ProfiLux 4 / 4e

Resource Guide

GHL Connect Edition

Step-by-step resource guide for ProfiLux 4 / 4e

As of June 2020

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General Information

Congratulations on purchasing a GHL ProfiLux 4 controller. You now own a piece of equipment built to last the test of time!

Please read this section to understand the intended purpose of this Resource Guide.

About this guide

This guide is a **supplement** to the existing ProfiLux 4 Programming Guide and Manual. The information provided by this guide will cover various aspects of the controller's functionality and include step-by-step instructions for programming the most commonly used functions on our **GHL Connect app**.

In order to get the most out of our product, we recommend you read both our Programming Guide and Instruction Manual. Doing so will provide you with the most details for using our product. These documents can be downloaded from our website's download area:

ProfiLux 4 Manual

ProfiLux 4 Programming Guide

Safety guidelines, warranty information, technical data, etc., can be found in the respective documents above.

Have a ProfiLux 3 or Mini WiFi controller?

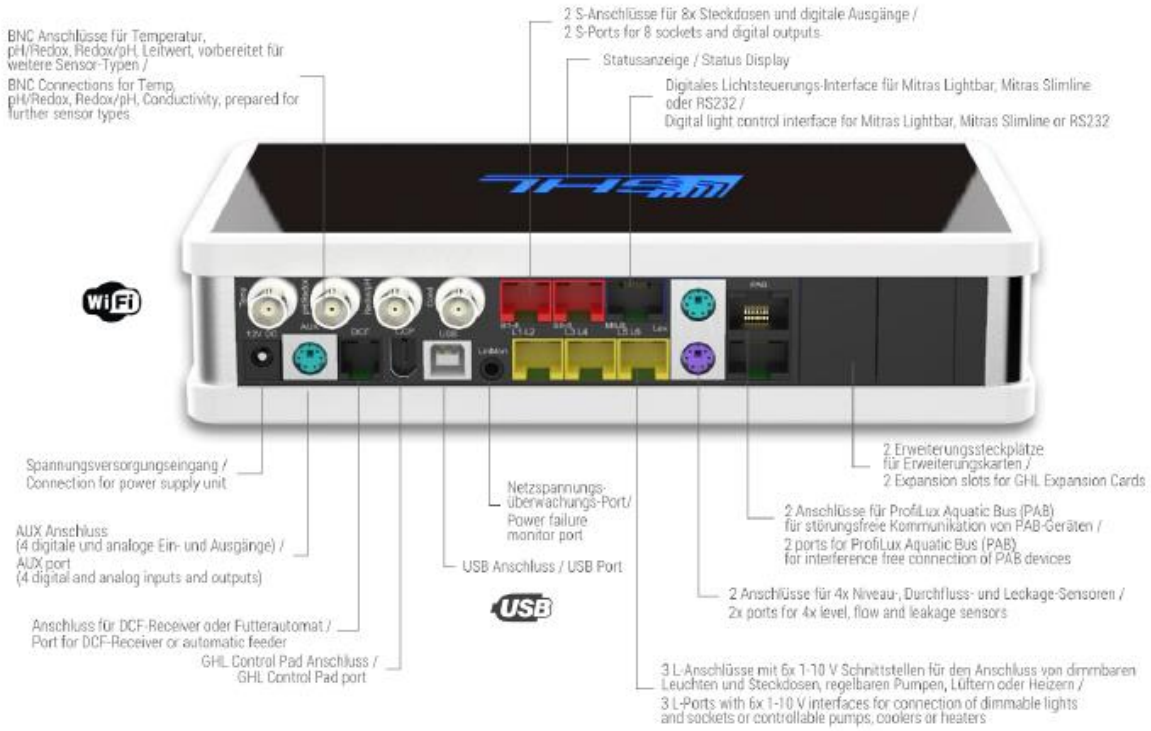
Many of the details and instructions provided by this guide can still be used for programming the ProfiLux 3 and Mini WiFi controller.

PLEASE READ: Navigating through this Resource Guide

This guide will provide step-by-step instructions and photos for setting up the most commonly used features and functions of the ProfiLux 4. When navigating through this guide, refer to the table of contents and pick a topic of choice. We HIGHLY recommend new ProfiLux 4 users to follow the **TO DO** steps first. This will get you started with the basics.

PLEASE READ: ProfiLux 4 connection ports overview

Right out of the box your ProfiLux 4 controller comes packed with many ports for various purposes ranging from BNC-ports to ports for 1-10v devices. Here is a brief overview of the ports behind the ProfiLux 4. A view of the P4e ports can be found in the ProfiLux 4 / 4e manual.



- **BNC Connections:** For connecting Temperature, pH, Redox, and Conductivity probes
- **Red ports:** For connecting GHL devices such as Gen 1 Dosing pumps, STDL4-4 and Powerbar6D powerbars. Ports deactivated by default for safety reasons
- **Digital light interface:** For connecting Mitras Lightbar LEDs
- **Green/Purple ports:** For connecting level sensors such as GHL Flow sensors, float/optical sensors, leak interface for leak sensors, etc.
- **PAB ports:** For connecting PAB devices such as Powerbar5.1, Doser 2.1, etc.
- **Expansion card slots:** Used for adding additional ports to the P4 via expansion cards
- **Yellow ports:** For connecting 1-10V compatible devices such as dimmable lighting, flow pumps, return pumps, etc.
- **Power failure port:** For connecting a backup power source to the P4
- **USB port:** For connecting to P4 via USB connection

- **GHL Control Pad port:** For GHL Control Pad device
- **DCF receiver port:** For radio controlled clock receiver (For German time)
- **AUX port:** For future P4 features and upgrades
- **Power port:** For connecting primary 12V power source to P4

ProfiLux 4 / 4e Connectivity Options

ProfiLux 4 / 4e offers various connectivity options:

- Direct USB Connection to a PC
- Direct Wi-Fi Connection (Access point)
- Standard Wi-Fi Connection (Client mode)
- ProfiLux Webserver
- myGHL Cloud

Direct USB Connection to a PC

Allows you to connect to the ProfiLux controller via GHL Control Center over a USB connection.

Direct Wi-Fi Connection

Allows you to connect directly to the ProfiLux's built-in Wi-Fi hotspot. With this connection option, you can connect directly to the hotspot, then connect to the device via GHL Connect app or GHL Control Center.

Standard Wi-Fi Connection

Allows you to add the ProfiLux to your existing Wi-Fi network. With this option, you can access the ProfiLux over your Wi-Fi network via GHL Connect app or GHL Control Center.

ProfiLux Webserver

Allows you to access the ProfiLux through the built-in webserver.

myGHL cloud

Allows you to access the ProfiLux from anywhere in the world via GHL Connect app and/or web browser. *(Requires the ProfiLux 4 to be connected to the internet)*

About Wi-Fi connection status LEDs on P4 / 4e front panel

At the front of the P4 / 4e, there are 3 LED indicator lights; 1 for Alarm notification and 2 for Wi-Fi connection and communication status.

YELLOW LED is ON: A device is connected directly to the ProfiLux's hotspot via Access Point (AP)

YELLOW LED flashes: ProfiLux 4 or 4e is actively communicating with connected device

GREEN LED is ON: ProfiLux 4 or 4e is connected to an existing Wi-Fi network

GREEN LED flashes: ProfiLux 4 or 4e is actively communicating within the connected network

BOTH LEDs are OFF: ProfiLux 4 or 4e has no Wi-Fi connection

Finding your current ProfiLux firmware version and more

For support and general information purposes, we recommend knowing your current ProfiLux 4 firmware version, serial number, and Wi-Fi module firmware version. Here is where you can find this information:

ProfiLux firmware

- Shown during startup; when ProfiLux is powered ON
- GHL Control Center *General* settings page
- myGHL *General* settings page
- GHL Connect *General* settings page

ProfiLux serial number

- Underneath the device; shown on silver sticker
- GHL Control Center *General* settings page

Wi-Fi module firmware

- GHL Control Center *Communications* settings page; bottom right of screen
- myGHL *General* settings page
- GHL Connect *General* settings page

Understanding the meaning of the GHL Logo LED color codes

The on-board LED status display at the top of the ProfiLux 4 / 4e serves as a notification tool to tell you the current status of your controller. Each color code has a separate meaning. In most cases, the ProfiLux LED logo may light up with different colors indicating multiple notifications. The meaning for each color code can be found here:

- GHL Logo Status Display color codes

ProfiLux 4 / 4e Initial Setup

QUICK SETUP: Getting started with the ProfiLux 4 / 4e

We have prepared a video to guide you through the first time setup of your ProfiLux. This will cover first-time connection, Wi-Fi connection, general settings setup and more. Choose one and follow the steps shown.

- ProfiLux 4 initial setup via GHL Connect app
- ProfiLux 4 initial setup via Web browser (Mac, PC, Mobile)

TO DO: Unpack, position and power ON the P4 / 4e

Carefully unpack your ProfiLux 4 or 4e and all the contents that are included in the box. Make sure that all parts are inside. The list of included parts are shown on the product box. Once completed, do the following:

- Find a suitable spot for your ProfiLux 4 or 4e
- Power **ON** the ProfiLux 4 using the included 12V power supply
- Place probes and PAB-devices on the side...we will explain how to set these up later

NOTE: Disregard the alarms for now

When you turn on the ProfiLux for the first time, there will be alarms going off and a flashing RED GHL logo light. Disregard these for now, they will be addressed later.

TO DO: Download GHL Connect app

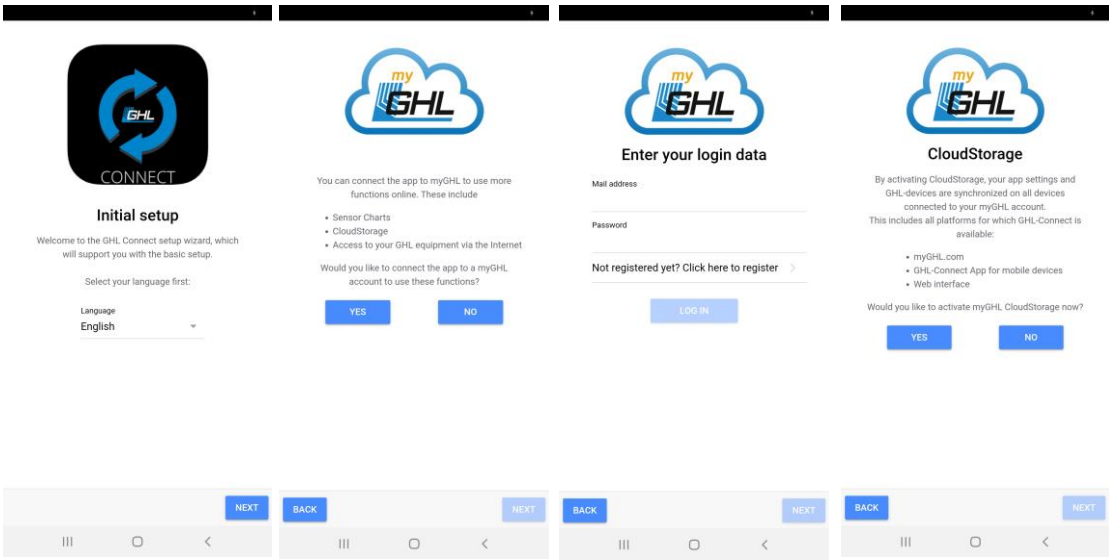
The GHL Connect app will be used for accessing your ProfiLux controller. This app can be found at the Google Play Store or Apple Store. Do a search for **GHL Connect** and download the app onto your phone or tablet.

TO DO: Setup GHL Connect / Create or link a myGHL account

This section will show you how to setup GHL Connect and how to link a myGHL account to the app. MyGHL is our cloud platform which allows you to access your GHL device from anywhere in the world. Open the app and follow the **Initial setup** wizard.

(ILLUSTRATIONS BELOW)

- Choose the language to display in the app
- Choose if you'd like to link a myGHL account to the app. Here is where you can connect a myGHL account to the app. Press YES to proceed or NO to skip this step.
  - **YES**: Create a myGHL cloud account, then enter your login info in the app. If you already have an account, type-in your login info.
- Choose if you'd like to enable CloudStorage
- Press DONE to complete the initial setup of the app

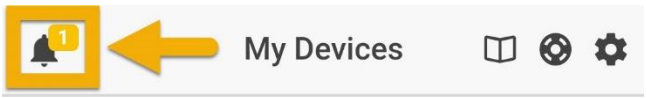


Recommended: Learn the basics of GHL Connect

This section will give you a brief overview of options that are specific to the app.

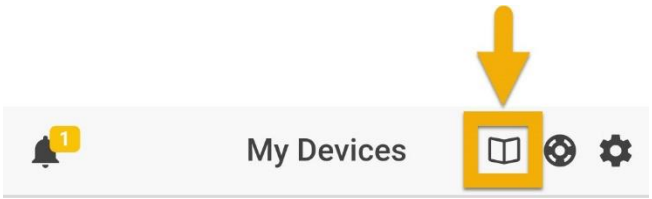
NOTIFICATION ICON (BELL ICON)

Pressing this icon will show you what is causing the warning or alarm notification. If your mobile device is not connected to the internet, the app will also notify you here.



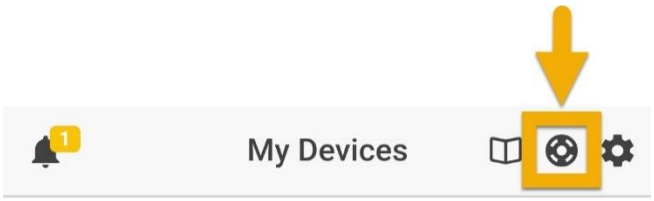
KNOWLEDGE BASE

This icon will take you to the GHL Knowledge Base which provides step by step instructions on using and setting up your GHL Device.



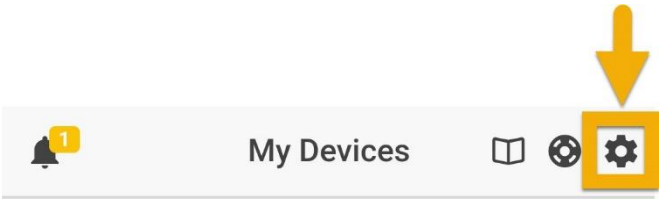
SUPPORT AND INFO

Here is where you will find app and mobile device related info. A shortcut to the official GHL support forum and company information can also be found here.



APP SETTINGS

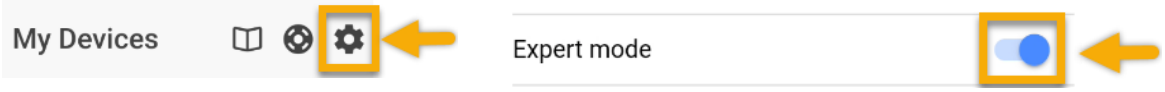
Here is where you can configure general app-related settings such as language, expert mode, auto-lock, and more. You can also enable and link a myGHL cloud account to the app from this page.



Optional: Enable Expert mode

If you'd like to see all the available control options of the P4 / 4e, enable Expert mode by doing this:

1. In the *My Devices* page, press the **app settings** icon
2. **Enable** Expert mode, press **SAVE**



TO DO: Connect to your ProfiLux for the first time

Now that the initial setup of the app is complete, you can move onto setting up the ProfiLux for the first time. These steps will show you how to connect for the first time and get the controller added to your Wi-Fi network.

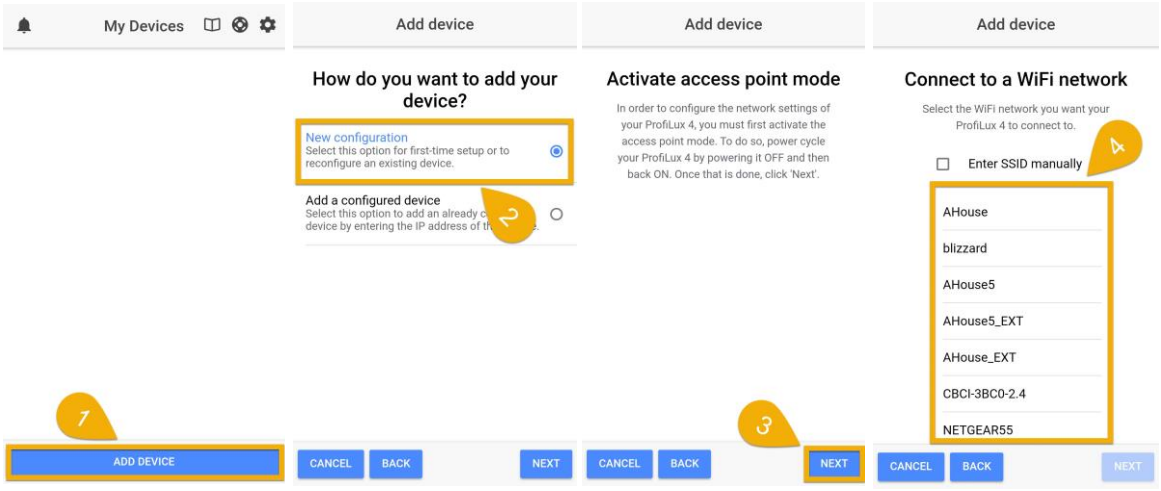
IMPORTANT: iPhone or iPad users

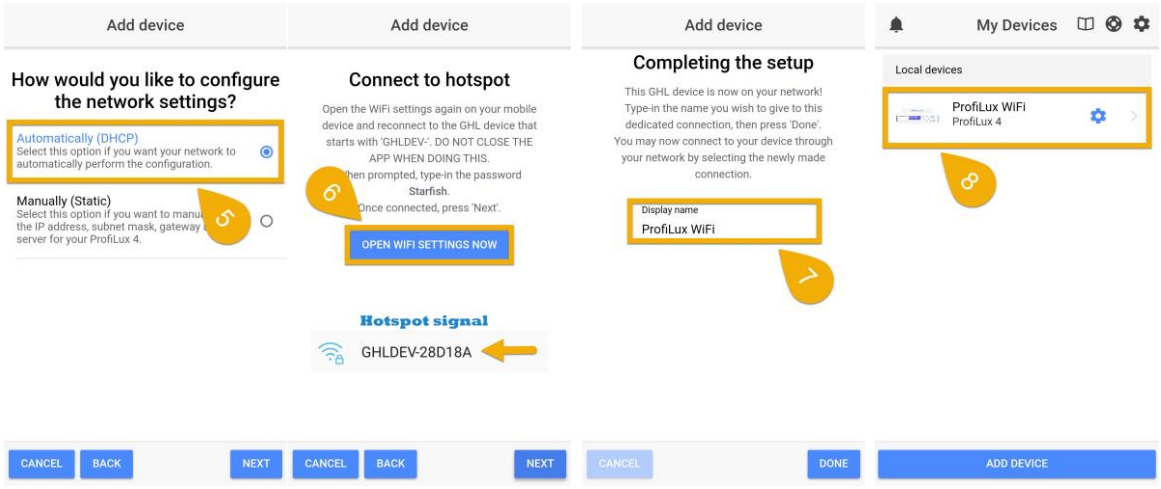
The steps provided below are for android devices. Due to the security policies on iOS devices, the first-time connection process will be slightly different. Follow steps 1 – 3, then follow the on-screen prompts.

(ILLUSTRATIONS BELOW)

To connect to your ProfiLux for the first time, follow these steps:

1. Press **ADD DEVICE**, select the **ProfiLux**, then press **NEXT**
2. Select **New configuration**, then press **NEXT**
3. Activate AP mode by powering **OFF** the ProfiLux, then **ON**, then pressing **NEXT** in the app
4. **Selec**t **your Wi-Fi network, type-in the password to your network**, then press **NEXT**
   - **IMPORTANT:** P4 must connect to a 2.4 GHz network!
5. Select **Automatically (DHCP)**, then press **NEXT**
   - **Automatically (DHCP):** Allows your network to automatically assign an IP address to your P4 / 4e
   - **Manually (Static):** Select this option if you want to assign a specific IP address to your P4 / 4e
6. Open the Wi-Fi settings on your mobile device and connect to the **GHLDEV** hotspot network. If prompted, type-in the password **Starfish**, then go back to the app and press **NEXT**
7. Your ProfiLux is now on your network. To complete the setup, type-in the name you wish to give to this connection, then press **DONE**
8. Your newly made connection will now be listed. Tap the connection to connect to your ProfiLux over Wi-Fi.
   - If you are unable to connect, check to see that your mobile device is connected to the **same Wi-Fi network**

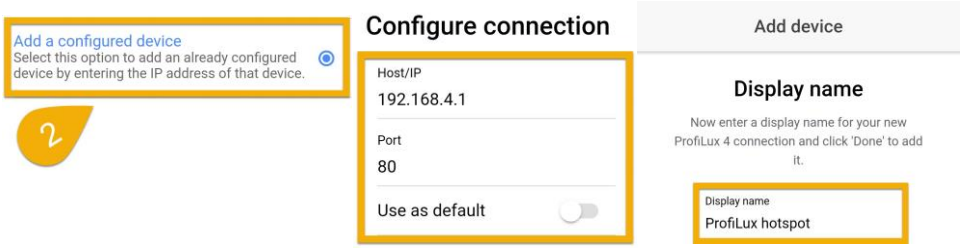




TIP: Add a dedicated hotspot connection

If you want to access the ProfiLux wirelessly, but your home wifi is unavailable, you can still access the controller through its hotspot connection. To set this up, create a dedicated hotspot connection by doing the following:

1. In the *My Devices* page, press **ADD DEVICE** and select the ProfiLux.
2. Select **Add a configured device**
3. In the *Configure connection* page, **leave everything as-is** and press **NEXT**
4. To complete the setup, type-in the name you wish to give to this hotspot connection, then press DONE

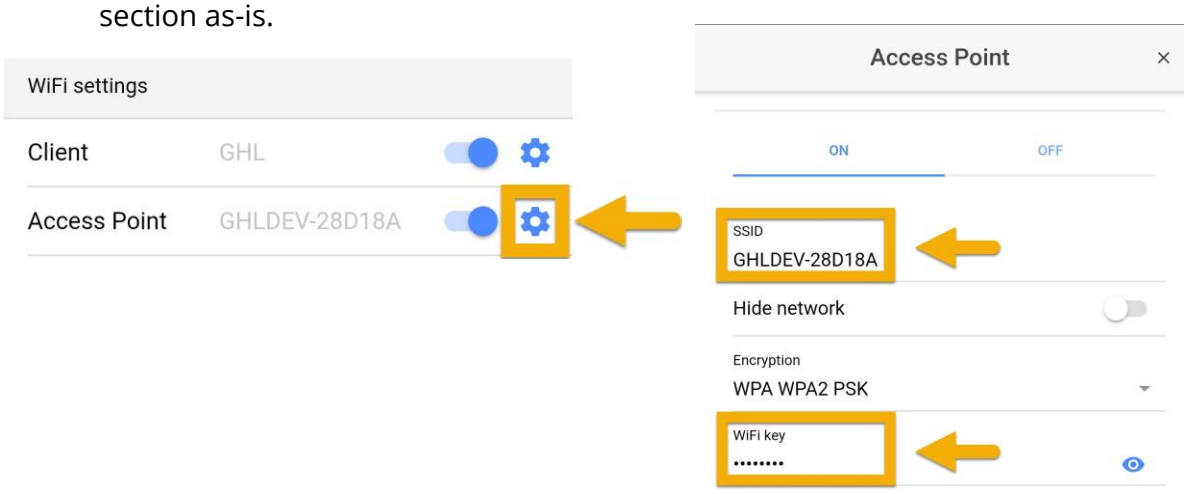


A new connection option will now be available.
In order to connect through the hotspot, you **must first** connect to the ProfiLux's hotspot signal. Once that is done, you will be able to go into the app and choose the hotspot connection you just created.

