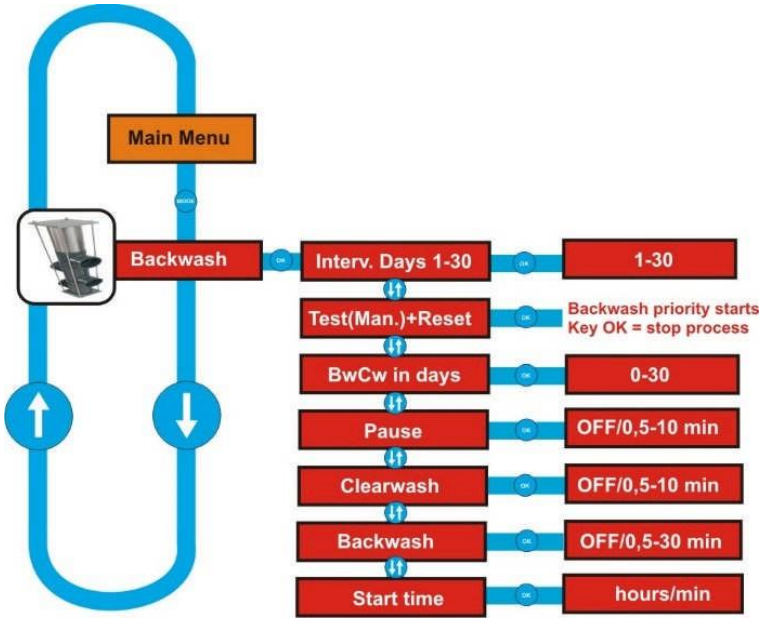

Figure 10. Backwash Menu Function

➔ Backwash
You reach the menu with the **MODE** button. Press the arrow key until the "Backflush" menu appears. Confirm with the **OK** button. The set values can be checked, and changed by pressing the **OK** button.

During the backflush and rinse, the speed will automatically be set at maximum (3), so that during the backflush process, the filter pump runs at maximum capacity. After backflush and after rinsing, the filter speed is reset to the original speed.

➔ Day Intervals
Day Intervals. This interval indicates the days on which the backflush cycle is started. Example: 10 days. This means that the backflush cycle is performed every ten days. The choices are **OFF** and **01 to 30 days**. OFF deactivates the backflush program.

➔ Test(hand) + reset
Test(hand) + reset. Here you can manually activate the backflush cycle and also reset the day counter. The manual backflush starts after a full minute has passed. You can read out the remaining time on the display.
Note: The display of the day counter is updated at midnight.

➔ Bw-Cw in days
Bw-Cw in day 4. This function indicates when the first subsequent backwash, rinse cycle will be started. Note: The day counter is updated every day at midnight.

➔ Pause
Pause. 3 pauses are included in the backflush and rinse cycles. They are the following:
Filter – **Pause** – Backflush – **Pause** – Rinse – **Pause** – Filter. The 3 pauses are of equal length. The duration of the pauses can be set. The choices are **OFF** and **0.5 to 30 minutes**. The OUT setting deactivates the pauses.

➔ Clearwash
Clearwash. In this menu, the backwash cycle is programmed by setting the rinse time. The choices are **OFF** and **0.5 to 5 minutes**. The **OFF** setting deactivates the rinse cycle. If it is **OFF**, the rinse time cannot be set.

➔ Backwash
Backwash. The backwash time is programmed in this menu. The possible choices are 0.5 - 30 min.

➔ Start Time
Start Time. The start time of the backwash cycle can be entered in this menu.
Note: The backwash cycle must fall within the programmed filter times, if this is not the case, the "error" message will appear on the display.