OPTIONAL: Customize the name of the ProfiLux hotspot signal

By default, the ProfiLux hotspot signal is named *GHLDEV* with some special numbers unique to your device. If you want, you can rename this hotspot signal so you can easily identify the controller's hotspot network. These steps will show you how to do exactly that.

1. Connect to the ProfiLux, press the **Menu** icon, select **Network**
2. Press the **Blue gear icon** to the right of **Access Point**
3. In the SSID field, remove the text and type-in the name you wish to give to your hotspot network; *P4 hotspot*
4. In the WIFi key field, type-in the new password here you wish to give to your hotspot network. If you'd like to keep the default password (Starfish), you can leave this section as-is.



TO DO: Set the language, date, time, etc.

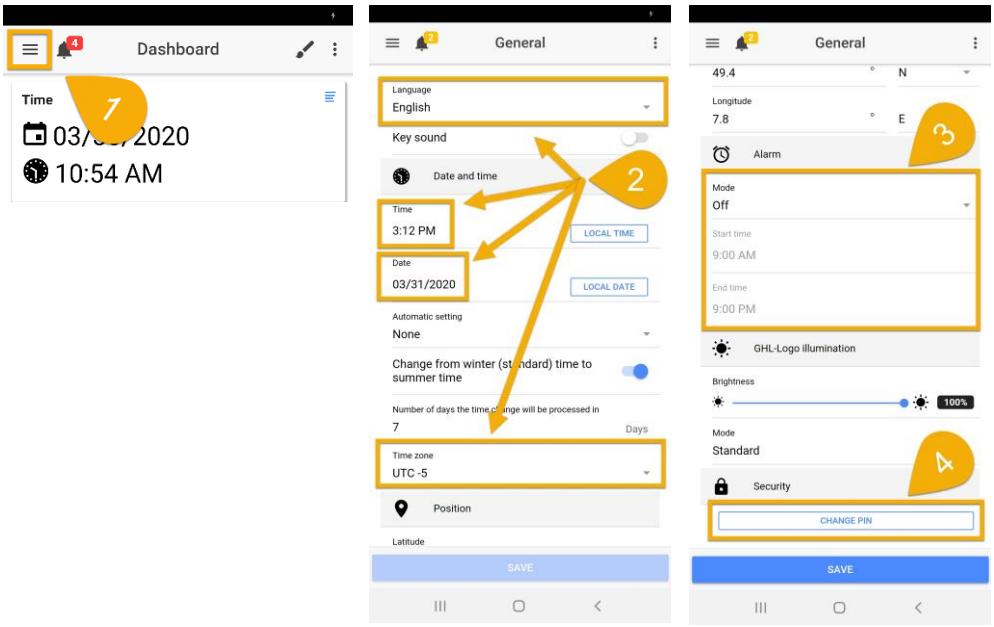
Now that you have access to your controller, it's time to configure the controller's general settings. This section will show you how to do things like set the ProfiLux's language to display, date, time, time zone, and more.

(ILLUSTRATIONS BELOW)

Configuring general settings

1. Connect to the ProfiLux, press the **Menu** icon, select **General**
2. Select language, set time and date, select your time zone
    a. **TIP:** Press **Local time** and **Local date** to quickly set this up
3. Choose if you'd like to have an audible alarm. If you want an audible alarm, but only within a certain time range, select **At set time**.

4. If you'd like to setup a PIN code to prevent unauthorized access, press **CHANGE PIN**
5. Press **SAVE** when done



Changing display language via P4 / 4e touch keys

If at any time you'd like to change the language displayed on the P4 / 4e, you may do so by following these steps:

1. Press any of the arrow keys
2. Scroll down and select **Extras**
3. Scroll up and select **Sprache**
4. Select the desired language
5. Select **JA** if you'd like the keys to make a sound when pressed. Select **NEIN** if you'd like the key sounds to be muted.
6. Confirm language in the next screen by selecting **JA**

TO DO: Assign PAB-devices to the ProfiLux 4 / 4e

This section will show you how to assign PAB-devices to the ProfiLux 4.

What is a PAB-device?

PAB devices are GHL devices that communicate with your controller through the use of a PAB cable. These can be Powerbars, GHL Dosers, KH Director, ION Director, etc.

Did you know?

There are multiple ways to assign PAB devices. If you'd like, you can do the assignment by using the **on-board P4 touch keys** instead of usng the app.

Here is how to do this:

1. Connect PAB devices to ProfiLux and power ON (if applicable).
2. Press up or down arrow key, select SYSTEM
3. Select CONFIGURE PAB, select ASSIGN DEVICES
4. Press *right* (>) arrow to select devices, then select the check mark

How-to video

Click the link below to watch our how-to video.

How to add a PAB-device to the P4:
https://youtu.be/cO0aMSNgDtY

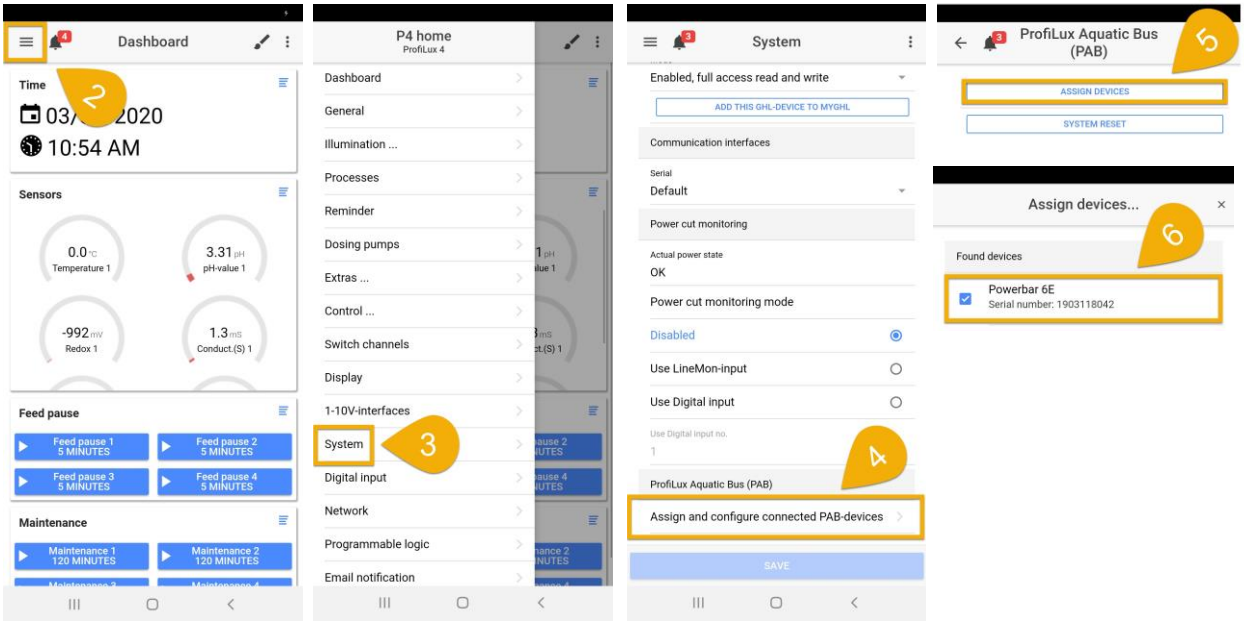
(ILLUSTRATIONS BELOW)

To add a new PAB-device, follow these steps:

1. Connect your PAB-devices to the controller using one PAB-cable for each device. For example, connect the PAB cable to the back of the P4 (labeled **PAB**) and other end of the cable to the PAB-port on a Powerbar. If your PAB-device has its own power supply, make sure to power it ON before proceeding any further. Below is an example of how devices can be connected.

2. Connect to the ProfiLux, then press the **Menu** icon
3. Select **System**
4. Press **Assign and configure connected PAB-devices**

5. Press **Assign devices**
6. Select the devices you wish to assign, then press **Save**
7. Confirm assignment by pressing **YES**



Your PAB-devices are now assigned!

You can now begin setting up your PAB devices.

NOTE: 1st Powerbar and 1st Doser are automatically assigned

If this is your FIRST Powerbar or FIRST GHL Doser Slave, the socket and pump numbering will automatically be assigned. The first PB will be assigned to Sockets 1-6 and first Doser will be assigned to Dosing Channels 1-4.

Adding more than one Powerbar or Doser unit?

Assign the numbering for these devices by going back into the PAB settings and setting the starting number for the Powerbar or dosing pump. You can see how this is done by clicking here.

Optional: Set the fallback state for your powerbar

PAB-powerbars give you the option to specify whether certain outlets should be ON or OFF **in case there is ever a PAB-communication disconnect** from the ProfiLux head unit. By default, all outlets are set to power OFF.

To have certain outlets stay ON, go to the **PAB-devices** page located in the **System** settings page. Press the blue-gear icon beside the powerbar and specify which outlets should remain ON.

Recommended: Calibrate ProfiLux 4 / 4e touch keys

If you would like to adjust the responsiveness of the touch keys, follow the steps shown in this video:

https://youtu.be/_TcYw3qkCaw

TO DO: Connect probes and calibrate probes

In order for probes to remain accurate, they must undergo calibration on a regular basis. **New probes must always be calibrated before being put to use.** The steps for calibrating each probe will vary. There are however some probes which do not require calibration. The temperature probe for example, is the only probe from the ProfiLux set which does not require any calibration.

NOTE

Probe calibration can be done through the ProfiLux display.

Best calibration practices

In order to acheive the most accurate probe readings, proper calibration must be performed. Here are some tips to go by:

- **ALWAYS** calibrate new probes; pH, redox, Conductivity
- When calibrating probes already in-use, clean with warm water or use 50/50 mix of water and white vinegar to remove build-up
- Calibrate every 1-3 months
- Rinse and dry the probe to remove any traces of tank water **BEFORE** starting calibration; failiure to do so could result in cross contamination of calibration fluids
- Make sure probe and eye is clean and free from any detritus or foreign material
- Wipe probe clean **BEFORE** dipping into another calibration fluid; this will avoid cross contamination
- Make sure **NO** microbubbles get stuck underneath the probe

Calibration is not required for Temperature probe

The GHL Temperature probe does not require calibration. Simply connect it to the Temperature BNC port and place it into the aquarium!

Probe calibration terminology

Before starting probe calibration, we recommend you become familiar with the terminology used during calibration:

- **Calibration tolerance:** Used for telling the ProfiLux how much of a measurement swing is allowed during calibration. The larger the number, the larger the tolerated swing, at the cost of probe accuracy. More information can be found on page 51 of the P4 Programming Guide.
  - By default and in most cases, Calibration tolerance of 1 is used
  - Higher tolerance of 2 or 3 can be used for probes greater than 1 year old
- **Calibration value 1:** The calibration fluid value of the first fluid that will be used
- **Calibration value 2:** The calibration fluid value of the second fluid that will be used
  - For example, if you calibrate a pH probe for saltwater, calibration value 1 would be 7.0 and calibration value 2 would be 9.0

pH probe calibration

In order to proceed with pH probe calibration, you will need the following fluids:

Required items for Saltwater
- pH 7 calibration fluid
- pH 9 calibration fluid

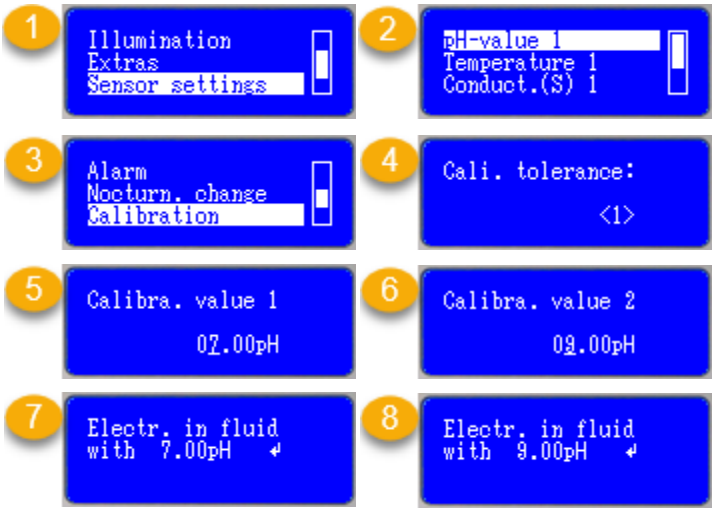
Required items for Freshwater
- pH 4 calibration fluid
- pH 7 calibration fluid

The steps below will use calibration fluids for saltwater aquariums. If you're calibrating for freshwater, please use the correct fluid.

NOTE: Listen for the 3-beeps

During calibration, the P4 will give the probe 900s (15 minutes) for the ADC values to stabilize. For steps 7 and 8, when you hear 3 beeps, calibration with the current fluid is complete. The amount of time it will take to hear these beeps will depend on probe age and set Calibration Tolerance.

1. Press any of the arrow keys on the ProfiLux and select **SENSOR SETTINGS**
2. Select **PH-VALUE 1** or desired pH probe to calibrate
3. Select **CALIBRATION**
4. Select **(1)** for CALI. TOLERANCE if probe is brand new or less than 1 year old
5. Select the pH value of the first calibration fluid, **pH 7.0**
6. Select the pH value of the second calibration fluid, **pH 9.0**



7. Dip probe in pH 7 fluid and press the **(√)** key. When you hear 3 beeps, remove the probe from the fluid, wipe it clean to prevent cross-contamination of calibration fluids, then proceed to the next step.
8. Dip probe in pH 9 fluid and press the **(√)** key. When you hear 3 beeps, select **YES** to save calibration
9. Wipe the probe and put it back into the aquarium

Redox probe calibration

In order to proceed with Redox probe calibration, you will need the following fluid:

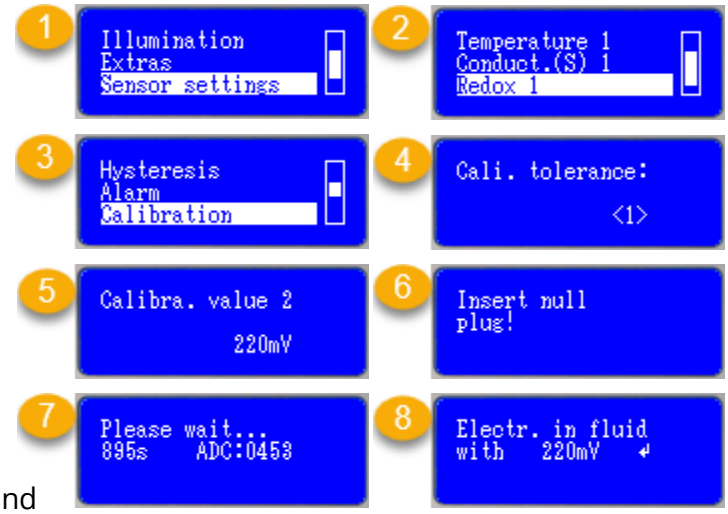
- 220mV calibration fluid

IMPORTANT: Null plug is required for calibration

The Redox probe calibration process requres you to use a special plug called, *Null plug*. This is the blank BNC connector plug that was included in the ProfiLux 4 product box and in Redox expansion cards. Please have this plug on-hand becauase you will need it for the calibration steps. This *Null plug* will connect to the Redox port on the P4.

NOTE: Listen for the 3-beeps

During calibration, the P4 will give the probe 900s (15 minutes) for the ADC values to stabilize. For steps 7 and 8, when you hear 3 beeps, the calibration step is complete. The amount of time it will take to hear these beeps will depend on probe age and set Calibration Tolerance.



1. Press any of the arrow keys on the P4 and select **SENSOR SETTINGS**
2. Select **REDOX 1** or desired Redox probe to calibrate
3. Select **CALIBRATION**
4. Select **(1)** for CALI. TOLERANCE if probe is brand new or less than 1 year old
5. Select **220mV** for CALIBRA. VALUE 2
6. Disconnect your Redox probe and connect the null plug to the Redox port. Press the **(√)** key to continue
7. The P4 will now begin a countdown. Leave the null plug connected and wait for 3 beeps before proceeding to the next step
8. Disconnect the null plug, reconnect the Redox probe, then dip probe in 220mV fluid and press the **(√)** key. When you hear 3 beeps, select **YES** to save calibration
9. Wipe probe and put back into the aquarium

Conductivity probe calibration

In order to proceed with Conductivity probe calibration, you will need the following:

Required item for Saltwater
- 50mS calibration fluid

Required item for Freshwater
- 1.41mS calibration fluid

IMPORTANT: Calibration fluid temp MUST equal tank temperature

Conductivity probe calibration will require the calibration fluid to be the exact temperature of your tank. Please float the bottle in the tank for a few hours to allow fluid temperature to equalize.

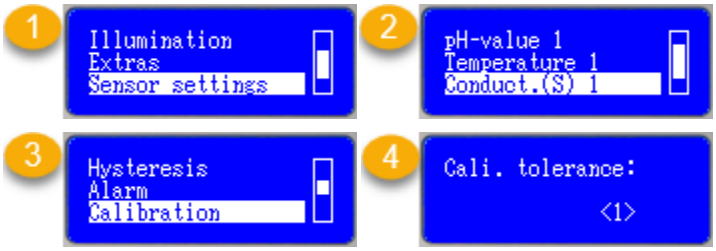
NOTE

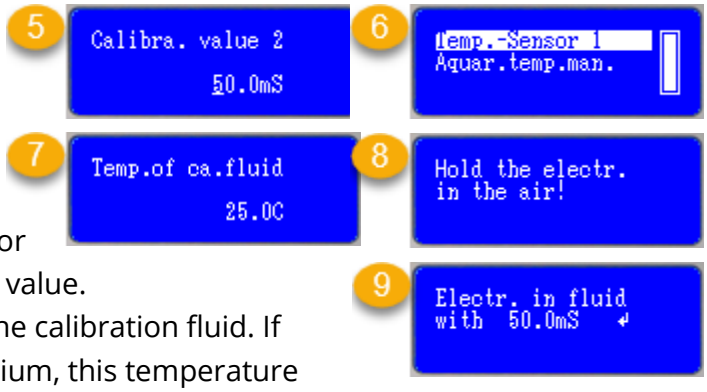
The Conductivity of a liquid is heavily dependant on the temperature of the liquid being measured. During calibration, you will be asked how to perform the temperature compensation; use the Temp. Probe or manually entered fixed temp. Value. For more info on Conductivity and temperature compensation, please see page 54 of the P4 Programming Guide.

NOTE: Listen for the 3-beeps

During calibration, the P4 will give the probe 900s (15 minutes) for the ADC values to stabilize. For steps 8 and 9, when you hear 3 beeps, the calibration step is complete. The amount of time it will take to hear these beeps will depend on probe age and set Calibration Tolerance.

1. Press any of the arrow keys on the P4 and select **SENSOR SETTINGS**
2. Select **CONDUCT.1** or desired conductivity probe to calibrate.
3. Select **CALIBRATION**
4. Select **(1)** for CALI. TOLERANCE if probe is brand new or less than 1 year old.





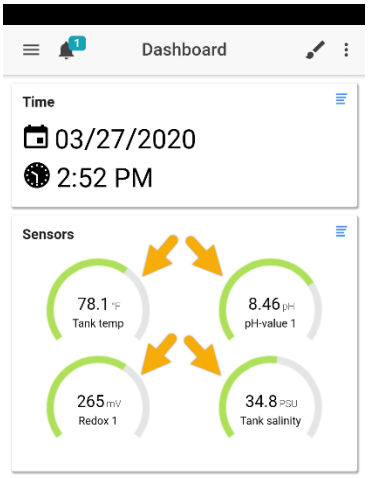
5. Select **50mS** for CALIBRA.VALUE 2
6. Select if the calibration process will use the temperature compensation readings from the ProfiLux temperature probe or a manually entered temperature value.
7. Enter the exact temperature of the calibration fluid. If bottle is still floating in the aquarium, this temperature will be the same temperature as your tank.
8. Take the probe out of the tank and let it sit out in the air, then press the **(√)** key to begin the countdown. When you hear 3 beeps, proceed to the next step.
9. Dip the probe in 50mS calibration fluid and press the **(√)** key. When you hear 3 beeps, select **YES** to save calibration.
10. Wipe the probe and put it back into the aquarium

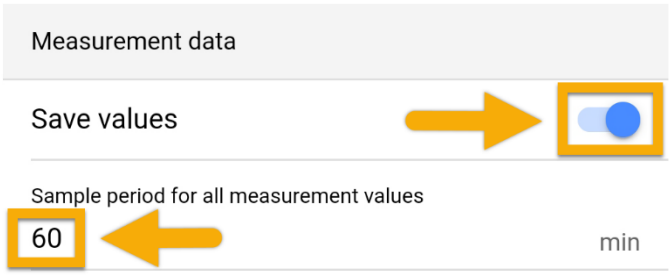
Recommended: Start recording probe values

Now that your probes are connected and calibrated, it's time to start collecting data so you can view it on a chart. Collecting probe data will come in handy because it will show you how your tank parameters have changed throughout the day, week or month(s).

(ILLUSTRATIONS BELOW)

1. Connect to the ProfiLux to view the dashboard
2. Select a probe from the dashboard
3. Enable **Measurement recording**, specify how often to record data, then press save
4. Repeat step 2 and 3 until all probes have recording enabled





Your probe values will now be recorded!
The ProfiLux will now collect measurement data based on the interval you selected.

Recommended: Set conductivity probe to display values in PSU

By default the ProfiLux 4 / 4e will display conductivity values using the **mS** unit of measurement. For reef aquarium purposes, we recommend you set the unit of measurement to **PSU**.

Why choose PSU?

The PSU unit which is displayed by the ProfiLux is **equivelant** to the commonly used PPT unit in refractometers. In other words, a measurement of 35ppt on a refractometer will display as 35 PSU on the ProfiLux...provided the probe is properly calibrated.

35 ppt = 35 PSU = 1.026 SG

IMPORTANT: KG/L unit is NOT equal to S.G!

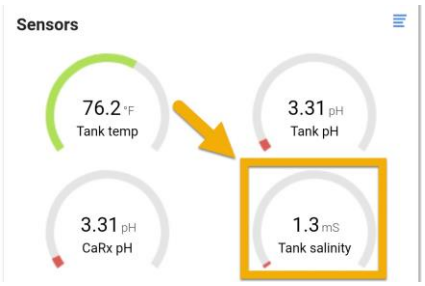
Although the ProfiLux displays conductivity in a familiar format used by refractometers, this KG/L unit is not equivalent to Specific Gravity.

1.026 kg/L **does not equal to** 1.026 SG!

You can convert this kg/L unit yourself by using a water density calculator like this one.

To change the unit of measure to PSU, follow these steps:

1. From the dashboard, select the **Conductivity** probe
2. Change the display to **PSU**, then press **SAVE**



Recommended: Add chart tile to your dashboard

This section will show you how to view all your probe data in a single chart on the app dashboard.

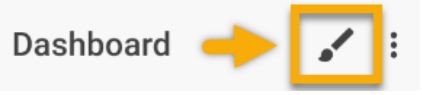
1. Connect to the ProfiLux to view the dashboard
2. Press the brush icon to the top-right, followed by the (+) icon
3. Select **Chart**, press **ADD**, press **check-icon**, refresh the dashboard page
4. Press the brush icon at the top-right, press the brush icon on the chart tile
5. Select the data to display, press **APPLY**, press (√) icon to save the dashboard

Your probe data will now be displayed on a chart!
As data is collected from these probes, the chart will begin to populate. Tapping on the chart will show you the probe values at a particular time.

Recommended: Customize your dashboard

The dashboard can show you as little or as much information as you want to see. Customize the dashboard to suit YOUR NEEDS by following the steps below:

1. Connect to the ProfiLux to view the dashboard
2. Press the brush icon to the top-right, followed by the (+) icon
3. Select the tiles you wish to add; we recommend ***Firmware*** *and* ***Switch channels***
4. Edit the tiles as needed. When done press the (√) icon.



Recommended: Setup myGHL cloud access

A major part of monitoring and control is the ability to check on your aquarium when you're away. This section will show you how to add your controller to the cloud so you can access it from anywhere in the world.

REQUIRED

In order to access your P4 via myGHL you will need to:

- Have the P4 connected to your WiFi network; **if the green light at the front of the P4 is ON…you're all set!**
- Have a myGHL account; register at www.myghl.com

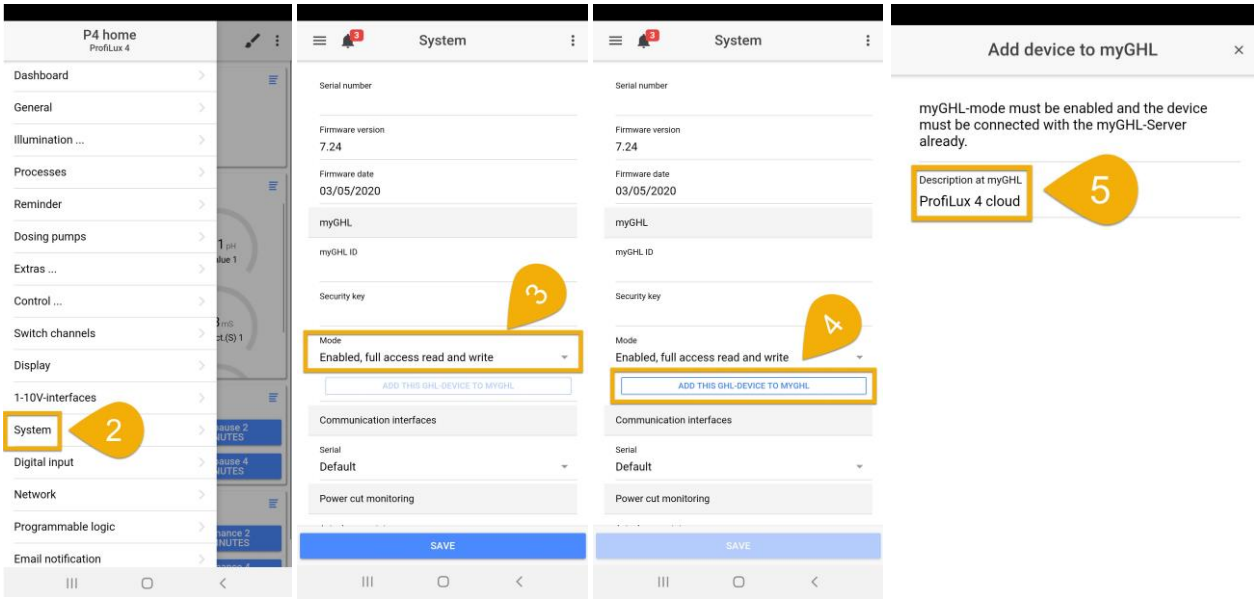
(ILLUSTRATIONS BELOW)

To setup myGHL cloud access, follow these steps:

1. Connect to the ProfiLux, press the **Menu** icon
2. Select **System**
3. Enable myGHL by choosing **Read only** or **Full access**, then press **SAVE**
4. Press **ADD THIS GHL-DEVICE TO MYGHL**
5. Give this cloud connection a name, then press **ADD DEVICE TO MYGHL**

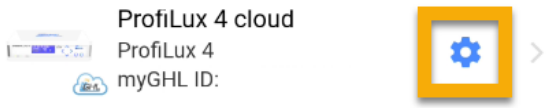
Your ProfiLux can now be accessed via the cloud!

Anytime you want to connect through the cloud, just open the app and select the dedicated myGHL connection you made or go to www.myghl.com



Want to share your device?

myGHL offers the flexibility to share your device with existing myGHL account owners You can choose to give VIEW only or FULL access rights. To do this, open the app, press the **blue** gear icon to the right of your myGHL device connection. Press **ADD**, then type-in the email address of the person you want to share your account with. Choose to give VIEW or FULL access rights and you're done!



Having trouble adding your device?

If you've tried the above steps and could not add the ProfiLux to your myGHL account, click the link below to see the alternate way to add the device.

https://youtu.be/wiwaV7nZu7Y

Still having trouble adding your device?

If the above video did not work for you, do the following:

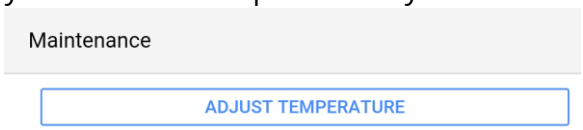
1. Use any web browser, go to myGHL.com and login
2. Press **ADD DEVICE**
3. Connect to your P4 using the app and navigate to the **System** setitngs page
4. Write down the **myGHL ID** number shown and type it into the myGHL website, then press **NEXT**
5. Go back into the app and write down the **Security key** and type it into the myGHL website, then press **NEXT**
6. Give this new device any name, then press **DONE**

TO DO: Setup heater control

This section will show you how to create and assign a basic heater function on your ProfiLux. First, you will create the function, then you will assign the function to an outlet on your GHL Powerbar.

IMPORTANT: No calibration required for temperature probe

GHL Temperature probes are factory calibrated and do not require further adjustment. Should you strongly feel the need to adjust the probe reading, you can do so by clicking ADJUST TEMPERATURE. Only do so **IF** you have another probe that you trust more!



Be sure to write down your ADC 1 and ADC 2 values **BEFORE** making any adjustments! These numbers can be used to revert back to factory calibration.

How-to video

Click the link below to watch our how-to video.

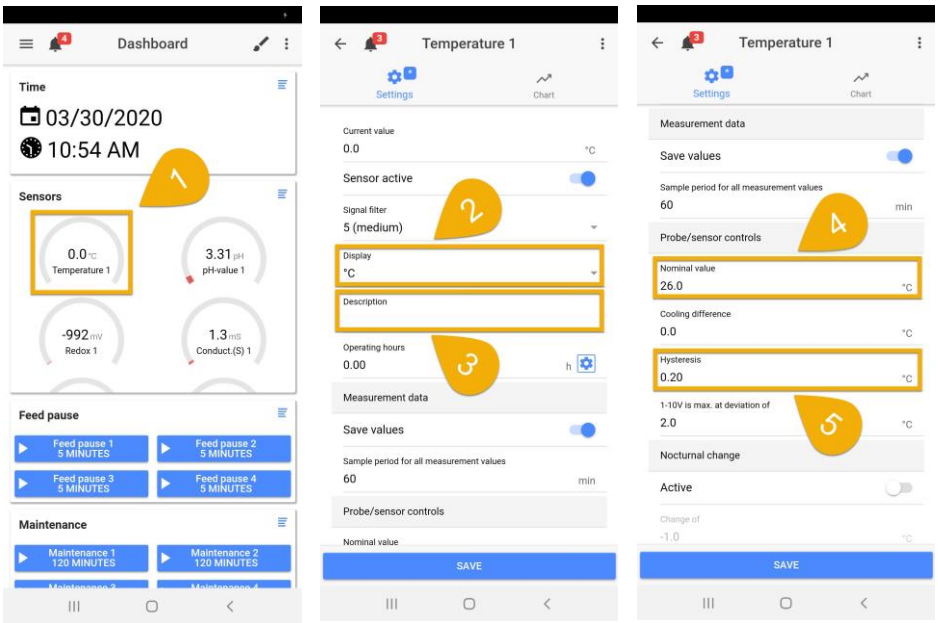
How to setup and assign basic heater function:
https://youtu.be/E0xreQwaV1A

(ILLUSTRATIONS BELOW)

To setup basic heater control on your ProfiLux 4, follow these steps:

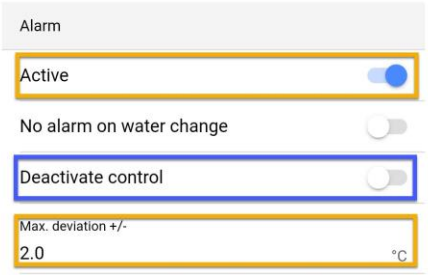
CREATING THE FUNCTION

1. Connect to the ProfiLux, then press the **Temperature 1** icon
2. Select the desired **temperature unit,** Fahrenheit or Celsius
3. Type-in a description for this probe; *Tank temperature*
4. Set the desired **NOMINAL VALUE**.
   - ➢ This is where you type-in the desired temperature value. For example, if you'd like to keep your tank temperature close to 77° F, type in 77.
5. Set the desired **HYSTERESIS**, then press **SAVE**
   - ➢ The number you enter here will determine how much of a swing you are willing to allow in-between the nominal value. This determines when heating / cooling functions are triggered.
   - ➢ By default, this value is set to 0.20°C or 0.36°F. This value works for most individuals. If you want a tighter or wider range of control, type in a smaller or larger value.



OPTIONAL: Trigger alarm for Temperature swings

If you wish to activate an alarm when temperature rises or falls beyond a certain temperature, set the alarm to **ACTIVE** and set the maxiumum allowed deviation. If you want to turn OFF your heater when the temp reading goes outside the allowed deviation, ENABLE *Deactivate control*.

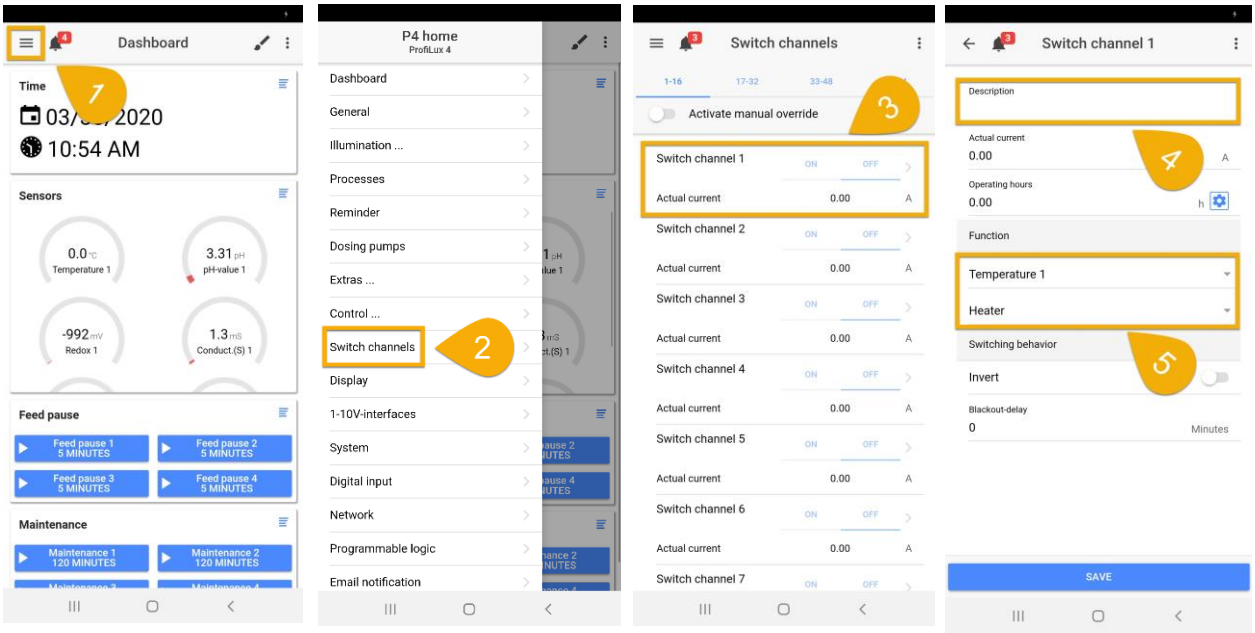


Your temperature function has now been created!

Now it's time to assign this function to the outlet(s) which will be powering your heater.

ASSIGNING THE FUNCTION

1. Press the back-arrow, press **Menu** icon
2. Select **Switch channels**
3. Select the outlet that has or will have the heater connected to it
4. Type-in a description; *Heater*
5. Set the function to TEMPERATURE and HEATER, then press **SAVE**



Do you have more than 1 heater?

If yes, you can apply the same temperature control function to multiple heaters. Simply select the powerbar outlet that has the other heater connected and assign it the SAME function as you did earlier.

For example, with 2 heaters plugged into separate outlets, both outlets would have the same TEMPERATURE HEATER function assigned.

Your heater function is now assigned!
The ProfiLux will now turn the assigned outlet ON/OFF based on the desired temperature of your tank.

TO DO: Setup return pump control

When it comes to having the ProfiLux control your return pump(s), you have many options to choose from. You can set the return pump to react to a feed pause, maintenance mode, control the flow via 1-10V interface, stay always ON, etc. Simply pick the sub-section that applies to you.

React to a feed pause

1. See How to setup feed pause functions
2. Plug in return pump to the assigned Powerbar outlet

Shut down pump if sump water level gets too low

In order to turn OFF the return pump to prevent it from running dry, you will need a GHL float or optical sensor. This sensor is what will trigger the pump to turn OFF.

1. See How to setup leakage detection
2. Plug in return pump to the assigned Powerbar outlet

Combine Feed Pause and Leakage Detection

If you wish to have the return pump react to more than 1 of the above functions, you can do so with Programmable Logic. This option will allow you to tie-in multiple functions to a single Powerbar outlet.

1. See How to setup feed pause functions and ONLY follow *CREATING THE FUNCTION* steps
2. See How to setup leakage detection and ONLY follow *CREATING THE FUNCTION* steps
3. See Combining Feed Pause and Leakage Detection
4. Plug in return pump to the assigned Powerbar outlet

Control flow rate via 1-10V interface

If you have a 1-10v compatible return pump, you can have the ProfiLux control the pump's flow rate. To do this, you will need a GHL-dedicated control cable from the pump manufacturer. If one is not available, you can still control the pump by using our Breakout-Box 1-10V accessory (PL-1680).

1. See How to setup 1-10V pump control

React to a maintenance mode

The maintenance mode is a feature that temporarily turns OFF or ON specific Powerbar outlets. This feature can also be used to ramp down a 1-10v compatible return pump that is connected to the ProfiLux.

1. See How to setup maintenance modes

TO DO: Setup skimmer control

With the ProfiLux, you can control your skimmer in various ways. For example, you can set the skimmer to turn OFF if the sump water level gets too high, skimmer cup gets full, or OFF during a feed pause and/or maintenance mode. You can also set the skimmer to stay always ON or even control it via 1-10V interface. Simply pick the sub-section that applies to you.

React to a Feed Pause

1. See How to setup feed pause functions
2. Plug in skimmer to the assigned Powerbar outlet

Turn ON skimmer during certain times of the day (TIMER)

1. See How to setup normal ON/OFF timers
2. Plug in skimmer to the assigned Powerbar outlet

Shut down skimmer if sump water level gets too high or cup is full

In order to turn OFF the skimmer to prevent it from overflowing, you will need a GHL float or optical sensor. This sensor is what will trigger the pump to turn OFF.

1. See How to setup leakage detection
2. Plug in skimmer to the assigned Powerbar outlet

React to a maintenance mode

The maintenance mode is a feature that temporarily turns OFF or ON specific Powerbar outlets. This feature can also be used to ramp down a 1-10v compatible skimmer pump that is connected to the ProfiLux.

1. See How to setup maintenance modes

Set a skimmer delay after a Maintenance mode

If you decide to use a Maintenance mode, all the outlets that were once OFF will now turn back ON. For in-sump skimmers, this can be detrimental because the water level in the sump will be too high the moment the skimmer turns back ON. As a result, the skimmer cup may overflow. The solution would be to set a delay for the skimmer once a Maintenance mode has ended. This gives the sump water level enough time to go back to normal level before the skimmer turns back ON.

1. See How to create and assign a Maintenance mode delay

Combine Feed Pause and Timer function

If you wish to have the skimmer react to both a Feed Pause and a Timer function, you will need to use the Programmable Logic (OR) function.

1. See How to setup feed pause functions and ONLY follow *CREATING THE FUNCTION* steps
2. See How to setup normal ON/OFF timers and ONLY follow *CREATING THE FUNCTION* steps
3. See Combining 2 functions w/ Programmable Logic (Using OR function)
4. Plug in skimmer to the assigned Powerbar outlet

Combine Feed Pause and Leakage Detection

If you wish to have the skimmer react to both Feed Pause and Leakage Detection functions (Prevent skimmer cup overflow), you will need to use the Programmable Logic (AND) function.

1. See How to setup feed pause functions and ONLY follow *CREATING THE FUNCTION* steps
2. See How to setup leakage detection and ONLY follow *CREATING THE FUNCTION* steps
3. See Combining Feed Pause and Leakage Detection
4. Plug in skimmer to the assigned Powerbar outlet

How to setup non-dimmable lighting control

If you have non-dimmable lighting (T5, MH, Refugium lighting, etc.) you would like to control with the ProfiLux, follow the steps below.

NOTE

In order for the ProfiLux to control these types of lights, they must be connected to a controllable powerbar outlet. The steps below will cause assigned powerbar outlets to turn ON and OFF according to the set schedule. Feel free to plug-in these lights before or after following these steps.

TIP: Temperature dependent light reduction

ProfiLux includes a feature called *Temperature dependent light reduction*. This feature links your temperature probe to your lighting timers. If your tank temperature rises above a certain point, this feature will automatically turn off your lights to prevent further heat transfer.

How-to video

Click the link below to watch our how-to video.