3.10 SYSTEM

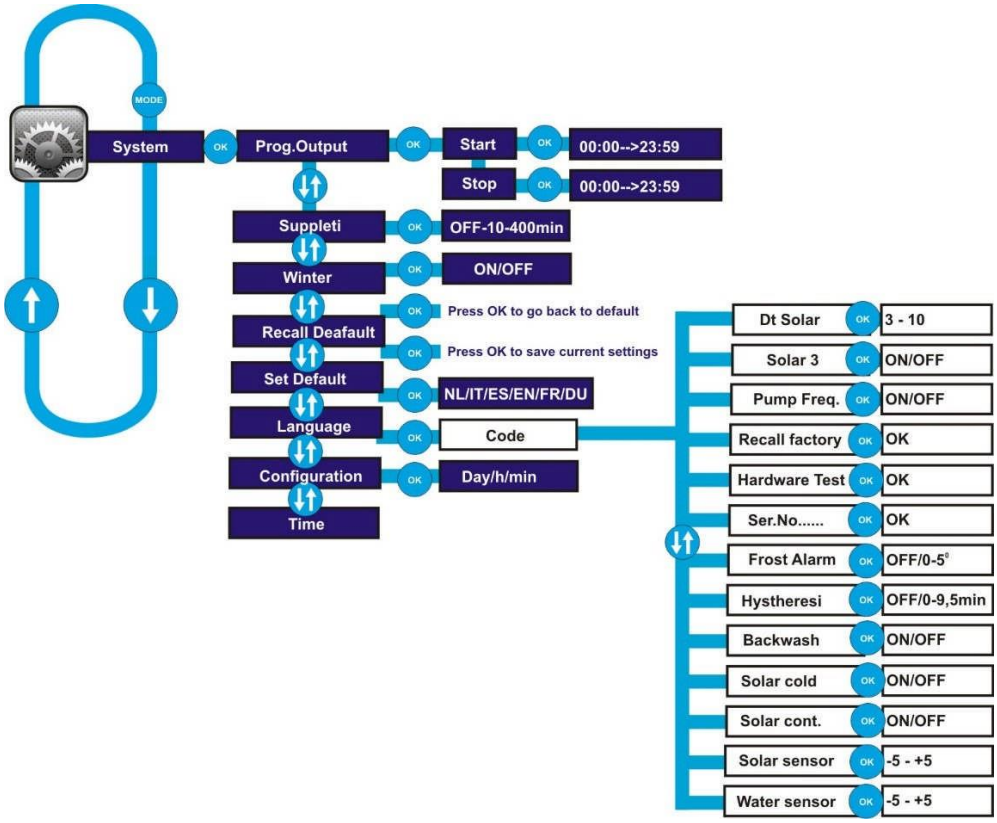

Figure 11. Menu Function System

➔ SYSTEM
You reach the main menu with the **MODE** button. Press the arrow key until the "System" menu appears. Confirm with the **OK** button.

➔ Programmable outlet
The first submenu function is the "**programmable outlet**". With this, a device can be turned on and off pursuant to the programmed times. This outlet can be used to switch on the lights or another device which can be turned on or off during the set times. By pressing the OK button, the start time and the stop time are set using the arrow buttons. The programmable outlet can be switched on and off directly with the **OPTION** button. "**Prog**" will appear in the display when the product is switched on.

➔ Replenishment
The second menu option has to do with "**Replenishment**" an offers the option to use the ASC 2 also as an electronic level regulator. This regulation is done with 3 different sensors. These are the float switches, capacitative sensor and an NTC sensor. With the **Level** quick button, the built-in level regulation can be switched on or off directly.

***Note:** The choice of which sensor will be used must be determined before starting the ASC 2. For the correct connection, see Chapter 5.*

***Note:** It is of great importance that the correct setting is made to prevent possible damage to the print plate. A jumper is placed if this is pressed properly on both pins.*

If **Replenishment** appears in the **SYSTEM** menu, the time can be set by pressing the OK button, which determines the maximum fill, up to a maximum of 400 minutes. Depending on the replenishment speed and size of the pool, the correct value must be determined. If, during this time, the pool is not brought up to the proper level, the replenishment valve will close and **ERR** will appear on the display by the **LEVEL** button. In order to remedy this error, you must press the **OK** button. Afterwards, the level regulation can be switched on with the **LEVEL** button.

➔ Winter

With the **"Winter"** menu option, you can turn on the frost protection. This function can be used to avoid frost damage to the installation. The function can only be used if a **solar sensor** is connected.

In the **System→Configuration→Frost Danger** menu, the temperature can be set so that the frost protection becomes active. For the system to function properly, the solar sensor should be mounted in a good place so that the correct temperature is measured. Usually, the solar sensor should be placed close to the solar panels, and this function can also be used if no solar panels are in use. Make sure that there is a good place for the solar sensor.

If the **WINTER** status is **ON**, then the filter pump will turn on when the temperature set for frost danger is reached. This will only work if the **FILTER** is switched to **AUT**. The filter times can be shortened or even completely switched off, the system will automatically restart when the temperature gets too low. When the temperature rises again, and exceeds the set temperature for frost danger, the filter pump will stop until there is another danger of frost.

➔ Recall Default

With **Recall Default**, the saved settings are reset. This can be handy if you have changed certain settings, after which you want to return to the old settings. By pressing **OK**, all settings are reset.

➔ Set Default

The following menu item is **Set Default**. With this, all settings are stored as programmed, everything is saved with the **OK** button.

➔ Language

Here you can set the language. The available languages are: Dutch, German, English, French, Spanish and Italian.

➔ Time

The current time can be set here. The set time stays even after the power has been cut, as it has a back up battery. Remember that there is a time limit to the battery capacity. The summer/winter switch must be done manually.

➔ Configuration

With **Configuration**, a few basic settings can be made. These are not available to the end user and can only be changed by entering a **code**.

➔ Configuration□Code□Delta Solar (dt Solar)

The temperature can be set from 3 to 10 degrees. This is the switch limit for the temperature to which the solar control will react around the set optimal temperature in the Solar menu.

➔ Configuration□Code□Solar 3

This setting can be set ON/OFF. When using a frequency regulator, the filter pump can be switched to the 3rd (highest) speed when the Solar function is set to ON with this setting. If the OFF setting is selected, the filter speed will switch to the 2nd speed when the Solar is active.

➔ Configuration□Code□Pump Frequency
With this, you can select the switching system to control the frequency regulator. If the regulator is **ON**, the stop function for the filter pump is active on terminal 38 as used for the Speck VSP pumps (Badu Eco Touch Pro). If this function is switched **OFF**, the stop function for the filter pump is controlled by the contact for the first speed, as with the Invertek frequency regulators. The default value is **OFF**, which means that the standard setting is based on the application of an Invertek frequency regulator.

➔ Configuration□Code□Recall Factory)
With Recall Factory, all factory settings are restored. This means that the programmed filter times and any backflush times are deleted. When pressing OK, the following is displayed: -/+ Recall A/B. Select A for Dutch settings.

➔ Configuration□Code□Hardware check
This function is for the manufacturer to check the function of the hardware.

➔ Configuration□Code□Serial number (Ser.No…)
Here you can see the serial number. This information may be important for the manufacturer.

➔ Configuration□Code□Frost Danger
Here you can set the temperature at which the frost protection becomes active. You can choose between 0 an 5 degrees, or select **OFF**. No switching will take place. This function will only work if System→Winter on **ON** is selected in the menu.

➔ Configuration□Code□Hysteresis
The value can be set from 0 to 9.5 minutes. This value determines the **check time** of the **filter pump** when the end of the filter time has been reached and the heating is still active. The set time can also be used to catch variations in temperature when switching from heating or solar. During the set time there will be no checks of variations in the temperature, this is displayed using the changing display of ACT/ON (this also avoids the so-called "commuting" of the solar control or heating).

➔ Configuration□Code□Backwash
Here the backwash must be set by choosing "ON" if there is an Aqua Easy backwash valve. The standard position for the backwash menu is "OFF".

➔ Configuration□Code□Solar Cold
An extra function can be connected to the solar controller. When **ON** is selected, the solar controller will be active when the filter pump is running and the pool has become too warm, while the outdoor temperature is lower than the pool temperature. The swimming pool water will be cooled via the solar panels. If the function is **OFF**, there will be no cooling via the solar panels.

➔ Configuration□Code□Solar continue
If this function is **ON**, the pool will be brought up to temperature as quickly as possible with the solar panels, even if the filter time is up in the **AUT** mode. If the heat from the solar panels is to be available outside of the filter times, the filter pump will be switched on by this function to use the available heat. If the function is **OFF**, the filter pump will not switch on to access the available solar heat.

Configuration□Code□Solar sensor
Here a correction can be made in the temperature detected by the solar sensor. The possible correction is -5 to +5^{o}C.

➔ Configuration□Code□Water sensor
Here a correction can be made in the temperature detected by the water sensor. The possible correction is -5 to +5^{o}C.

4. Electrical Connections and Connection Plans

4.1. GENERAL

Note: *The installation and mounting of electrical equipment may only be done by professionals according to the locally applicable rules! The ASC 2 must be installed in a dry, well ventilated room with an ambient temperature of 5 and 40^{0}C.*

Note: *In the* ***OFF*** *position(s) of the* ***Filter, Heating, Level and Solar****, not all terminals in the connection compartment are voltage free!* ***In order to secure the installation from inadvertent switching on, the power source of the ASC 2 must be turned off if work is being done on the installation.***