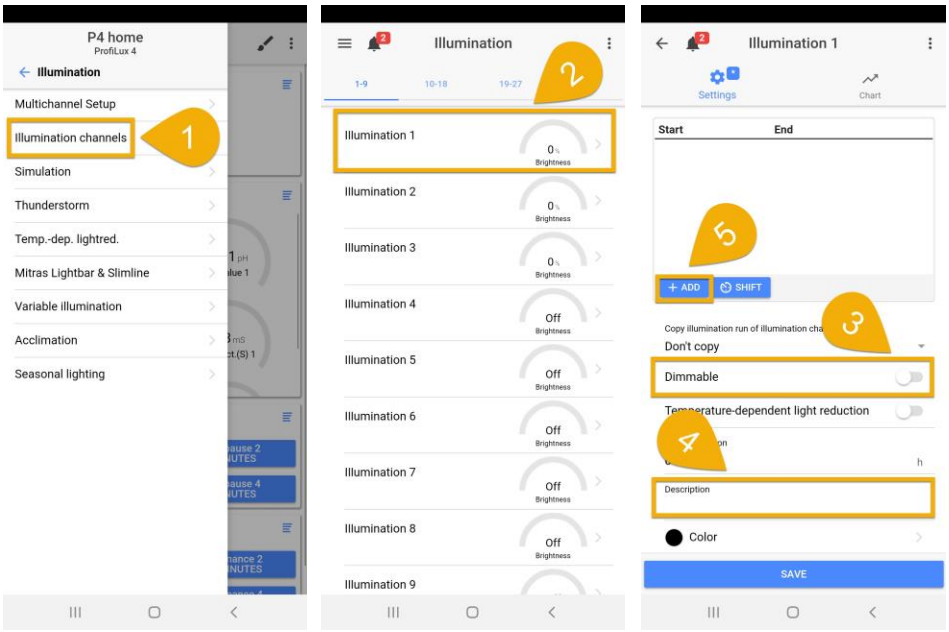
Non-dimmable illumination setup:
https://youtu.be/77UJzgm_05Q

(ILLUSTRATIONS BELOW)

To setup non-dimmable lighting timers, follow these steps:

CREATING THE FUNCTION

1. Press the **Menu** icon, select **Illumination**, select **Illumination channels**
2. Select an Illumination channel.
3. **Disable** the DIMMABLE option (as shown)
4. Type-in a description; *T5 blue*
5. Press **ADD** and specify the ON and OFF times of this illumination channel, then press **SAVE**



TIP: Color code your Illumination channels

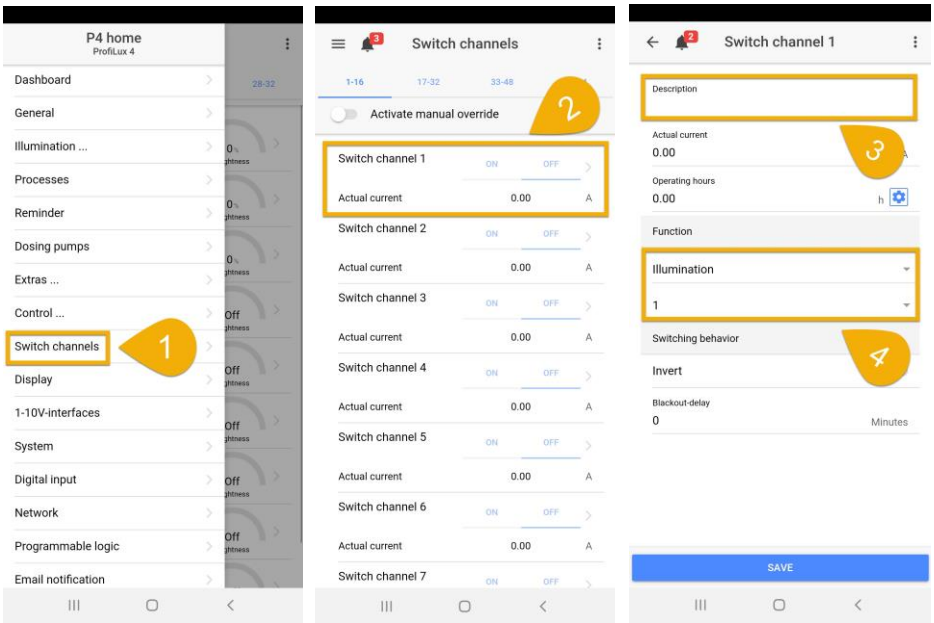
If you'd like to give each Illumination channel a specific color, you can do so here. Make sure to press **SAVE** after the color is selected.

You've now created an Illumination function!

If you have any additional non-dimmable lights you want to control, press the back-arrow and repeat steps 2 – 5. The next step will be to assign this function to the desired Powerbar outlets.

ASSIGNING THE FUNCTION

1. Press the back-arrow, press the **Menu** icon, press the back-arrow, then select **Switch channels**
2. Select the Powerbar outlet(s) that you want to assign the Illumination function to
3. Type-in a description; *T5 blue*
4. Set the function to **Illumination** and select the channel number that has your illumination settings, then press **SAVE**
    - For example, if you created the function on Illumination channel 1, set the function to ILLUMINATION 1. If Illumination channel 2 was used – set the function to ILLUMINATION 2



Your Illumination function is now assigned!
If you created multiple illumination channels, press the back-arrow and repeat steps 2 – 4. The assigned outlets will now turn ON/OFF based on the schedule set in the Illumination channel.

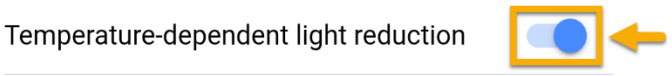
OPTIONAL: Temperature Dependent Light Reduction

NOTE

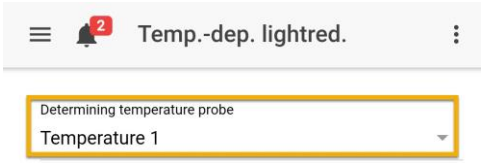
ProfiLux 4 / 4e can further assist with temperature management when you use Temperature dependent light reduction. If your tank temperature rises higher than a maximum allowed temp, the ProfiLux can be triggered to turn OFF specific lights for the remainder of the day.

To activate this feature, follow these steps:

1. Go to the **Illumination channels** page, select your light channel, and **enable Temperature-dependent light reduction** (as shown), then press **SAVE**



   - If you want multiple Illumination channels to react to this feature, repeat step 1 for those channels
2. Press the back-arrow, press the **Menu** icon, select **Temp.-dep.lightred.**
3. Select the Temperature probe that will be responsible for controlling the assigned Illumination channel(s)



4. Specify at what temperature your non-dimmable light should turn OFF, then press **SAVE**
   - The number you set will determine when your lights would turn off. For example, if your Temperature probe nominal temperature is set to 77°F and shut off limit is set to 3°F, the assigned illumination channels will turn off for the day IF temperature reaches 80°F and above.

How to setup normal ON/OFF timers

This section will show you how to setup and assign standard ON/OFF timer functions to specific Powerbar outlets.

NOTE

TIMER functions come in handy because they can run equipment like skimmers or media reactors during certain times of the day. You can also use timer functions to automatically activate a Feed Pause. This section will show you how to setup a TIMER function using the NORMAL (ON/OFF) switchmode option.

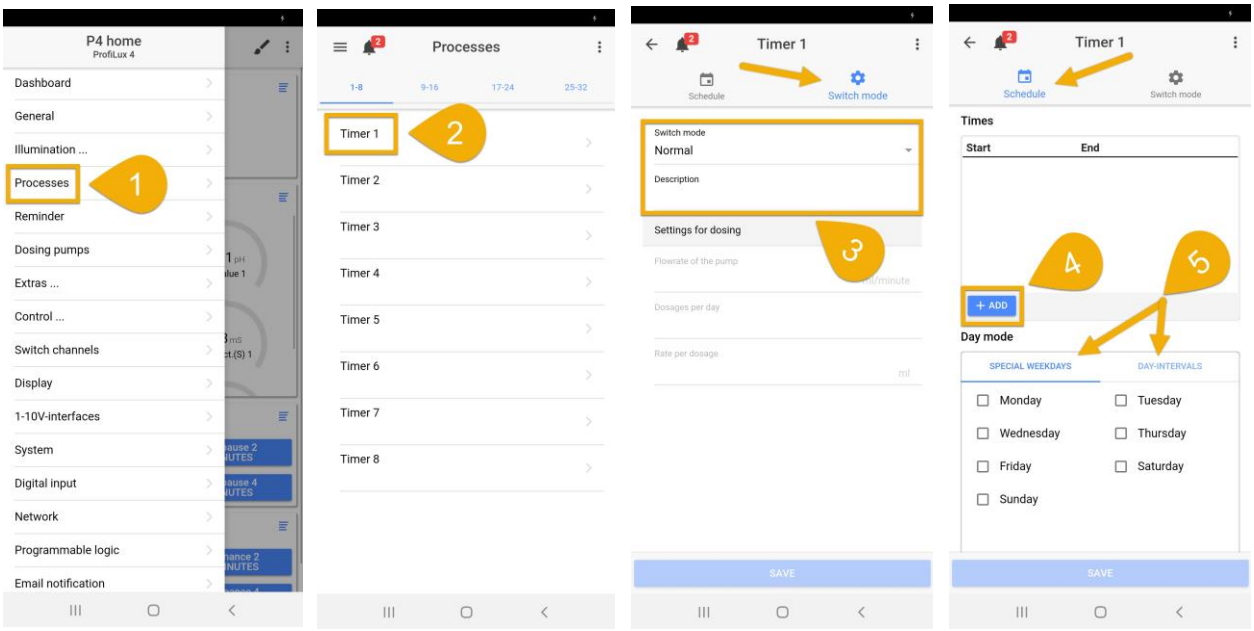
(ILLUSTRATIONS BELOW)

To setup normal ON/OFF timers, follow these steps:

CREATING THE FUNCTION

1. Press the **Menu** icon, select **Processes**
2. Select an unused **Timer** function
3. Press the **Switch mode** tab, select **Normal**, then type-in a description
4. Press the **Schedule** tab, press **ADD** and specify the *Starting* and *Ending* time
    - If you want multiple ON/OFF times, press ADD again and specify the times.
5. Select a Day mode
    - **Special weekdays:** Allows you to choose the days of the week to run this timer
    - **Day intervals:** Allows you to choose how often to run this timer in intervals.
        i. For example, *Repeat every* 3 days = Timer will run every 3 days
        ii. *Starting in* is a delay. If you want to delay the timer, specify by how many days.

6. Press **SAVE**

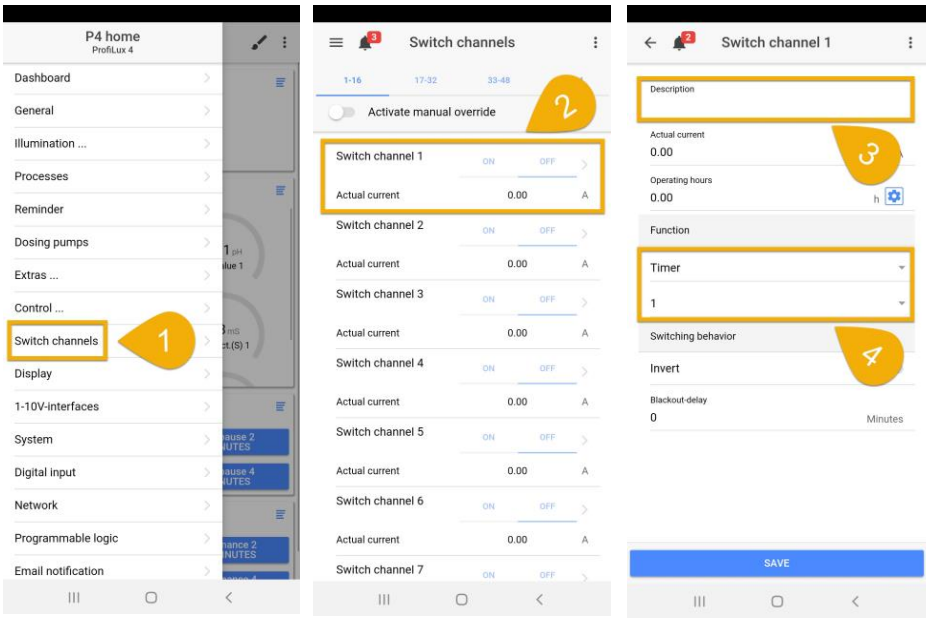


You've now created a TIMER function!

Now it's time to assign this function to the desired Powerbar outlets.

ASSIGNING THE FUNCTION

1. Press the back-arrow, press the **Menu** icon, select **Switch channels**
2. Select the Powerbar outlet(s) that you want to assign the timer function to
3. Type-in a description
4. Set the function to **TIMER** and select the TIMER number you used when you created the timer function, then press **SAVE**
    - For example, if you created the function on TIMER 1, set the function to TIMER 1. If TIMER 2 was used, set function to TIMER 2, etc.



Your timer function has now been assigned!

The assigned outlet will now turn ON/OFF based on the schedule set in the timer.

How to setup 1-10V lighting control

This section will show you how to control dimmable lighting through the ProfiLux's 1-10V interface. With the correct GHL accessory, any dimmable lighting fixture that has its own 1-10V interface can be controlled by the ProfiLux. Lighting that is dimmed through a PWM signal can also be controlled. The accessory to use will depend on the lights you plan to control.

First you will connect the lighting control cable to the fixture and GHL accessory, then you will connect the GHL accessory to the controller. With the cables connected, you will then assign the 1-10V interface function and configure your lighting schedule.

DO YOU HAVE EVERYTHING YOU NEED?

In order for the ProfiLux to control a dimmable lighting fixture, the correct **GHL lighting accessory** is required. Here is a sample list of GHL lighting accessories with a description of their intended use.

- **1-10V Breakout Box:** For controlling lights that include a 1-10V control port
- **LEDControl4 V2:** For controlling lights that are dimmed through a PWM signal

- **Mitras Simu Driver:** For controlling GHL Mitras-Simu-Sticks

1x 1-10V port = 2x 1-10V channels

Each 1-10V (**Yellow**) L-channel port on the ProfiLux, Expansion cards, and Expansion Box are capable of controlling 2 separate 1-10V channels.

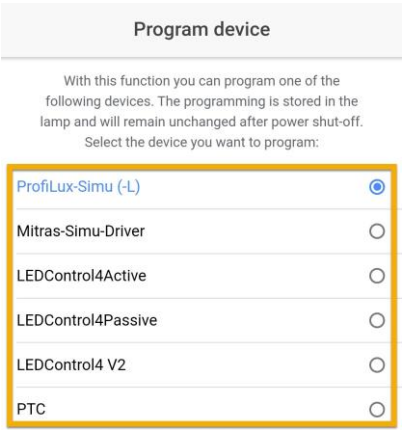
(ILLUSTRATIONS BELOW)

To setup 1-10V lighting control, follow these steps:

CONNECT CONTROL CABLE

1. Take the 1-10V control cable and connect it to the lighting fixture and GHL accessory
2. Connect the GHL accessory to an available **YELLOW** L-channel port on the back of the controller
   - The following accessories **MUST FIRST** be connected to L-channel ports, L1-L6 for **initial programming**. Once programming is complete, you can connect this device to any L-channel port. If you are not using any of these accessories, disregard this section.
     i. LEDControl4 models
     ii. Mitras Simu-Driver
     iii. ProfiLux-Simu-LEDs

Initial programming for Mitras-Simu, ProfiLux-Simu or LEDControl4

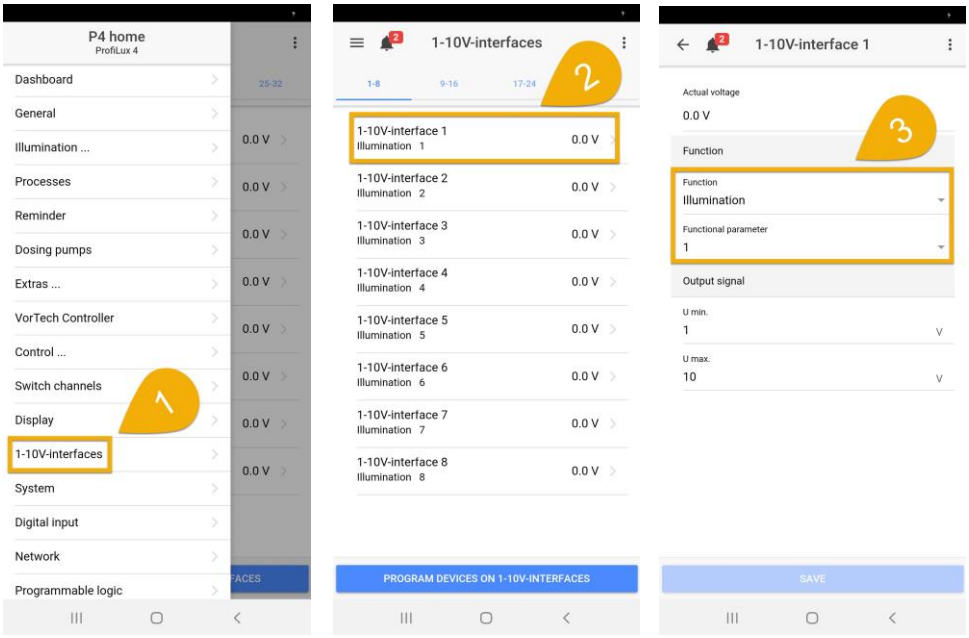


If you have a Mitras-Simu, ProfiLux-Simu, or any LEDControl4 accessory, go to the 1-10V INTERFACES settings page (press **Menu** icon), press **Program Devices**, then select the device you have and follow the instructions. Once complete, you can disconnect the accessory and connect it to any L-channel port, then proceed to the next step.

ASSIGNING 1-10V INTERFACE FUNCTION

1. Press the **Menu** icon and select **1-10V Interfaces**

2. Select the **1-10V interface** number where you have the light connected
    - For example, if connected to L1/L2, you can configure L1 and L2 in the 1-10V interface settings page. If on L3/L4, you can configure L3 and L4
    - If you'll be using 1 channel and not the other, select only 1 channel
3. Set the function to **Illumination** and select the **channel number** to assign to this light, then press **SAVE**
    - Since most LED fixtures include more than 1 channel, we recommend assigning each to its own ILLUMINATION channel.
    - For example, LED fixture Royal Blue channel – Assign to Illumination 1, White channel – Assign to Illumination 2.
4. Repeat steps 2-3 for each lighting channel that needs to be assigned.

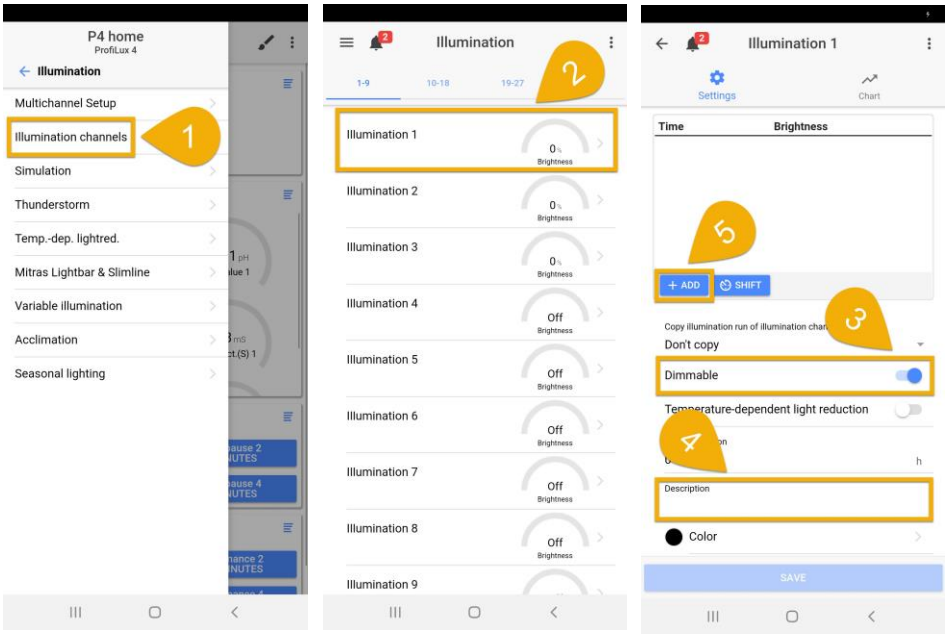


Your dimmable light has now been assigned to a 1-10V interface channel!
The next step will be to create the light schedule for the dimmable light.

CREATING A DIMMABLE LIGHT SCHEDULE

1. Press the back-arrow, press the **Menu** icon, select **Illumination**, select **Illumination channels**
2. Select the channel you assigned earlier
    - For example, if you assigned the L1-channel to Illumination 1, select Illumination 1. If you assigned L2 to Illumination 2, select Illumination 2
3. Enable the DIMMABLE option (as shown)
4. Type-in a description; *Royal Blue LED*

5. Press **ADD**, specify the time and percentage light output for this time, then press **ADD**
   - ➢ Continue creating NEW time-points until you're satisfied with your schedule, then press **SAVE**
   - ➢ Pressing the **Chart** tab will show you this schedule as a whole



TIP: Color code your Illumination channels

If you'd like to give each Illumination channel a specific color, you can do so here. Make sure to press **SAVE** after the color is selected.

Your Illumination channel function has now been created!

This schedule will now control your dimmable light through the 1-10V interface channel.

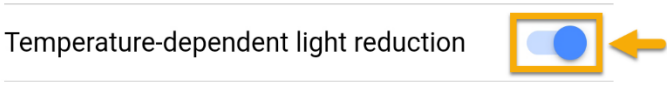
OPTIONAL: Temperature Dependent Light Reduction

NOTE

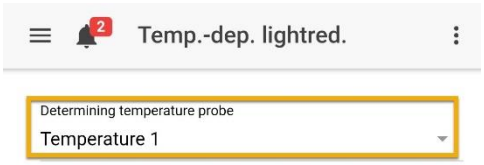
ProfiLux 4 / 4e can further assist with temperature management when you use Temperature dependent light reduction. If your tank temperature rises higher than a maximum allowed temp, the ProfiLux can be triggered to turn OFF specific lights for the remainder of the day.

To activate this feature, follow these steps:

1. Go to the **Illumination channels** page, select your light channel, and **enable Temperature-dependent light reduction** (as shown), then press **SAVE**



   - If you want multiple Illumination channels to react to this feature, repeat step 1 for those channels
2. Press the back-arrow, press the **Menu** icon, select **Temp.-dep.lightred.**
3. Select the Temperature probe that will be responsible for controlling the assigned Illumination channel(s)



4. Specify at what temperature your non-dimmable light should turn OFF, then press **SAVE**

The number you set will determine when your lights would turn off. For example, if your Temperature probe nominal temperature is set to 77°F and shut off limit is set to 3°F, the assigned illumination channels will turn off for the day IF temperature reaches 80°F and above.

How to setup 1-10V pump control

This section will show you how to control 1-10V pumps such as return pumps, Maxspect Gyre pumps, and Tunze stream pumps. Since the applications for each pump will vary, the steps below will provide a general overview of what you need to do to get your 1-10V pump up and running. First you will connect the control cables to the ProfiLux 4, then you will assign the 1-10V interface function, then configure the pump's behavior.

DO YOU HAVE EVERYTHING YOU NEED?

In order for the ProfiLux to control a 1-10V pump, a **GHL compatible control cable** is required. This control cable can be sourced from the pump manfacturer. For example, Abyzz and Royal Exclusiv offer GHL compatible control cables.

If a control cable is not available from the pump manufacturer or there is only an RJ-45 control cable available, you can still connect it to the P4 / P4e by cutting the end of the cable and connecting it to our **1-10V breakout box** accessory. This breakout box is then connected to the P4 / P4e's (**Yellow**) L-channel port.

Have a controllable Tunze pump?

Tunze control cables for ProfiLux controllers are available at your preferred GHL dealer.

- PL-0087 ProfiLuxTunze1
- PL-0088 ProfiLuxTunze2

Tunze1 cables are for odd-numbered L-channels.
Tunze2 cables are for even-numbered L-channels.