Note: The electrical power must be connected via an earthed 30 mA switch (installed separately from the swimming pool installation). Back-up fuse max. 16 A. *A work switch in the power supply is also recommended.* ***Always follow the instructions.***
For the connection of all components/devices to the terminal bar, see the connection plan/terminal bar (Chapter 6). **Note: Do NOT forget to set the motor protection.**

The **heating outlet** (220-240 V/AC max. 2.0 A) is connected to the terminals for the **HEATER** terminal 48 phase and 25 zero. For greater switching possibilities, an ancillary relais must be added.
The **solar outlet** (220-240 V/AC max. 2.0 A) is connected to the terminals for the **SOLAR** terminal 22 phase and 23 zero. For greater switching possibilities, an ancillary relais must be added. Usually, a motor terminal is connected to a **solar outlet.**

Note: *The motor terminal gets the command of whether or not to let the filtered water to flow through the solar panels.*

As an alternative, a 3 way motor valve 24 V/AC can be used. This motor valve is connected to the **MOTOR VALVE** terminal. Terminal 52 is open 53 is Gnd and 54 is close.

The **dosing technology outlet** (220-240 V/AC max. 2.0 A) is active when the filter pump is switched on and is connected to the **DOSE** terminals 12 phase terminal 13 zero. For greater switching possibilities, an ancillary relais must be added.
The **outlet of the backflush system** (220-240 V/AC max. 2.0 A) controls an Besgo backflush valve via terminals 15 phase, 17 zero. Terminal 16 permanently feeds 230V for connection of a possible backflush system.

Note: *At the input of the terminal* ***SAFETY SWITCHES (terminal 29 to 34)*** *may only be connected* ***potential-free switch plugs****! Do not connect any voltage carrying wires/cables.*

The **TXD terminal 55 and RXD terminal 56** are intended for external communication.

When using a backflush system, the backflush menu is switched off, the control is then regulated by the terminal. The system is connected to terminals 16 and 17 (feed for the terminal) and the filter pump is controlled by the terminals for **safety switches** terminal 29 and terminal 20 (breaker contact) and terminals 33-34 to cause the pump to switch on (overflow safety).

Some instructions for general use:

If the AS Control 2 is connected at 230V, the valves: **N terminal 2 and R terminal 3** must be used. In accordance with **230V filter pump on N terminal 7 and R terminal 8** of the relevant connection block.

If the heating is active, the potential free contact **heater** terminal terminals 44 and 45 will also be in use, this can be handy when controlling a CV installation or other application.

If there is a pump malfunction or if the frost protection is active, then the potential free **safety** contact is used in terminals 46 an 47.
An external alarm can be activated here too.

If the filter pump is running, the potential free **filter** contact is switched on terminals 42 an 43. This can also be used for an application running parallel to the filter pump.

For the programmable outlet which is switched on with the **OPTION** button, **OUT 2** is used, terminal 51 is phase and terminal 27 is zero.

If a rinse terminal is used, this is connected to **OUT 1** terminals 50 is phase and terminal 26 is zero.

A frequency regulator can be connected on terminals FCC to FC4. From here the FCC connection is a communal contact for FC1 to FC4. The terminal occupation is as follows: FCC terminal 40, FC1 terminal 64, FC2 terminal 65, FC3 terminal 41, FC4 terminal 38. FC1 is switched with FCC at low filter speed. If the middle speed is active, FCC and FC2 is switched together with FC1. At the highest speed, FC3 is switched with FCC together with FC1. If in the menu **SYSTEM/CONFIGURATION/Pump Freq**. is switched to ON, the control is suitable for application of a **Frequency controlled pump from SPECK.** This pump needs an extra switch function to stop, this can be done with FC4. FC4 also switches the communal FCC connection. On **OFF** the ASC 2 is suitable for the use of **Schneider ATV 212 frequency regulation**.

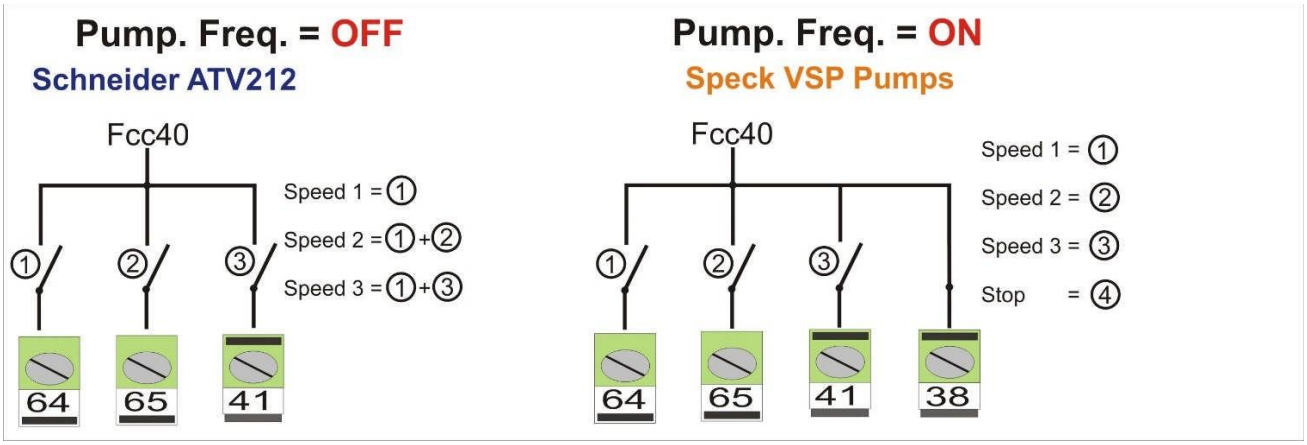

Figure 12. Function/principle of frequency regulation of Schneider ATV 212 and Speck VSP.

It is possible to automatically increase the filter pump speed to the maximum speed if a cover is opened. This can be done by attaching a make contact of the switch box from the cover on terminals CHK terminal 63 an Gnd terminal 39. If the solar temperature sensor or water temperature sensor are not connected, the display of the relevant temperature will not be shown.

The Pool Control is secure on all outlets by fuses. These fuses are located under the operational front. If it is necessary to replace a fuse, the correct value must be reset to ensure safety. The values are as follows:

F2 =	0.16 Amp slow (primary)	F6 =	2 Amp slow (dosing)
F3 =	10 Amp slow (R) pump	F7 =	4 Amp slow (backflush and solar)
F4 =	10 Amp slow (S) pump	F8 =	4 Amp slow (heating and level)
F5 =	10 Amp slow (T) pump	F9 =	4 Amp slow (rinse and prog. outlet)

4.2. CONNECTING ASC 2 TO SCHNEIDER ATV 212 FREQUENCY REGULATOR.

Note: Note : in menu System Configuration Code: Pump. Switch freq to OFF.

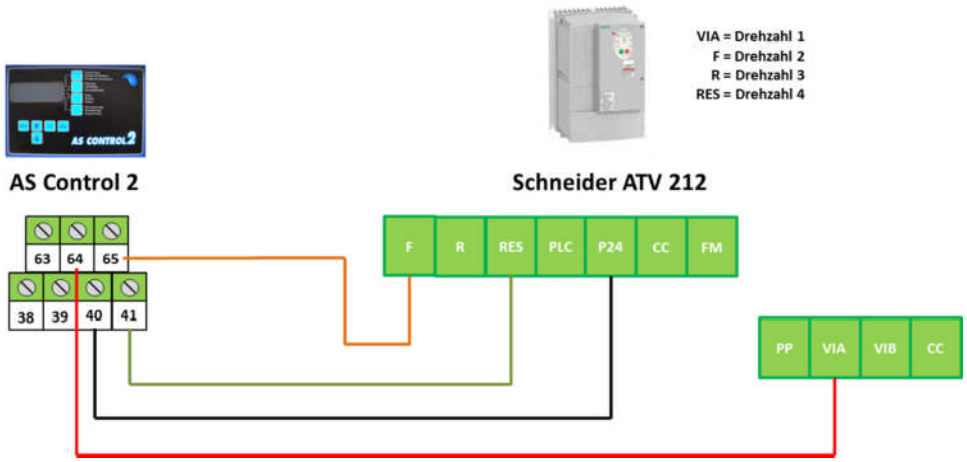

Figure 13. Connection of Schneider ATV 212 Regulator 0.55 kW to 5.5 kW

4.3. CONNECTION OF ASC 2 TO SPECK ECO TOUCH PRO AND BADU 90 ECO VS

Note: Note : in menu System Configuration Code: Pump. Switch freq to ON.

Figure 14. Connection of Speck Eco Touch Pro and Badu 90 Eco VS

4.4. CONNECTING ASC 2 TO SPECK BADU 90/40 ECO MV-E

Note: Note : in menu System Configuration Code: Pump. Switch freq to ON.