For example, 3 pumps will need 2x T1 cables and 1x T2 cable. (Pump #1 connected to the P4's – L1 (**Yellow**) port, Pump #2 – L2 port, Pump #3 – L3 port)

1x 1-10V port = 2x 1-10V channels

Each 1-10V (**Yellow**) L-channel port on the ProfiLux 4 / 4e, expansion cards, and expansion box are capable of controlling 2 separate 1-10V channels. You can access both channels by using our *YL2 splitter cable* accessory offered in 3 sizes, 1m, 2.5m, 5m.

(ILLUSTRATIONS BELOW)

To setup 1-10V pump control, follow these steps:

CONNECT CONTROL CABLE

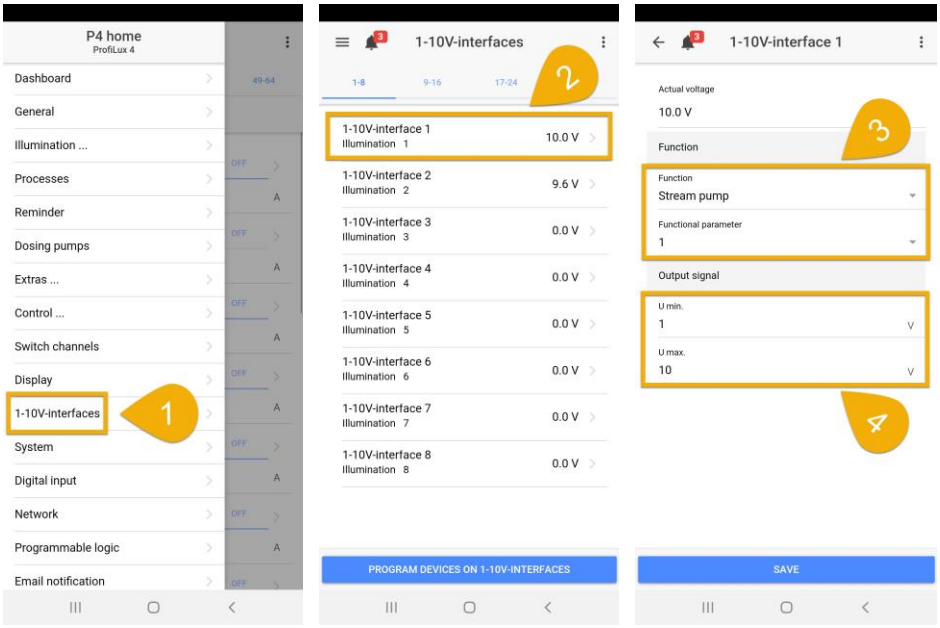
1. Connect the 1-10V control cable from the pump or 1-10V breakout box to an available **YELLOW** 1-10v port to the back of the P4 / P4e
    - If you are connecting a single cable directly to a 1-10V port, the control cable numbering will be assigned to the first number of that 1-10V port
        i. For example, if the cable is connected to the L1/L2-port, the device will automatically be assigned to the L1 channel
    - If you are using a YL2 splitter accessory, one port on the splitter will be the 1st L-channel and the other port will be the 2nd L-channel
        i. For example, P4 L1/L2 port → YL2 splitter → Port 1 (L1) and Port 2 (L2)
    - If you are connecting the cable to an expansion card or Expansion Box 2, the L-channel numbering will continue beyond L5/L6
        i. For example, if you have a PLM-4L interface expansion card, the L-channel numbering would be L7/L8 for the first port, L9/L10 for the second port.
        ii. If you do not have any L-channel expansion cards on the P4 and instead have an EXB2, L1/L2 on the EXB2 would actually be L7/L8

ASSIGNING 1-10V INTERFACE FUNCTION

Now that the control cable is connected to the P4 / P4e and the 1-10V pump, it's time to assign a function to a specific L-channel (1-10V)

1. Press the **Menu** icon and select **1-10V interfaces**
2. Select the L-channel interface where you have the 1-10V device connected
    - If you have a pump connected to the L1 channel, select L1. If on L2, select L2.
3. Set the function to **Stream pump** and assign a pump number
    - If this is your first pump, you can select Stream Pump 1. If this is a second pump, select Stream Pump 2.
4. Set the output signal, then press **SAVE**
    - The minimum and maximum V signal will depend on the device being used
    - Tunze streams should be set to 3-8V

- Most others can be set to 1-10V



Your 1-10V flow pump has now been assigned to a 1-10V interface channel!
If you have multiple pumps you want to use, repeat steps 2 – 4. The next step will be to assign the pump(s) to a stream group.

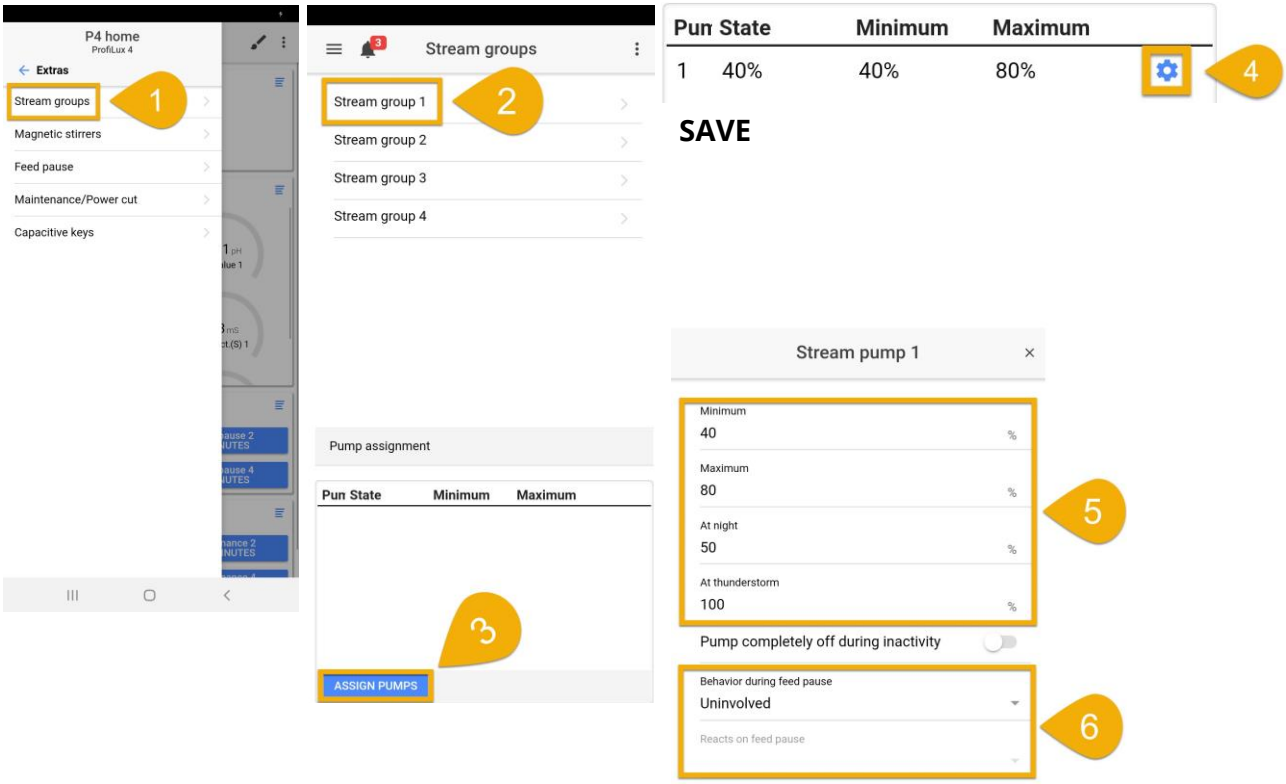
ASSIGNING PUMPS TO A STREAM GROUP

Now that the 1-10V interface has been assigned as a Stream Pump, it's time to assign the pump(s) to a Stream Group.

1. Press the back-arrow, press the **Menu** icon, select **Extras**, select **Stream groups**
2. Select a stream group
   - **First time setting up:** Select *Stream group 1*. Otherwise choose another group.
3. Press **ASSIGN PUMPS**, select the pump(s) to assign to this group, then press **SAVE**
   - If you assigned Stream Pump 1 in the 1-10v interfaces page, select **Pump 1**
4. Press the blue gear icon to the right of the assigned pump
5. Set the pump's flow behavior Min flow %, Max flow %, at night %, and thunderstorm %.
6. Choose **how** this pump will react **when** a feed pause is activated, then **choose which FP** it will react to.
   - **Uninvolved:** Does not react to FP
   - **At minimum:** Runs pump at minimum flow %

- **OFF:** Turns pump OFF

7. Repeat Steps 4-6 for each pump you want to add to this Stream Group, then press



Your pump(s) has now been assigned to a stream group!
The next step will be to setup the flow behavior of the assigned pumps.

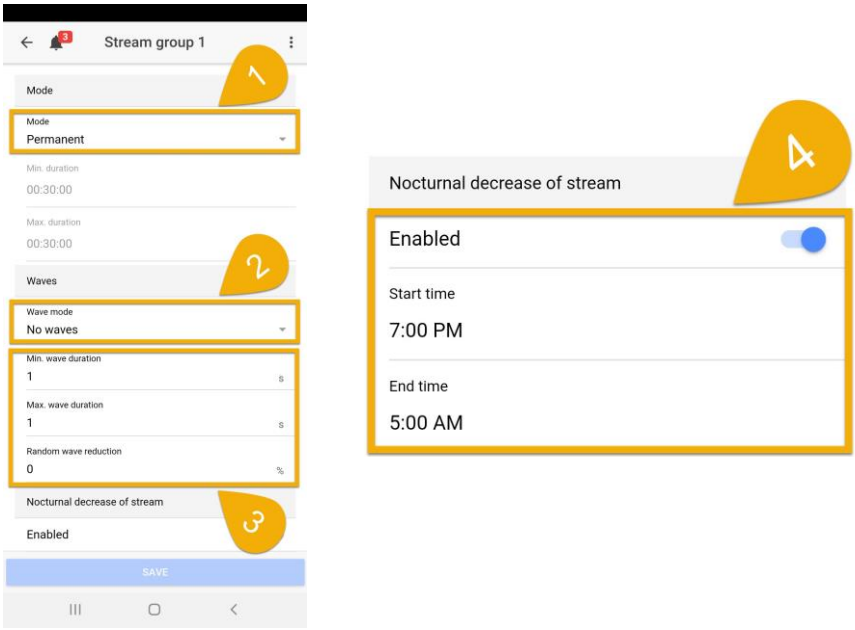
CONFIGURING FLOW PATTERN AND BEHAVIOR OF THE PUMP(S)

Now that the pump has been assigned to a Stream Group, the next step is to configure the wave pattern/behavior of the pump(s).

IMPORTANT: Stream modes and waves

The stream group offers many ways to control your 1-10v pumps. In order to best understand the mode and wave options available, we **highly recommend** reading this article:
https://www.aquariumcomputer.com/knowledge-base/create-custom-wave-patterns-with-profilux/

1. Select the desired flow **MODE**
    - If you're running a skimmer pump or return pump, we recommend you use **Permanent mode**. Be sure to set the min/max flow % to the **same value** to maintain consistent flow.
    - If you are running a closed loop pump, Tunze Stream, or another flow pump, choose from the available options.
2. Select the **WAVE** pattern behavior for the pump(s) in this group
    - For those running a skimmer or return pump, select **No waves**
    - **Right angled waves:** Abrupt changes between the Min/Max flow percentages
    - **Sinus wave:** Gentle increase/decrease of flow between the Min/Max flow percentages
3. Specify the **Min/Max/Random wave duration** for the selected WAVE pattern
4. If you want to run the pump(s) at a different % at night, **Enable** this option (as shown), then press **SAVE**
    - Specify the starting and ending times for this nocturnal mode
    - Pump(s) will run at the specified *at night* flow % during the specified time range



Your 1-10v pumps are now controlled by the ProfiLux!

These assigned pumps will now react according to the settings entered into the selected stream group.

React to a maintenance mode

The maintenance mode is a feature that temporarily turns OFF or ON specific Powerbar outlets. This feature can also be used to ramp down a 1-10v compatible return pump that is connected to the ProfiLux.

➢ See How to setup maintenance modes

How to setup Vortech pump control

This section will show you how to setup and control your Vortech pumps.

IMPORTANT: GHL Vortech Controller required

In order for the ProfiLux to control your Vortech pump(s), the GHL Vortech Controller accessory, PL-0757 is required. This accessory will allow the ProfiLux to wirelessly control your Vortech pumps.

IMPORTANT: Preliminary step – Assign PAB device

Before you proceed with the setup, you must assign the Vortech Controller accessory to the ProfiLux. If you have not yet assigned this PAB-device, please do so. If you are not sure how to do this, click here for the step-by-step instructions.

(ILLUSTRATIONS BELOW)

To setup Vortech pump control, follow these steps:

CLEAR THE DRIVER MEMORY OF YOUR VORTECH PUMP(S)

Do this for all pumps.

1. Press and hold the **MODE** and **SET** buttons together until the control dial blinks **red/white/blue**
2. Hold the **MODE** button until the dial blinks **red/purple**
3. Hold the **SET** button until the pump resets

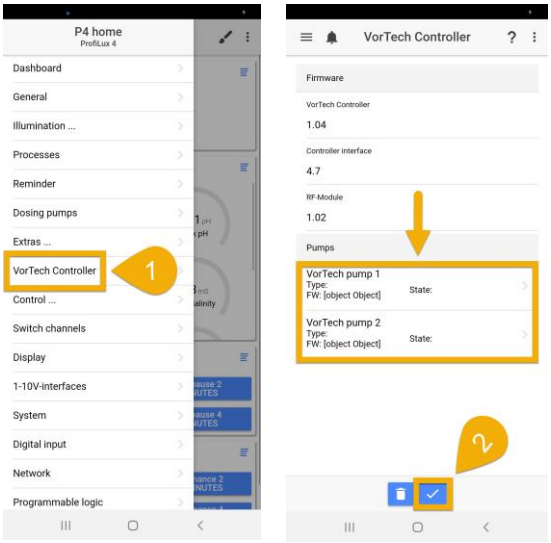
ENTER SETUP MODE FOR VORTECH PUMPS

Do this for all pumps.

1. Press and hold the **MODE** and **SET** buttons together until the control dial blinks **red/white/blue**
2. Press the **SET** button until the dial blinks **blue/yellow**

ASSIGN VORTECH PUMPS TO PROFILUX

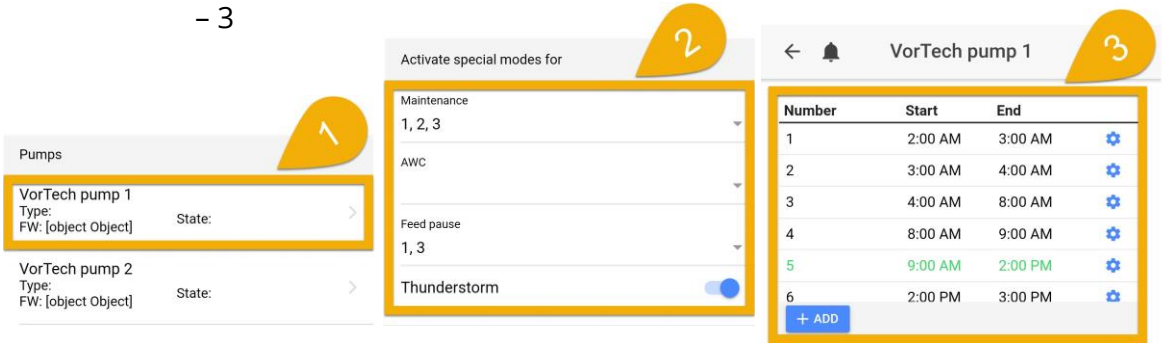
1. Press the **Menu** icon, select **Vortech Controller**
2. The Vortech controller will now display the pumps that is it detecting, press the **(√)** icon to assign the pump(s). Your Vortech driver dials will now turn green,



SETTING UP VORTECH PUMP FLOW SETTINGS & BEHAVIOR

1. Select a pump to open its settings page
2. Scroll to the bottom and specify if this pump will react to Maintenance modes, AWC events, Feed pauses event or Thunderstorm effect
3. At the top of the screen, you can either customize the existing flow settings or you can start from scratch. If you scroll down this table, you will also see the option to specify how the pump will react during a maintenance mode, AWC, Feed pause event or thunderstorm effect
   - Pressing the blue gear icon will open the control settings
   - If you wish to use the ProfiLux built-in *Stream pump* settings, select a time-point and select **ProfiLux controlled** mode, then specify the pump channel to assign it to. After doing this, you must assign this pump to a *Stream Group*. Click here for more info.
4. Press **SAVE**

- If you have multiple Vortech pumps, press the back-arrow and repeat steps 1 – 3



Your Vortech pump(s) will now be controlled by the ProfiLux!

How to setup dosing pump control

This section will show you how to create dosing schedules for various kinds of dosing pumps such as the GHL Doser 2.1, Doser Maxi, and traditional dosing pumps. Depending on the kind of dosing pump you plan to use, the initial setup steps will vary. These steps apply to Dosing pumps with a **PAB-port** and traditional dosing pumps.

Have a GHL Doser?

If you plan to use your ProfiLux 4 to control a GHL doser, the doser must FIRST be assigned to the ProfiLux 4 / 4e. Please click the link below and assign the doser to the ProfiLux:

Assign PAB-devices to the ProfiLux 4 / 4e

Once the doser has been assigned, you can proceed with the steps below.

Have a traditional ON/OFF doser?

If you plan to control a traditonal ON/OFF doser such as the ones sold by BulkReefSupply, please note that it must be connected to a controllable powerbar outlet.

Don’t forget to calibrate your dosing pumps!

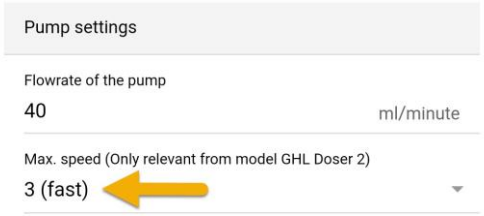
In order for dosing pumps to provide accurrate dosages, they must first be calibrated. The accuracy of a dosing pump is dependent on the accurracy of the calibration. For tips on acheiving maximum accuracy, click here.

Before calibrating, make sure your dosing lines are setup and you have graduated cylinder or measuring scale ready. This cup will be used to measure the amount of fluid dispensed during calibration.

CALIBRATION: PAB-device dosing pump

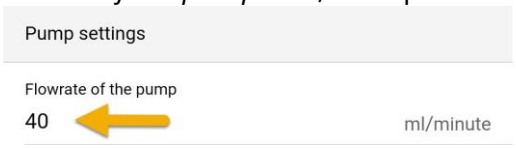
PAB-device dosing pump

1. Press the **Menu** icon, select **Dosing pumps**, select the pump to calibrate, select the desired pump speed, then press **SAVE**



2. Press **CALIBRATE PUMP**, then confirm by pressing **YES**. Dosing pump will run for 1 minute and dispense fluid into collection cup.

3. See how many ml was dispensed and enter this amount into the *Flowrate of the pump* box, then press **SAVE**



How-to video

Click the link below to watch our how-to video.

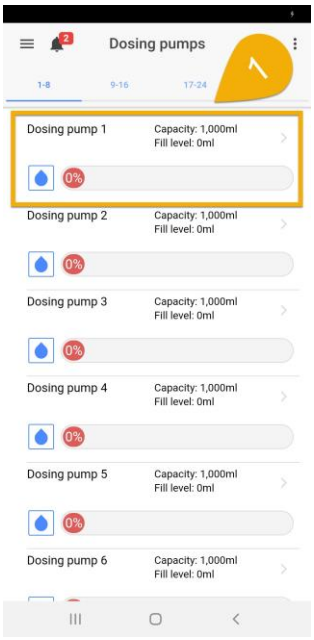
Creating a dose schedule / pump calibration:
https://youtu.be/UN8v3X48eiw?t=118

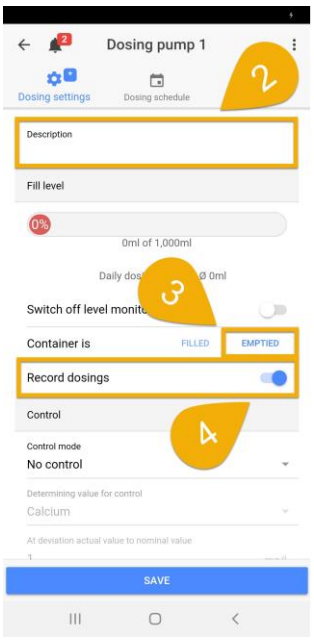
(ILLUSTRATIONS BELOW)

To setup a dosing pump schedule, follow these steps:

CONFIGURING DOSING PUMP SETTINGS

1. Press the **Menu** icon, select **Dosing pumps**, select a **dosing pump**
2. Type-in a description
3. Select *Container is **EMPTIED***
   - *"Emptied"* means the container is being emptied with each dose
   - *"Filled"* means the container is being filled with waste water
4. If you wish to have your dosages recorded, **Enable** Record dosages (As shown)
5. Type-in the **Capacity** of your dosing container, then press **REFILL CONTAINER** and type-in how many ml are now in the container, then press **SAVE**
   - If you want the ProfiLux to notify you when the container is at or below the





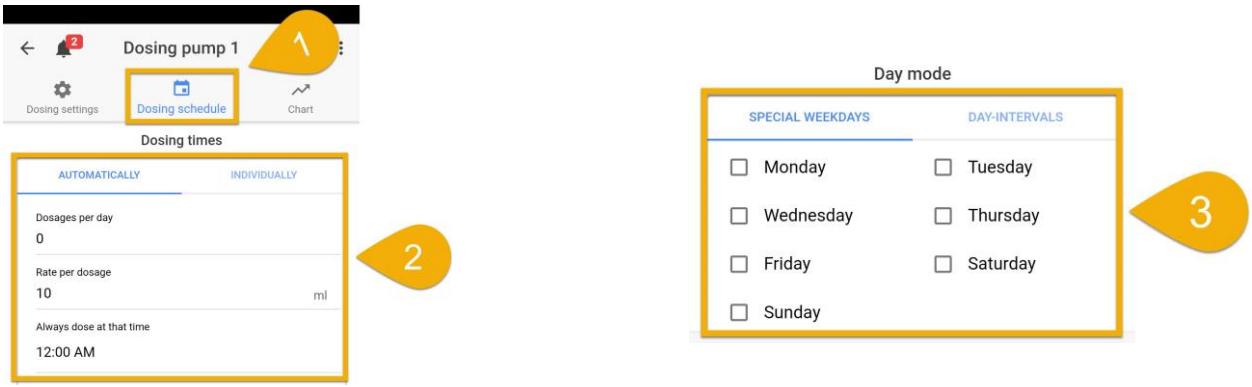
minimum, **enable** *Alarm if below minimum* and specify the min.point

The basic settings for your dosing pump is now setup!
The next step will be to create the schedule for the dosing pump.

CREATING A DOSING PUMP SCHEDULE

1. Press the **Dosing schedule** tab

2. Select a dosing mode
   - **Automatically**: Specify the doses per day, amount per dose and first dose time. For example, 5 doses per day and 10ml per dose = 50ml total dose. Total amount will be evenly spread throughout a 24 hour window.
   - **Individually**: Manually enter the time to dose and amount to dose at that time
3. Select a day mode, then press **SAVE**
   - **Special weekdays:** Allows you to choose specific days of the week to dose
   - **Day-intervals:** Allows you to specify how often to dose and set dosing delay, if needed



Traditional ON/OFF doser users...read this

If you just created a dose schedule for a traditonal ON/OFF doser, please connect this doser to an available outlet on your powerbar. Press the back-arrow, press the **Menu** icon, select **Switch channels**, select the outlet that has the pump connected to it and set the function to **Dosing pump**. Be sure to select the pump number you used to create the dose schedule, then press **SAVE**.

You've successfully created a dosing schedule!

Your dosing schedule will now run based on the schedule you set.

How to setup calcium reactor control

If you have a calcium reactor you'd like to control through the ProfiLux, this section will show you how to set that up.

DO YOU HAVE EVERYTHING YOU NEED?

In order for the ProfiLux to control a calcium reactor, you will need the following:

- **Available powerbar outlet:** For connecting the solenoid valve
- **Dedicated pH port / probe:** This probe will be installed inside the calcium reactor and will be the controller's primary means of turning the solenoid ON/OFF based on the pH valve of the calcium reactor chamber

IMPORTANT: Calibrate the pH probe first!

Before you proceed with the steps below, make sure you calibrate the pH probe which will be installed onto the calcium reactor chamber. If you have not done so yet, click here to see the steps for pH probe calibration.

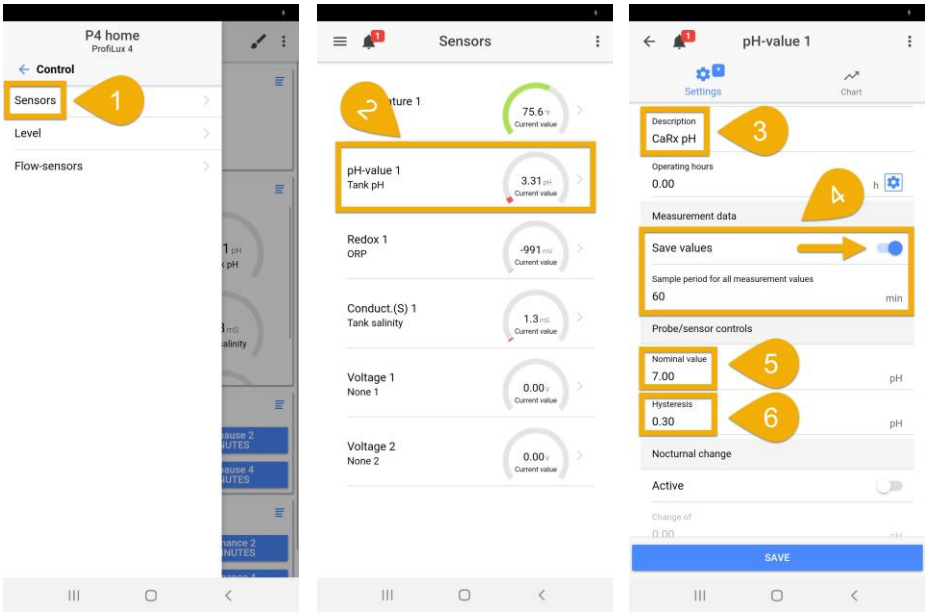
(ILLUSTRATIONS BELOW)

To setup calcium reactor control, follow these steps:

SETTING UP PH CONTROL SETTINGS

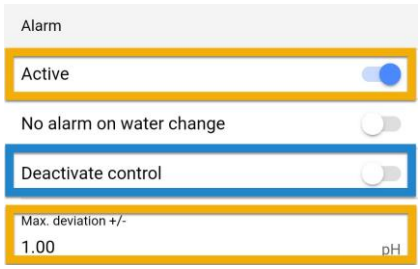
1. Press the **Menu** icon, select **Control**, select **Sensors**
2. Select the desired **pH** probe
3. Type-in a description; *CaRx pH*
4. Enable measurement recording and specify how often to collect data; 60 min works for most
   - This will allow the pH to record the levels in the calcium reactor which can be later viewed on a chart.
5. Set the desired **Nominal value**
   - This is where you type-in the pH value you want to maintain inside your calcium reactor
6. Set the desired **Hysteresis**, then press **SAVE**
   - The number you enter here will determine how much of a swing you are willing to allow in-between the nominal value. This determines when the pH control function is triggered.

- By default, this value is set to 0.20°C or 0.36°F. This value works for most individuals. If you want a tighter or wider range of control, type in a smaller or larger value. Be careful **NOT** to make the hysteresis too small because it will cause the solenoid to switch ON/OFF too quickly in-between reactions which may damage the solenoid and put heavier wear on the Powerbar outlet.



OPTIONAL: Trigger alarm for pH swings

If you wish to activate an alarm when the pH level rises or falls beyond a certain point, set the alarm to **ACTIVE** and set the maxiumum allowed deviation. If you want to turn OFF your solenoid when the temp reading goes outside the allowed deviation, ENABLE *Deactivate control*.

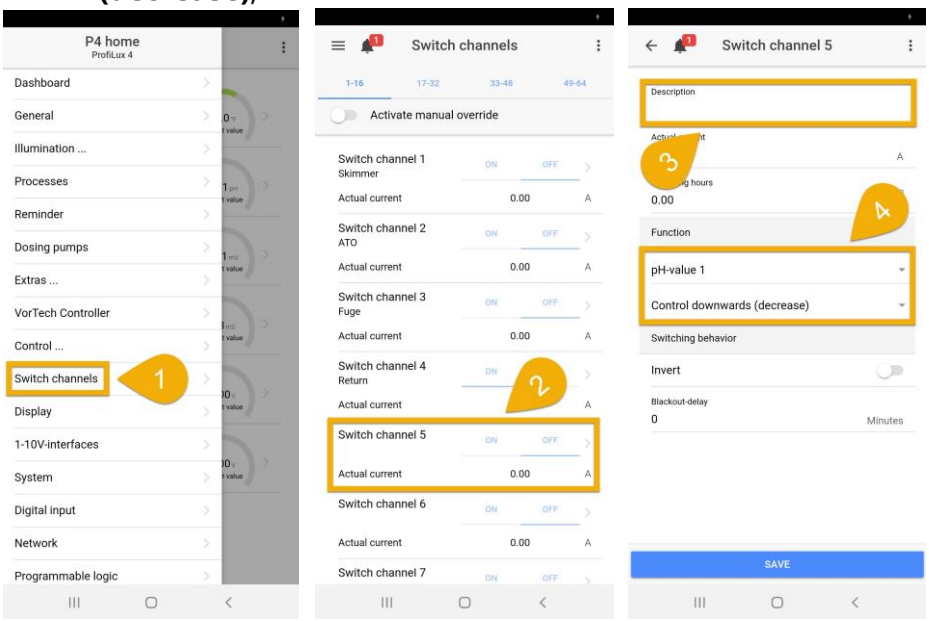


Your pH function is now created!

The next step will be to assign this function to the outlet that has or will have the Calcium reactor solenoid connected to it.

ASSIGNING THE FUNCTION

1. Press the back-arrow, press **Menu** icon, press the back-arrow, and select **Switch channels**
2. Select the outlet that has or will have the solenoid connected to it
3. Type-in a description; *Solenoid (CO2)*
4. Set the function to **pH value**, select the probe to use, select **Control downwards (decrease)**, then press **SAVE**



Your calcium reactor will now be controlled by the ProfiLux!

If you haven't done so yet, plug-in the solenoid valve to the Powerbar outlet you just assigned the pH control function to. Anytime pH climbs above the desired pH value, the ProfiLux will turn OFF the assigned outlet (solenoid). When pH falls back down to the desired value and lower, this same outlet will turn ON.

How to setup reminder notifications

Want to be reminded to change light bulbs or replace your carbon/phosphate media?

This section will show you how to create and configure reminders.

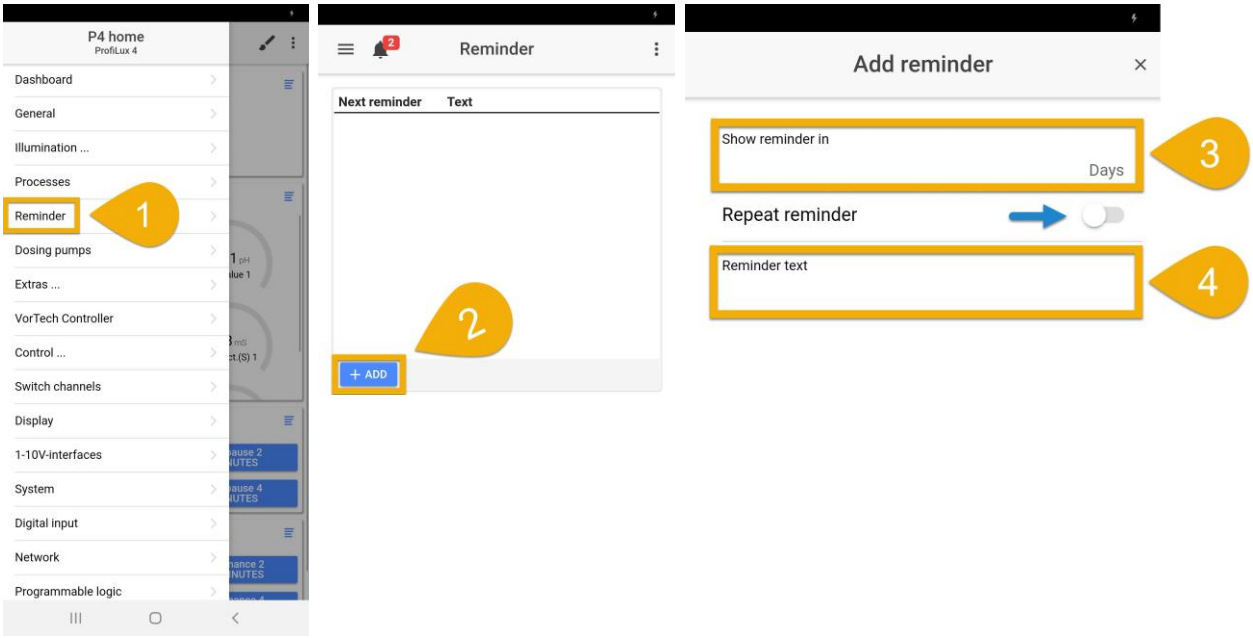
NOTE

ProfiLux 4 / 4e can support up to 16 different reminders.

(ILLUSTRATIONS BELOW)

To setup reminders, follow these steps:

1. Press the **Menu** icon, select **Reminder**
2. Press **ADD**
3. Specify in how many days the ProfiLux should notify you of this reminder
   - ➢ If you'd like to have this reminder on repeat, **enable** *Repeat reminder*
4. Type-in the text you want see on the day of the reminder, then press **ADD**
5. Repeat steps 2 – 4 until you've added all your reminders, then press **SAVE**



You've now setup a reminder notification on your ProfiLux!
Every time a reminder event occurs, the chosen text will be shown on the ProfiLux 4 display and in the notification tab (bell icon) in the app.

How to setup Feed pause functions

If you have certain Powerbar outlets that you'd like to turn OFF during feeding time, you can configure the ProfiLux 4 / 4e to temporarily turn these off. This section will show you exactly how to do that. First, you will create the function, then you will assign the function to an outlet on your GHL Powerbar.

TIP

This feature can be used to turn off your skimmer, return pump, or any device connected to a powerbar outlet. You can also configure flow pumps to turn off or run at minimum speed during FP. This option is available in the STREAM GROUP settings page and will not be covered in this section.

SHORTCUT KEY for Feed Pause

Feed pause can be activated by pressing the (X) key on the ProfiLux 4 controller. Select which FP to activate and the function will be enabled.

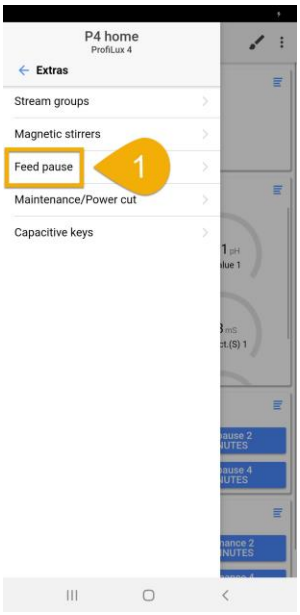
(ILLUSTRATIONS BELOW)

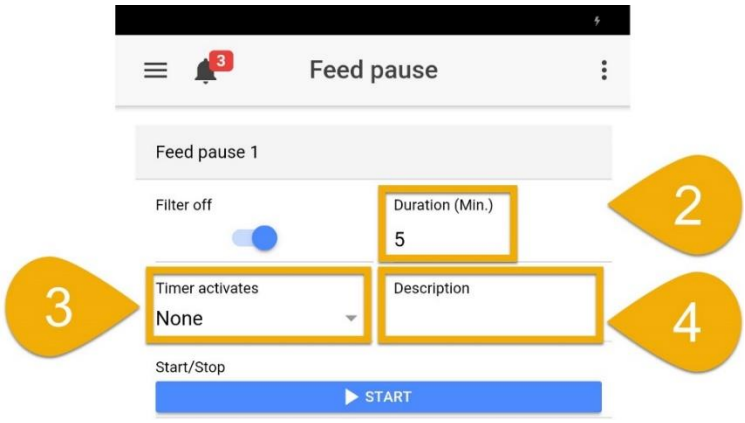
To setup a Feed pause function, please follow these steps:

CREATING THE FUNCTION

1. Press the **Menu** icon, select **Extras**, select **Feed pause**
2. Choose a Feed pause and specify how long this FP will run for; *1 – 120 minutes*
3. If you'd like to use a standard Feed pause, leave this section as-is.
   - By selecting **None,** the FP will **only** activate after you manually activate the function.
   - If you want this FP automatically activated on a set schedule (via timer), select the timer function (1-32) which will activate it. After you finish setting up the FP, go to the chosen TIMER function, set mode to EVENT START, click NEW and specify at what time this TIMER should activate the Feed Pause.

4. Type in a description, then press **SAVE**



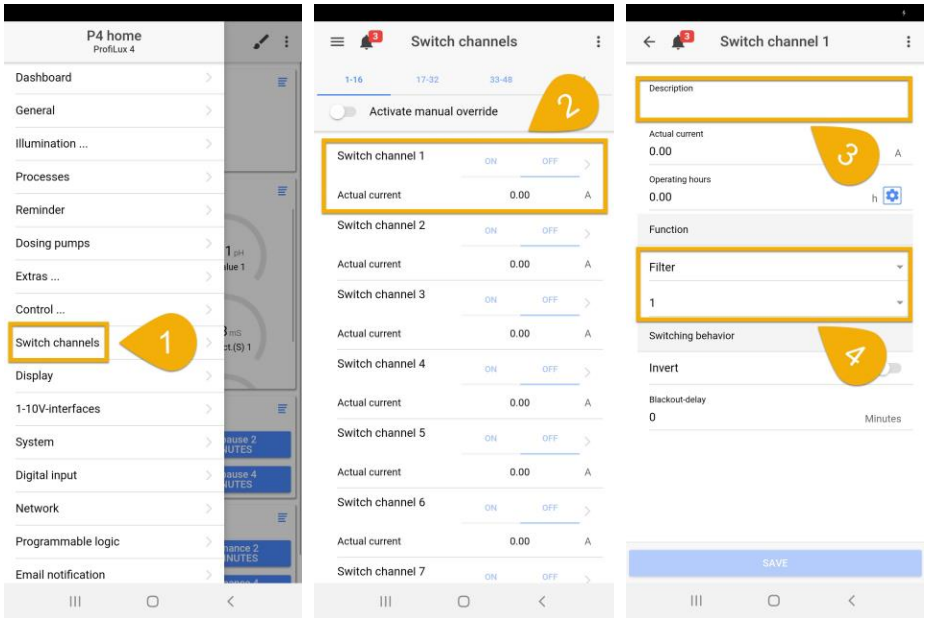


NOTE

In the *Filter off* section, you will see the option enabled. This means when a certain FP is activated, any powerbar outlet with the corresponding function – FILTER will be turned OFF. An unchecked box will not affect those outlets.

ASSIGNING THE FUNCTION

1. Press the **Menu** icon, press the back-arrow, select **Switch channels**
2. Select the Powerbar outlet(s) that you want reacting to this FP.
3. Type-in a description
4. Set the function to **FILTER** and select the FILTER number you used when you created the filter function, then press **SAVE.**
   - ➢ For example, if you created the function on FEED PAUSE 1, set the function to FILTER 1. If FEED PAUSE 2 was used, set the function to FILTER 2, etc.



Your feed pause is now setup!

Anytime a FP is activated (manually or by timer), the sockets assigned to the **Filter** function will turn OFF (if Filter OFF option is enabled). Once the FP ends, those same outlets will turn back ON.

How to setup Maintenance modes

ProfiLux 4 / 4e can be configured to temporarily shut down specific outlets, 1-10V devices, and Mitras Lightbar. This feature is especially useful for manual water changes or general maintenance tasks. When activated, specific devices will be turned OFF for a certain amount of time, then turned back ON after the time has elapsed.

TIP

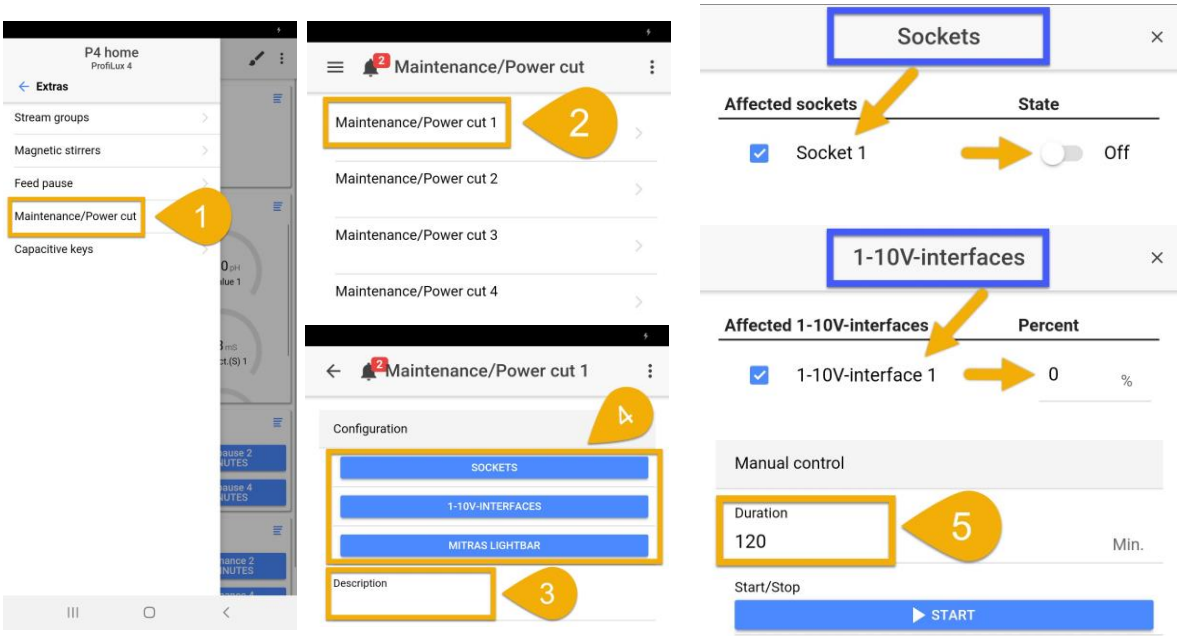
You can have up to 4 independent maintenance modes.

(ILLUSTRATIONS BELOW)

To setup Maintenance mode, please follow these steps:

1. Press the **Menu** icon, select **Extras**, select **Maintenance/Power cut**
2. Select a **Maintenance** option

3. Type-in a description
4. Choose the **Sockets**, **1-10v interfaces**, or **Mitras Lightbar** that will react to this mode, then press **APPLY**
    i. **Sockets:** Select the desired outlets, then set them to turn ON or turn OFF when this mode is activated, then press **Apply**
    ii. **1-10V-interface:** Select the desired 1-10v channels and specify the percentage it will run on when this mode is activated, then press **Apply**
    iii. **Mitras Lightbar:** Select the channel(s) that will react and brightness, then press **Apply**
5. Specify how long this maintenance mode should run for, then press **SAVE**
    - 240 minutes (4 hours) is the maximum allowed time



Your maintenance mode is now setup!

Anytime you want to activate a maintenance mode, you can do so by going to the dashboard.

How to setup ATO control (1 or 2 sensors)

This section will show you how to setup and assign an ATO function to an outlet on your Powerbar.

In order to setup ATO control, you will need certain items. These items can be purchased at your preferred GHL dealer:

ATO w/ 1 sensor

- PL-1095 PL-LF-Base 2 (Assembly rod)
- PL-0077 Float sensor OR PL-0082 Optical sensor
- PL-0723 PL-LF-S12 (For optical sensor)
- PL-0080 PL-LF-S8 (For float sensor)

ATO w/ 2 sensors

- PL-1095 PL-LF-Base 2 (Assembly rod)
- *Any combination of 2 sensors:* PL-0077 Float sensor OR PL-0082 Optical sensor
- PL-0723 PL-LF-S12 (For optical sensor)
- PL-0080 PL-LF-S8 (For float sensor)

NOTE

This section will **only** show you how to get an ATO function running with a dedicated ATO pump connected to an outlet on your powerbar.