In order to be able to connect the ASC 2 to the Speck Badu 90/40 MV-E and extra Speck switchbox is necessary (article number: 034107)

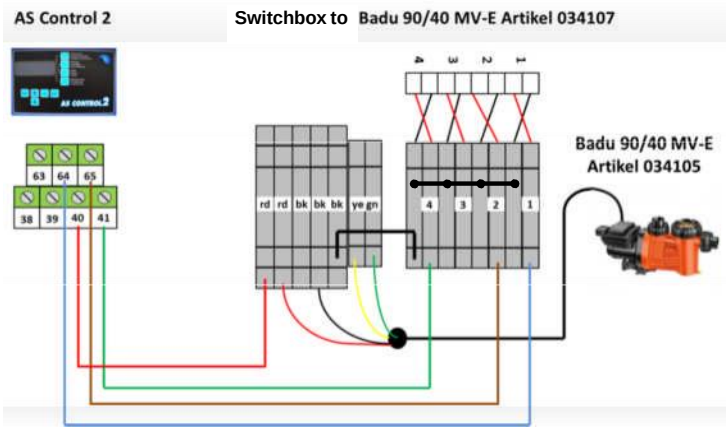

Figure 15. Connecting Speck Badu 90/40 MV-E + Switch box 034107

4.5 CONNECTING LEVEL SENSORS

On the print plate, there must be a jumper setting set **standard (default), the ASC 2 is set for a float operated switch.** The Jumpers can be found on the mainboard, which can be reached when the front is removed. The jumpers are located on the bottom right, just above the terminal strip. There is a row of 3. They are numbered from left to right: Jumper1 Jumper2 Jumper3.
Depending on the relevant sensors,the jumper setting should be separated as follows:

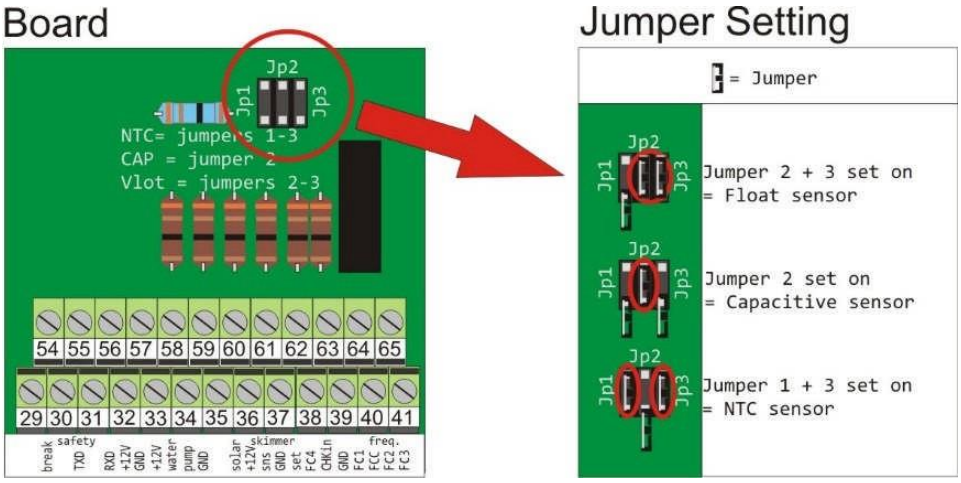

Figure 16. Jumper setting with regard to level regulation/replenishment

Float sensor switch	terminal 37 Gnd, terminal 61 sns→	Jumpers : Place jumpers 2+3
Capacitive sensor	Terminal 36 +12V (brown wire) → Terminal 37 Gnd (green wire+ earth) Terminal 61 sns (yellow wire) Terminal 62 set (white wire)	Jumpers : Place jumper 2
NTC sensor	Terminal 37 Gnd, terminal 61 sns→	Jumpers : Place jumpers 1+3