How-to video

Click the link below to watch our how-to video.

1-sensor ATO setup:
https://youtu.be/ucXcsm46GnU

2-sensor ATO setup:
https://youtu.be/GMPOP1bN2Pw

Using a GHL Doser as a dedicated ATO pump?

If you have an available Doser 2.1 or Maxi dosing pump and want to use it as a dedicated ATO pump, click the link below to watch our how-to video.

Using GHL Doser as ATO pump:
https://youtu.be/dskABZwjsoA

(ILLUSTRATIONS BELOW)

To setup ATO control, follow these steps:

CONNECT ALL ACCESSORIES

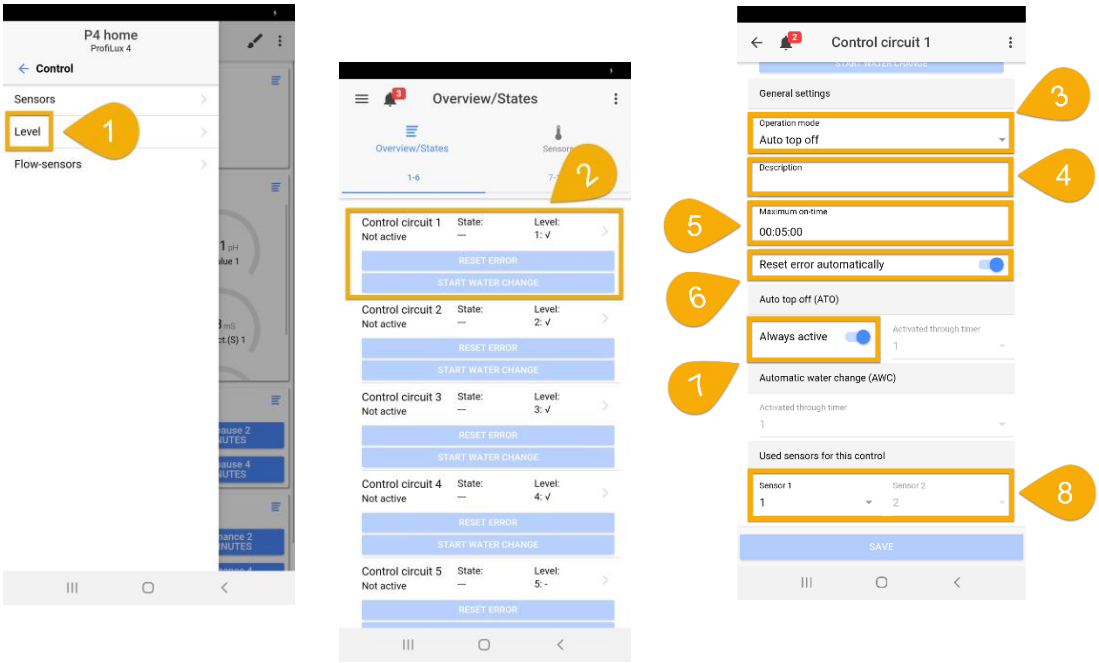
1. Connect a GHL Float or Optical sensor to an available Level-port on your ProfiLux
    - Take note which color port on the ProfiLux you are connecting the sensor(s) to
        i. **Purple port:** Level 1/2
        ii. **Green port:** Level 3/4
    - If you are connecting the sensor(s) to an expansion card or Expansion Box 2, the Level-port numbering will continue beyond Level 3/4
        i. For example, if you have a PLM-4Level expansion card, the Level numbering would be 5/6 for one port and 7/8 for the second port
        ii. If you do not have any Level-port expansion cards on the P4 / 4e and instead have an Expansion Box 2, Level 1/2 on the EXB2 would actually be Level 5/6
    - If a single sensor is connected directly to a Level-port, the Level sensor will be assigned to the first number of that Level-port
        i. For example, if a single sensor is connected to Level 1/2, the sensor would automatically be assigned as Level sensor #1

CREATING THE FUNCTION

1. Press the **Menu** icon, select **Control**, select **Level**
2. Select an unused CONTROL CIRCUIT
3. Set the *Operation mode* to **Auto Top Off**, **Min/Max control** **OR** **ATO w/ 2 sensors**
    - The *Operation mode* you select will depend on how you wish to use the ATO function
    - **Auto Top Off:** Normal 1-sensor ATO
    - **Min/Max control:** 2-sensor ATO; one sensor is lower and one sensor is upper. When lower sensor is triggered ATO will run and stop when water level reaches upper sensor.
    - **ATO w/ 2 sensors:** Both sensors placed side-by-side; ATO is triggered only when both sensors detect low water level
4. Type-in a description; *ATO*
5. Set the Maximum on-time

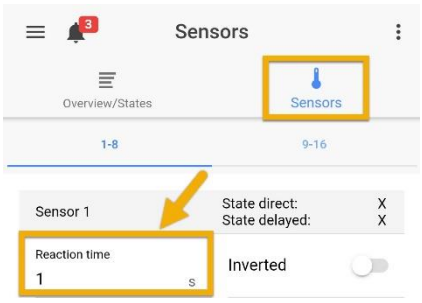
- This is the failsafe that will turn OFF the assigned Powerbar outlet in case the sensor does not respond. If the specified time limit expires, the failsafe will be triggered with an alarm and the assigned outlet will turn OFF.
- **To disable this feature,** set the Max on-time to (0)

6. If an alarm is activated by this function, you can have the alarm automatically reset when normal operation is detected. To automatically reset the alarm, **enable** this feature as shown below **(Recommended)**
   - If this is disabled and an alarm is triggered by this function, the ProfiLux will keep the alarm active and keep the assigned Powerbar outlet OFF until you manually reset the error
7. If you want to use the ATO 24/7, **leave as-is**
   - If you'd prefer to have the ATO run at certain days or times, disable this option and select the Timer which will control this ATO. Later, you will need to go to the chosen Timer function, set the switch mode **Normal**, then specify the ON/OFF times and days. See How to setup normal ON/OFF timers.
8. Select the sensor that will be used for this function, then press **SAVE**
   - For example, if you are using a 1-sensor ATO and have it connected directly to the LEVEL 1/2 port, select (1)
   - If you are using a 2-sensor ATO and have it connected via a splitter cable to the LEVEL 1/2 port, select (1) and (2)



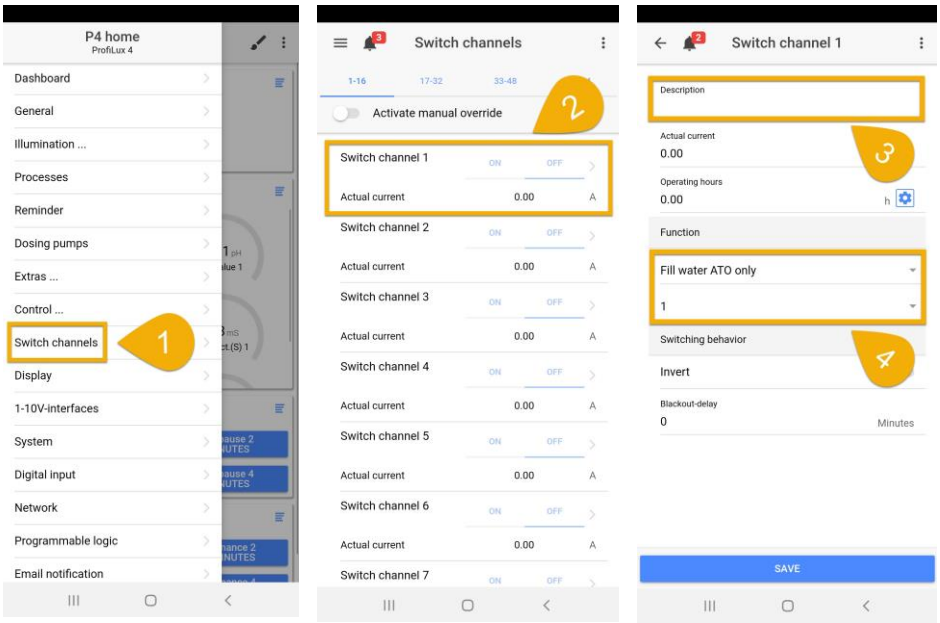
Want to delay the reaction time of a sensor?

Delaying the reaction time of a sensor can prevent the sensor/outlet from switching ON/OFF too often. If you need to delay the reaction of a level sensor, press the back-arrow, select the **Sensors** tab, specify the **Reaction time** of the selected sensor, then press **SAVE**.



ASSIGNING THE FUNCTION

1. Press the **Menu** icon, press the back-arrow, select **Switch channels**
2. Select the Powerbar outlet that has the ATO pump connected to it
3. Type-in a description; *ATO pump*
4. Set the function to **Fill water ATO only** and select the *Control Circuit* number you used when you created the ATO function, then press **SAVE**
    - ➢ For example, if you created the function on *Control circuit* 1, set the function to FILL WATER (ATO ONLY) 1. If *Control circuit* 2 was used, set the function to FILL WATER (ATO) ONLY 2.



Your ATO function is now setup!
Anytime the water level in your sump drops below the ATO sensor, the assigned outlet will turn ON. Once the water level comes back to normal, the assigned outlet will turn OFF.

How to setup Automatic Water Changes

This section will show you how to setup and assign an Automatic Water Change function.

In order to setup AWC control, you will need certain items. These items can be purchased at your preferred GHL dealer:

Items needed for AWC control

- PL-1095 PL-LF-Base 2 (Assembly rod)
- Any combination of 2 sensors: PL-0077 Float sensor OR PL-0082 Optical sensor.
- PL-0723 PL-LF-S12 (For optical sensor)
- PL-0080 PL-LF-S8 (For float sensor)

Standard AWC function

The standard AWC function works alongside 2x GHL sensors and 2x utility pumps. If you'd prefer to use 2x dosing pump heads, that is also possible.

NOTE

AWC functions are activated through a TIMER function. In the steps below, you will select a TIMER to use for activating the AWC command.

How-to video

Click the link below to watch our how-to video.

Automatic Water Change setup:
https://youtu.be/xAqrTwi1fSk

Want to use a GHL Doser for your AWC?

If you prefer to use the heads on your Doser 2.1 or Maxi for AWC, click the link below to see how it's done.

Using GHL Doser for AWC control:

https://youtu.be/l1pPprKKFjI

(ILLUSTRATIONS BELOW)

To setup AWC control, follow these steps:

CONNECT ALL ACCESSORIES

1. Connect the 2x GHL Float or Optical sensors to an available Level-port on your ProfiLux
    - Take note which color port on the P4 / 4e you are connecting the sensors to
        i. **Purple port:** Level 1/2
        ii. **Green port:** Level 3/4
    - If you are connecting the sensors to an expansion card or Expansion Box 2, the Level-port numbering will continue beyond Level 3/4
        i. For example, if you have a PLM-4Level expansion card, the Level numbering would be 5/6 for one port and 7/8 for the second port.
        ii. If you do not have any Level-port expansion cards on the P4 and instead have an Expansion Box 2, Level 1/2 on the EXB2 would actually be Level 5/6.
    - If a single sensor is connected directly to a Level-port, the Level sensor will be assigned to the first number of that Level-port
        i. For example, if a single sensor is connected to Level 1/2, the sensor would automatically be assigned as Level sensor #1.

CREATING THE AWC FUNCTION

1. Press the **Menu** icon, select **Control**, select **Level**
2. Select an unused CONTROL CIRCUIT
3. Select the desired *Operation mode* to **Water change OR ATO & Water change**
    - **Water change:** Standard WC option
    - **ATO & Water change:** Similar to Water change, but also includes the ATO function where the top (max-point) sensor will serve for both ATO and AWC functions
        i. If this option is selected, select if you want the ATO function always active
4. Type-in a description; *AWC*
5. Set the Maximum on-time
    - This is a failsafe feature that will turn OFF the assigned Powerbar outlets in case the assigned float and/or optical sensors do not respond. If the

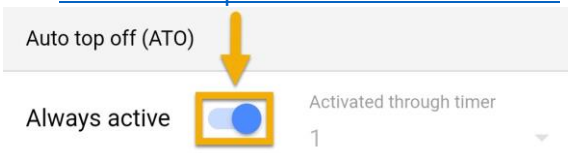
specified time limit expires, the failsafe will be triggered with an alarm and the assigned outlets will turn OFF.

- **To disable this feature**, set the Max on-time to (0)

Did you select ATO & Water change?

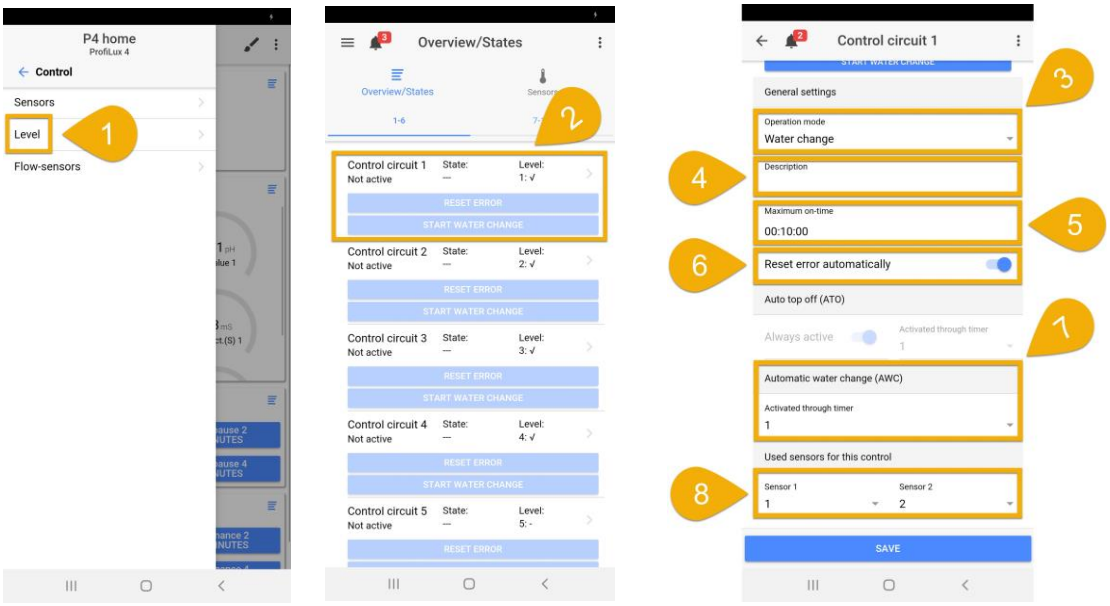
If you selected the **ATO & water change** operation mode, select if you want the ATO function to run 24/7 or be controlled by a TIMER function, **Always on** (as shown). If you want the ATO to be controlled by a timer, disable this option, select the timer number. You will need to go to that timer function and specify the ON/OFF time and day **after you complete the AWC setup**.

See How to setup normal ON/OFF timers.



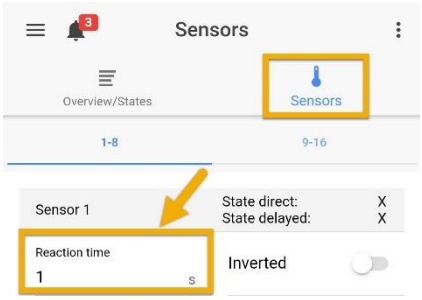
6. If an alarm is activated by this function, you can have the alarm automatically reset when normal operation is detected. To automatically reset the alarm, **enable** this feature as shown below **(Recommended)**
   - If this is disabled and an alarm is triggered by this function, the ProfiLux will keep the alarm active and keep the assigned Powerbar outlet OFF until you manually reset the error
7. Select the TIMER number that will be responsible for activating the AWC function
   - Select a TIMER number that is not currently being used. You will go to this TIMER function and configure it shortly
8. Select the sensors that will be used for this function, then press **SAVE**
   - For example, if you have a single sensor connected to the Level 1/2 port, select 1

- If you are using a splitter cable and have both sensors connected to Level port 1/2, select 1 and 2. Same rules apply for if these sensors are connected to Level port 3/4, 5/6, etc.



Want to delay the reaction time of a sensor?

Delaying the reaction time of a sensor can prevent the sensor/outlet from switching ON/OFF too often. If you need to delay the reaction of a level sensor, press the back-arrow, select the **Sensors** tab, specify the **Reaction time** of the selected sensor, then press **SAVE**.



Your AWC function is now created!

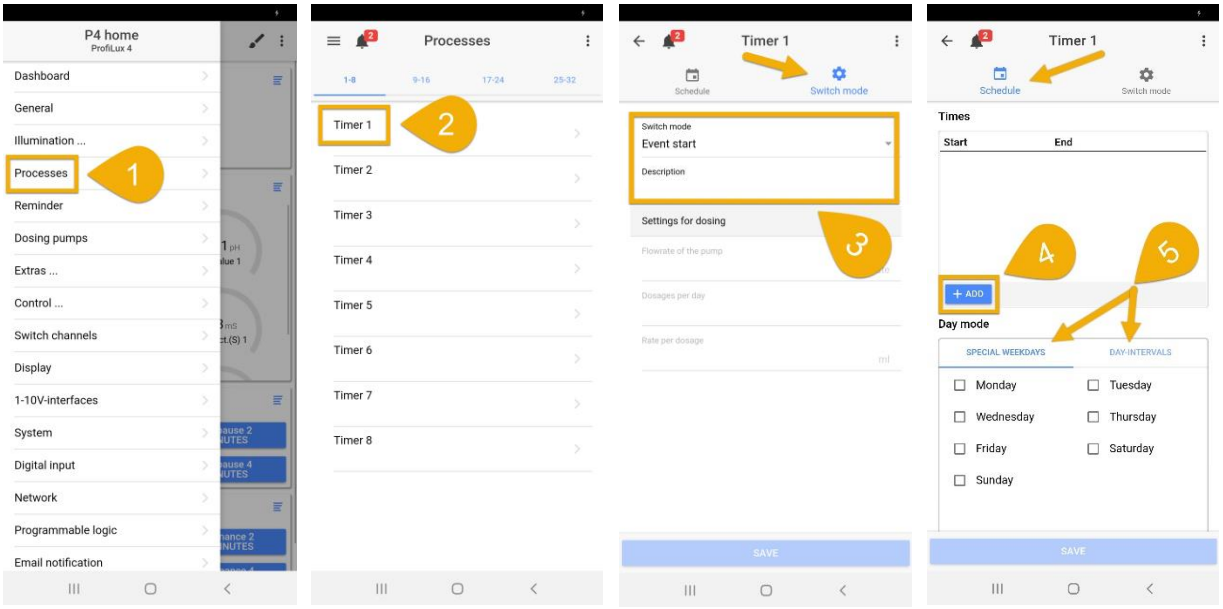
Now it's time to specify what days and times the AWC task will happen.

CREATING THE AWC SCHEDULE

1. Press the back-arrow, press the **Menu** icon, press the back-arrow, select **Processes**
2. Select an unused **Timer** function
3. Press the **Switch mode** tab, select **Event start**, then type-in a description
4. Press the **Schedule** tab, press **ADD** and specify the time the AWC will begin

- If you want to do multiple WC throughout the day, press ADD again and specify each starting time.

5. Select a Day mode
   - **Special weekdays:** Allows you to choose the days of the week to activate the WC
   - **Day intervals:** Allows you to choose how often to run the WC in intervals
     i. For example, *Repeat every* 3 days = WC will run every 3 days
     ii. *Starting in* is a delay. If you want to delay the WC, specify by how many days.
6. Press **SAVE**



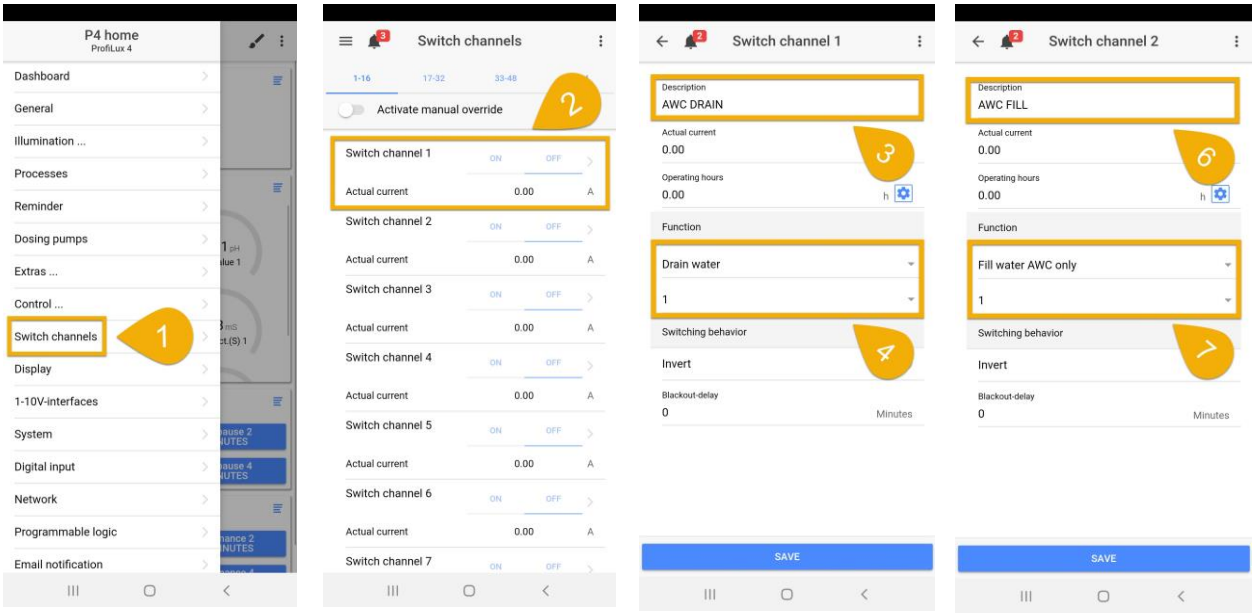
You've now specified the times of your water change!
The last part will be to assign the AWC task to the desired powerbar outlets.

ASSIGNING THE FUNCTION

1. Press the back-arrow, press the **Menu** icon, select **Switch channels**
2. Select the outlet that has the **AWC DRAIN** pump connected to it
3. Type-in a description; *AWC DRAIN*
4. Set the function to **Drain water**, select the *Control Circuit* number you used when you created the AWC function, then press **SAVE**

- For example, if you created the AWC function on *Control circuit 1*, set the function to DRAIN WATER 1. If *Control circuit* 2 was used, set the function to DRAIN WATER 2.