5. CONNECTION TERMINALS AND FUSES

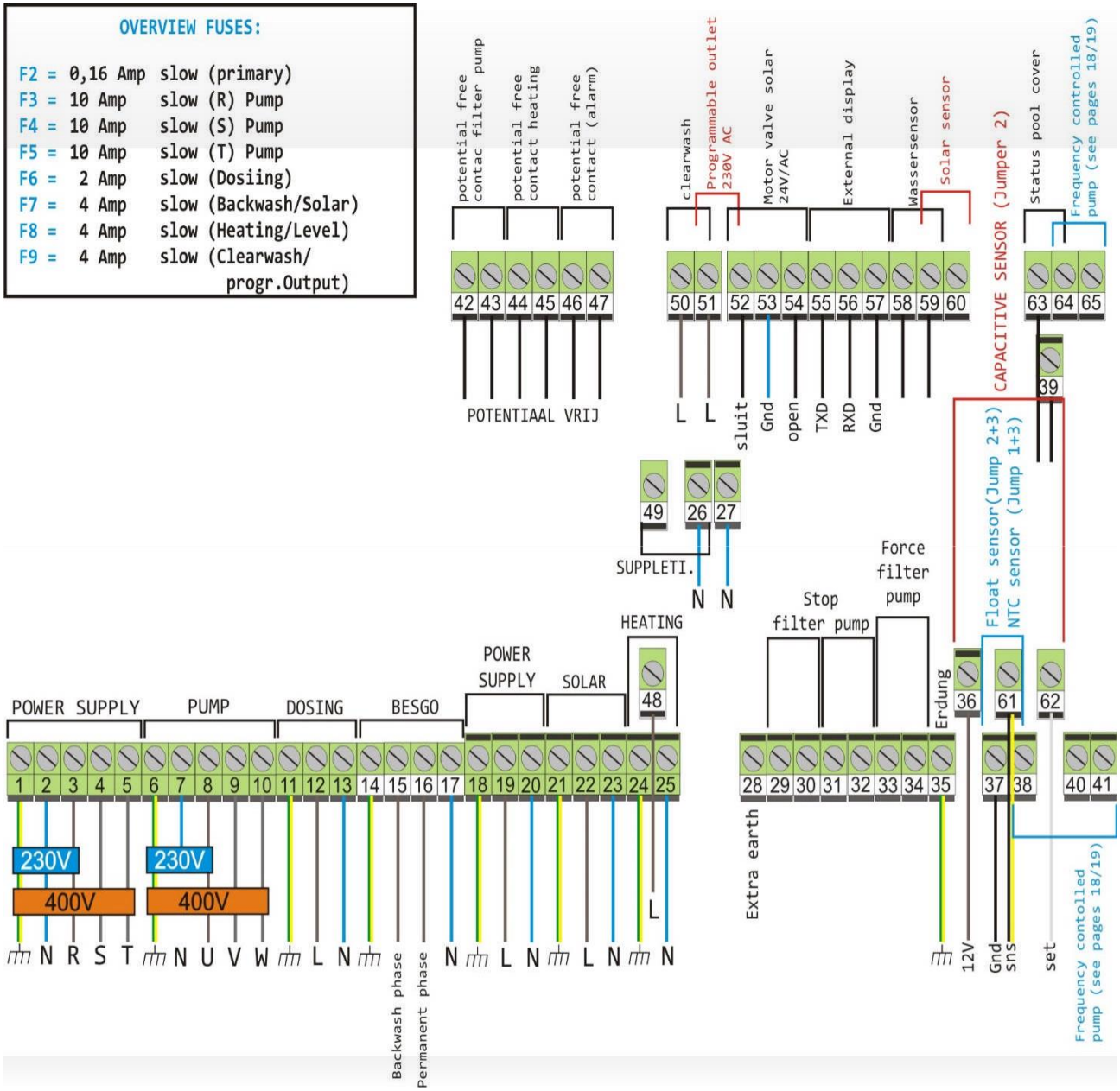

Figure 17. ASC 2 connection terminals

Description of all terminals on ASC 2

Terminal 1,2,3,4,5: Connections for the power supply. 1 is earth, 2 is zero, 3 is the first phase (R), 4 is the second phase (S) and 5 is the third phase (T). If there is no active power being used, the supply is connected to terminals 1, 2 and 3 (earth, zero and phase).

Terminal 6,7,8,9,10: Connections for the filter pump. Terminal 6 is earth, terminal 7 is zero and terminals 8, 9, 10 are the 3 phases. When using a single phase pump, terminals 6, 7, and 8 are used. These are earth, zero and the first phase. For a 3 phase pump, the zero is not used!

Terminal 11,12,13: Connections for dosing equipment, terminal 11 is earth, 12 the phase and 13 zero.

Terminal 14,15,16.17: Connections for backwash terminals. Terminal 14 is earth, 15 is phase which is used for backwash actions, terminal 16 is a permanent phase (for possible supply of a backwash system), terminal 17 is zero. If you are using a Besgo backwash valve, terminals 14, 15 and 17 should be used.

Terminal 18,19,20: Connections for power supply for, for example for the potential free contacts for power. There is a permanent voltage on the terminals: 18 is earth, 19 is the phase and 20 zero.

Terminal 21,22,23: Connection for a solar terminal or solar pump. Terminal 21 is earth, 22 is the phase and 23 zero.

Terminal 24,25,48: Connections for the heating (**Note:** Terminal 48 sits on a higher terminal bar). Terminal 24 is earth, 25 is zero and 48 is the phase for the heating terminal or the relais which switches on the heating.

Terminal 29,30: Connection which can be used to stop the filter pump. If the connection is interrupted, the pump stops. These terminals are potential free and are consistently used for a backflush system or control of a buffer tank.

Terminal 31,32: The same as terminal 29 and 30, for the connection of a backwash terminal and buffer tank control.

Terminal 33,34: Potential free connection used to force switching on of the filter pump. This connection is necessary if a buffer tank control is connected. Normally, the connection is NOT present.

Terminal 35: Extra earth (for protection of the water and solar sensor).

Terminal 42, 43: Potential free contact used to switch external equipment which runs at the same time as the filter pump. The contact is switched on when the filter pump is switched off.

Terminal 44,45: Potential free contact used for switching or signalling of heating. If the heating is activated, the contact is closed (this contact is often used to directly control a CV).

Terminal 46,47: Potential free contact which can be used to emphasise an alarm situation. The contact is closed in the case of an alarm, a telephone message or signal lamp or siren can be controlled.

Terminal 48: See terminal 24, 25 (heating): Connection for the 230V output of the heating.

Terminal 50, 26: OUT 1. An Besgo rinse valve is connected here if you are using the backwash function. Terminal 50 is phase and terminal 26 zero.

Terminal 51.27: OUT 2. This outlet is for the programmable outlet and controls 230V out if the outlet is active. Terminal 51 is phase and terminal 27 zero.

Terminal 52,53,54: 24V alternating current outlet for the control of a motor crane of the solar system. 52 is the control for close, 53 is Gnd (0) and 54 the control for open.

Terminal 55,56,57: Connection of an external display. Only digital information is sent via these terminals. Terminal 55 is TXD, 56 RXD and 57 Gnd (0).

Terminal 58,59: Connection of the water sensor. (Terminal 57 together with terminal 58 may also be used).

Terminal 59,60: Connection of the solar sensor (if a solar system is being used). Terminal 59 can be used for communal Gnd for the water and the solar sensor.

Terminal 63,39: Input for the signalling of the status of the cover (for example). If the contact is closed, the frequency regulator is switched to maximum speed.

6. DEFAULT SETTINGS

The AS Control 2 is delivered standard with certain default settings. Depending on the equipment used for the swimming pool installation and possible requirements or wishes of the installer and/or the swimming pool user, certain values must be applied. Always be aware of the consequences of changes and read this manual carefully so that you know what they might be.

Filter	OFF
Heating	OFF
Solar	OFF
Level	OFF

Sensor for level regulation	FLOAT SENSOR

Filter Time 1	8:00 – 20.00 – AL
Filter Times 2-9	OFF

Backflush	ON
Winter	OFF
Solar continue	OFF
Solar cooling	OFF
Pump frequency	ON

Water temperature	20°C
Solar temperature	28°C
Water sensor offset	0°C
Solar sensor offset	0°C
Hysteresis	3 MIN.
Delta Solar	3°C
Frost Alarm	2°C

Day Intervals	7
Backflush start hour/min	11:00
Backflush minutes	3 MIN.
Rinse minutes	OFF
Pause minutes	OFF
BwCw in days	0

Language	DEUTSCH

Motor Protection	3 A
Replenishment minutes	60 MIN.
Start time of programmable outlet	00:00
Stop time of programmable outlet	00:00

Filter Times 1-4 high pump speed	-
Filter Times 5-9 low pump speed	-

Recall Factory	A

TROUBLESHOOTING

Problem:	*Answer:*
The backflush menu is not visible.	*The backflush menu must first be set in the system settings (SYSTEM/CONFIGURATION/CODE/BACKFLUSH).*
The water temperature is not indicated on the display.	*The water sensor is not (correctly) connected or is defective. Check the connection or replace the water sensor.*
The filter pump does not start (not running at all).	*Check whether the wire bridge on terminals 29, 30 and 31, 32 are attached and that they are screwed in securely (making contact)*
The filter pump no longer stops at the programmed times.	*Check that the device is connected to terminals 33, 34 an check the connections on these terminals.*
The Besgo backwash valve remains open.	*Check terminal connection 15. It is possible that this has been swapped with 16.*

8. MENU STRUCTURE