5. Press the back-arrow, then select the outlet that has the **AWC FILL** pump connected to it
6. Type-in a description; *AWC FILL*
7. Set the function to **Fill water AWC only**, select the *Control Circuit* number you used when you created the AWC function, then press **SAVE**
    - Similar to step 4, if you created the AWC function on *Control circuit 1*, set the function to FILL WATER (AWC ONLY) 1.



Did you select ATO & Water Change?

If during the AWC function setup you selected the *Operation mode*, ATO & WATER CHANGE, you must select the outlet that has your ATO pump connected and assign the function, **Fill water ATO only**.

Your AWC task is now setup!

Your WC task will now begin according to the schedule you specified.

How to setup Leakage detection

ProfiLux 4 / 4e is equipped with a Leakage detection feature which can be set to notify you of a leak. This feature can also be used to shut down certain Powerbar outlets in cases where a leak is detected or shut down return pumps if the sump water level gets too low. This section will show you how to setup Leakage detection and assign outlets to turn OFF in case of a leak or low sump water level. First, you will create the function, then you will assign the function to an outlet on your GHL Powerbar.

In order to setup standard Leakage detection, you will need certain items. These items can be purchased at your preferred GHL dealer:

- PL-0851 – Leakage interface (For connecting to the P4 / 4e Controller)
- PL-0850 – Leakage sensor (For connecting to the Leakage interface)

TIP: Daisy chaining Leak Sensors

If you wish to expand the leakage detection area, simply daisy chain multiple leak sensors together. All leak sensors connected to a Leak interface will react as a single unit. By default, if **any** of these sensors detect conductive water, the P4 / P4e will notify you of a leak and shut down assigned powerbar outlets.

TIP: Prevent overflows and pumps from running dry

The Leak detection feature can also be used with our float and optical sensors. This is especially useful for preventing sumps from overflowing, shutting down skimmers if sump water level gets too high, etc.

Want to have independent leak reactions?

In order to setup independent leak reactions, you will need a separate Leak interface.
For example, let's say you wanted to have a leak sensor placed on top of a skimmer cup to prevent cup overflow **and** also wanted to have a leak sensor placed near the display tank. If you **DO NOT** want these sensors to react together, you will need 2 Leak interfaces for independent control.

How-to video

Click the link below to watch our how-to video.

Leak detection setup:

https://youtu.be/G46NmAAXKnk

(ILLUSTRATIONS BELOW)

To setup Leakage detection, please follow these steps:

CONNECT ALL ACCESSORIES

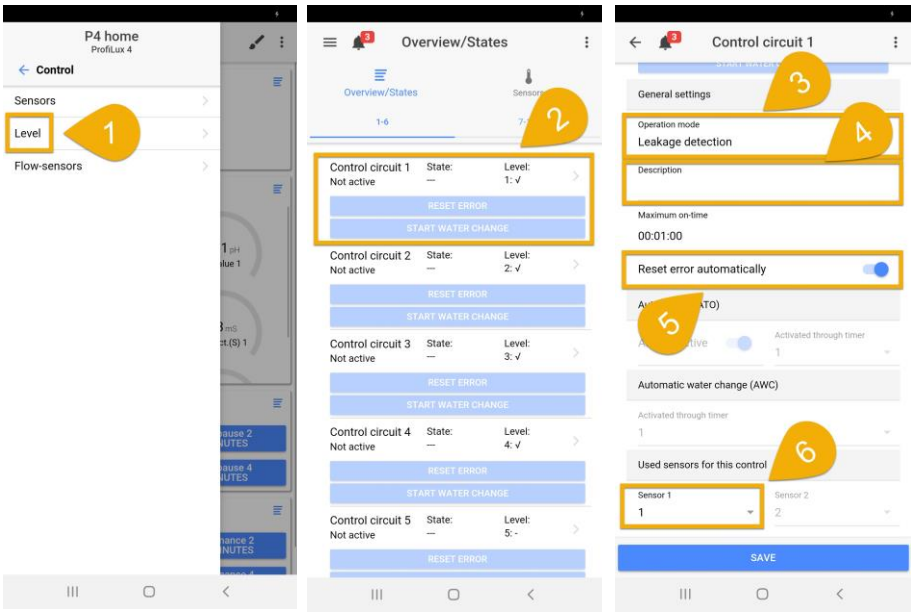
1. Connect the GHL Leak interface, Float sensor, or Optical sensor to an available Level-port on your P4 or P4e.
    - Take note which color port on the P4 or P4e you are connecting it to.
        i. **Purple port:** Level 1/2
        ii. **Green port:** Level 3/4
    - If you are connecting the Leak interface, float, or optical sensor to an expansion card or Expansion Box 2, the Level-port numbering will continue beyond Level 3/4.
        i. For example, if you have a PLM-4Level expansion card, the Level numbering would be 5/6 for one port and 7/8 for the second port.
        ii. If you do not have any Level-port expansion cards on the P4 and instead have an Expansion Box 2, Level 1/2 on the EXB2 would actually be Level 5/6.
    - If a single sensor is connected directly to a Level-port, the Level sensor will be assigned to the first number of that Level-port.
        i. For example, if a single sensor is connected to Level 1/2, the sensor would automatically be assigned as Level sensor #1.
2. Connect the Leak sensor(s) to the Leak interface. (Applies ONLY to those using Leak sensors.)

CREATING THE FUNCTION

1. Press the **Menu** icon, select **Control**, select **Level**
2. Select an unused CONTROL CIRCUIT
3. Set the *Operation mode* to **Leakage detection**
    - Maximum on-time is not involved here. No changes need to be made.
4. Type-in a description; *Leak detection (Sump)*
5. If an alarm is activated by this function, you can have the alarm automatically reset when normal operation is detected. To automatically reset the alarm, **enable** this feature as shown below **(Recommended)**

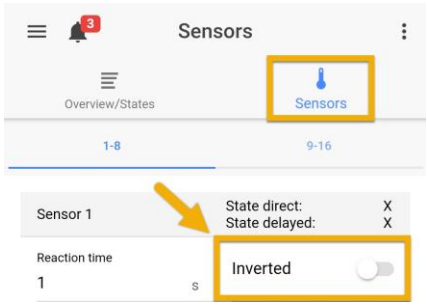
- If this is disabled and an alarm is triggered by this function, the ProfiLux will keep the alarm active and keep assigned Powerbar outlet OFF until you manually reset the error

6. Select the sensor number that will be used for this function, then press **SAVE**
   - For example, if you have the Leak interface or other sensor connected to the Level 1/2 port without a splitter, select 1.
   - If you are using a splitter cable on Level 1/2 and already have Level 1 assigned, select 2.



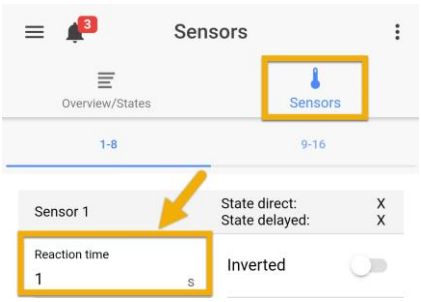
Using a Float or Optical sensor for a return pump?

If you are using this feature for the purpose of shutting down your return pump if sump water level gets too low, you **MUST** invert the reaction of the sensor. To do that, press the back-arrow, select the **Sensors** tab and set invert the reaction of the desired sensor, then press **SAVE**.



Want to delay the reaction time of a sensor?

Delaying the reaction time of a sensor can prevent the sensor/outlet from switching ON/OFF too often. If you need to delay the reaction of a level sensor, press the back-arrow, select the **Sensors** tab, specify the **Reaction time** of the selected sensor, then press **SAVE**.



Your leak detection function has now been created!

The next step will be to assign this function to the Powerbar outlet that will react to it.

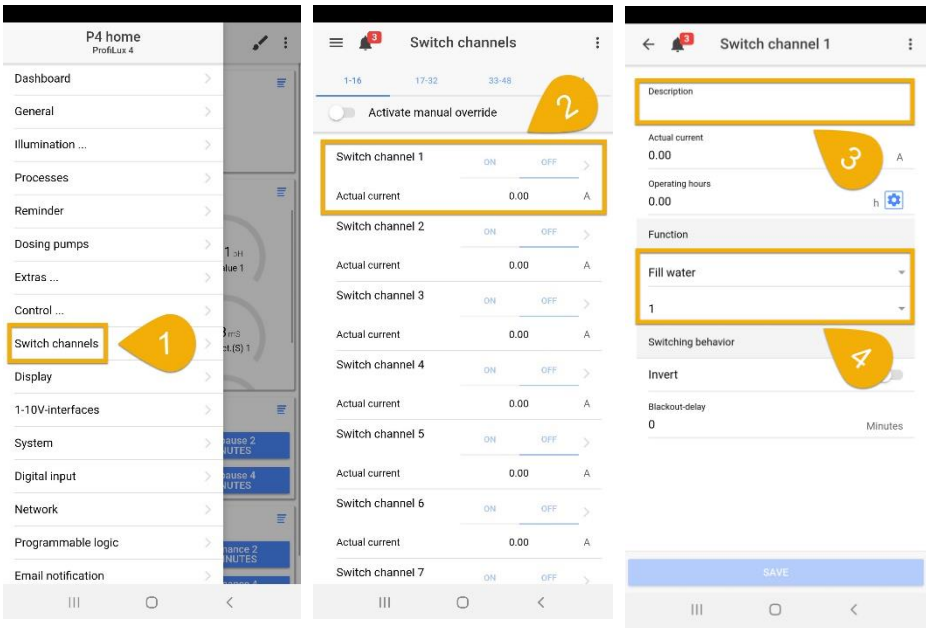
ASSIGNING THE FUNCTION

1. Press the **Menu** icon, press the back-arrow, select **Switch channels**
2. Select the Powerbar outlet(s) that you want reacting to this leakage function
3. Type-in a description
4. Set the function to **Fill water** and select the *Control circuit* number you used when you created the Leakage detection function, then press **SAVE**
   - For example, if you created the function on Control circuit 1, set the function to FILL WATER 1. If Control circuit 2 was used, set the function to FILL WATER 2.
5. Repeat Steps 2 – 4 as necessary

NOTE

By default, the assigned sockets will stay ON with this function. When a sensor detects a leak or a sensor is triggered, the assigned socket will turn OFF until the alarm is reset or problem is solved.

For those using a float or optical sensor for their return pumps, since the sensor reaction is inverted, the socket will stay ON when the sensor is in the water. The socket will turn OFF when it is no longer in the water.



Your leak detection is now setup!

If any of the leak sensors detect conductive water, the ProfiLux will trigger an alarm and shut OFF any assigned Powerbar outlets.

How to setup email and text notification

The ProfiLux 4 / 4e email and text notification feature can send you periodic updates on the status of your aquarium. With this feature, you can also have the ProfiLux notify you when an alarm is activated. For this to work, your ProfiLux **must be connected** to the internet.

IMPORTANT: SMTP mail server

In order to setup email/text notification, you will need to know the **SMTP** domain mail server name for your email provider. A list of email providers with their domain mail servers and port numbers can be found here. Click the link and write down the STMP server name. You will need this info during setup.

Have a Gmail account?

For those with Gmaill accounts, do the following before proceeding any further:

1. Enable **2-step verification** on your account by clicking here
2. Add the P4 as an app by clicking here
3. Select **Other**, type-in **ProfiLux 4** , then click **Generate**

4. Write down the generated password w/out spaces; this is what you will enter later as the password for your email address

Want to receive text message notifications?

Certain cell phone providers allow you to receive email notifications in the form of a text message. With that capability you can have your ProfiLux send you text message alerts and notifications.

Here are some examples of popular wireless carriers:

- **Verizon wireless:** 10digitcellphonenumber@vtext.com
- **AT&T:** 10digitcellphonenumber@txt.att.net
- **T-mobile:** 10digitcellphonenumber@tmomail.net

(ILLUSTRATIONS BELOW)

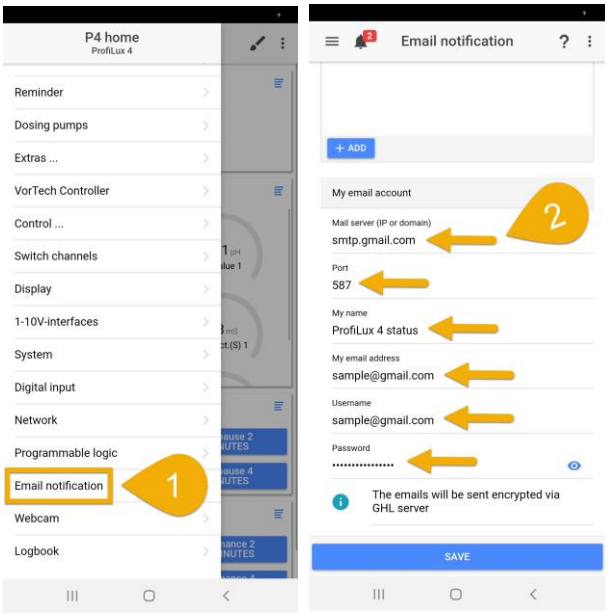
To setup Email notification, please follow these steps:

CONFIGURING P4 EMAIL NOTIFICATION

1. Press the **Menu** icon and select **Email notification**
2. In the *My email* account section, fill-in the following fields
   - **Mail server (IP or domain):** Type-in the SMTP server name for your email provider
     - **Example (Gmail):** smtp.gmail.com
   - **Port:** Type-in the port number for your SMTP email server
     - **Example (Gmail):** 587
   - **My name:** Type-in the name that will be shown in the email
   - **My email address:** Your email address goes here
   - **Username:** Your email address goes here

- **Password:** Your email password goes here (16 character limit)
  - **Example (Gmail):** Here is where you enter the generated password

3. Press **SAVE**



CREATING AN EMAIL NOTIFICATION

1. Press **ADD**
2. Type-in the recipient's email address
3. Type-in the subject of the notification
4. Choose a message type
   - **Basic:** Leave option disabled if you want to send a single pre-defined message
   - **Advanced:** Enable this option if you want to send multiple bits of info in this message **(Recommended)**
5. Select the message to include in the message body.
   - **Advanced:** Press **Generate script/token**, select the scripts to include, then press **ADD**

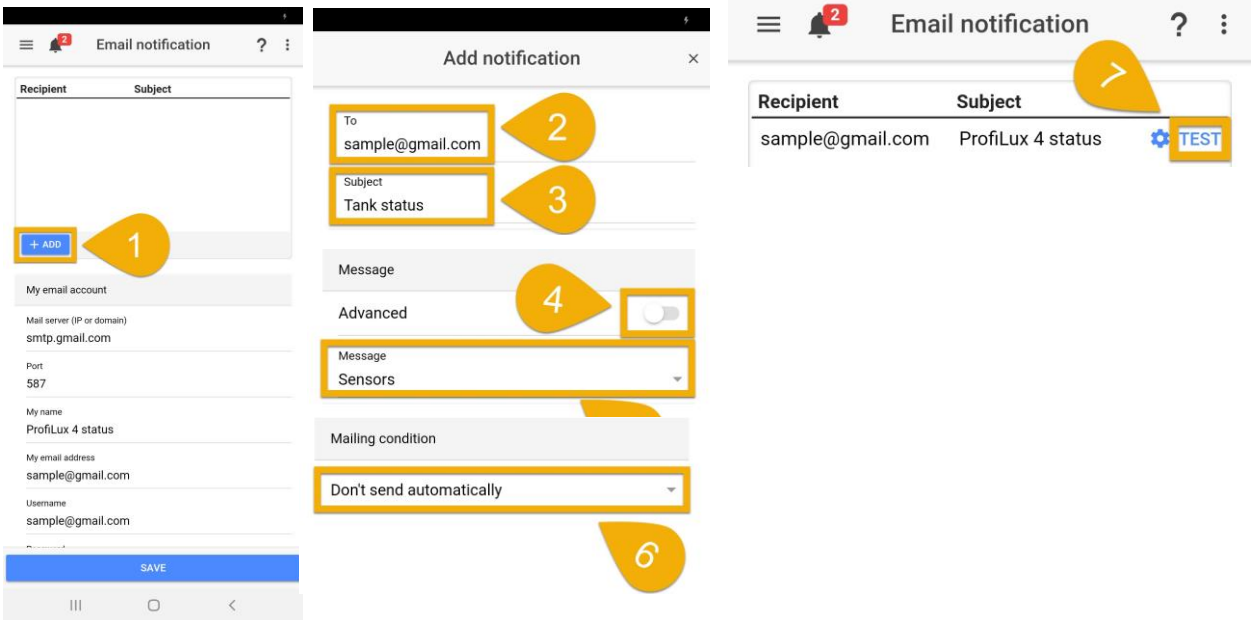
Want to see probe and outlet descriptions?

By choosing the advanced message option, you can customize the message and content sent by the ProfiLux. **Copy & paste** this to the message body to recieve an email that includes your probe status, probe description, powerbar outlet number, outlet description, and current status of each outlet.

```
$$REPS[32][0]$$$$SEND[x]$$ : $$SENV[x]$$
$$REPE$$

$$REPS[64][2]$$$$SWIN[x]$$ : $$SWID[x]$$ : $$SWIS[x]$$
$$REPE$$
```

6. Choose when to send this notification, then press **SAVE**
   - **Don't send automatically:** Message will be sent only when manually sent
   - **Always:** With this option, you can have a reoccurring (cyclic) email notification or email sent at a specific time of the day.
   - **Alarm:** With this option, you can have a notification sent ONLY when an alarm is triggered. You can choose to have a reoccurring (cyclic) email sent while the alarm is active, at a certain time, when a NEW alarm is triggered, or when the alarm is disabled.
7. Send a test email by pressing the TEST button beside the desired notification
   - Depending on the email provider used, it may take up to 5 minutes for the email to arrive



Customize the content of each email using tokens

The ProfiLux email system is capable of sending you customized bits of data. There are certain commands you can include in the email body which will tell the controller what it should send you. The list of commands can be found here.

Push notifications via Pushover app (Alternative)

If you'd like a workaround for push notifications from the ProfiLux, you can use an app like Pushover. Anytime the controller sends an email notification, the Pushover app can receive this email and notify you in the form of a push notification.
To get started with this do the following:

1. Download **Pushover** app and create an account
2. Copy the dedicated email provided by the app
3. Paste that email into the **TO** field in the P4 / 4e's notification page
4. Save settings, then send a **Test** email to make sure it's working normally
5. If you'd like you can also add a widget to your phone for quick access

How to setup power loss monitoring / emergency backup program

With the ProfiLux 4 / 4e, you can trigger emergency backup functions and receive notifications when a power outage occurs. If this happens, you the controller can be set to run an emergency program to keep the essentials running. This section will show you how to set this up.

IMPORTANT: Power cut adapter required

In order to use this feature, you will need to have the power cut monitoring adapter. This can be purchased at your preferred GHL dealer.

- *PL-1607 ProfiLux 4 adapter for power cut monitoring*

IMPORTANT: Battery back-up required

In order for the controller to notify you and initiate the emergency program, it will need to be connected to a UPS or some kind of battery back-up. The powerbar which is powering your essential equipment will **also** have to be on a back-up power source.

How it works

With the use of the ProfiLux power cut adapter, the ProfiLux continuously monitors the running voltage, 12V. If at anytime, a drop in voltage is detected due to an outage, the ProfiLux will automatically activate a user-defined emergency backup function to keep the essentials running. When power is restored, the ProfiLux will go back to running the normal functions.

(ILLUSTRATIONS BELOW)

To setup power loss monitoring and create an emergency program, follow these steps:

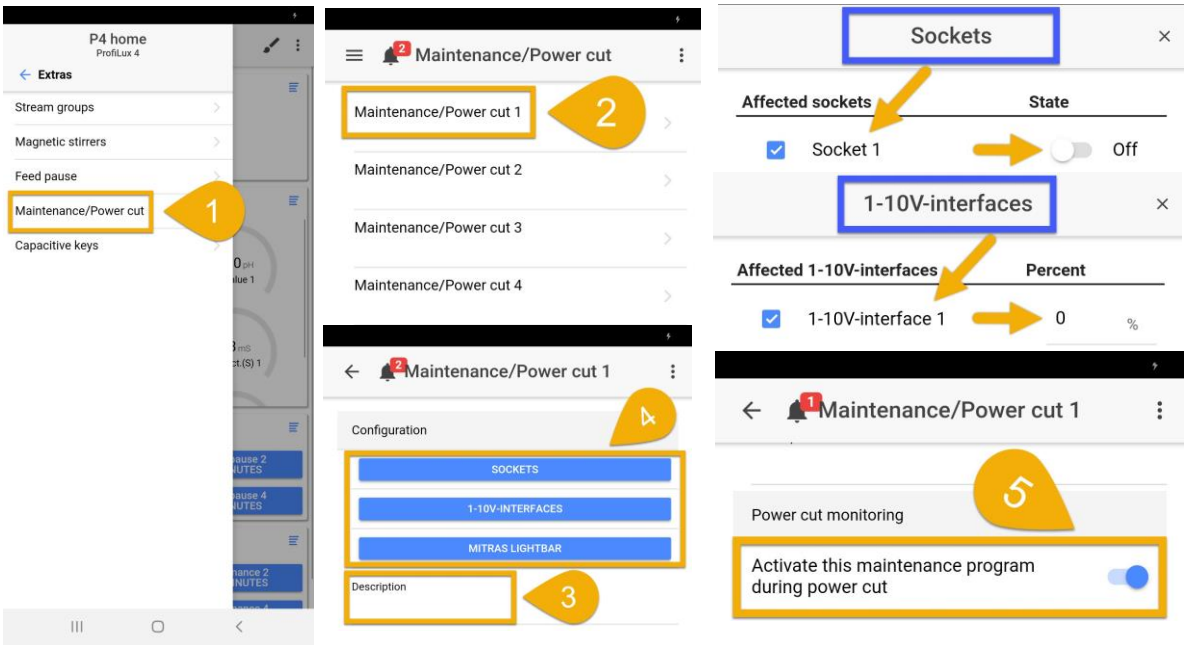
CONNECT ALL ACCESSORIES

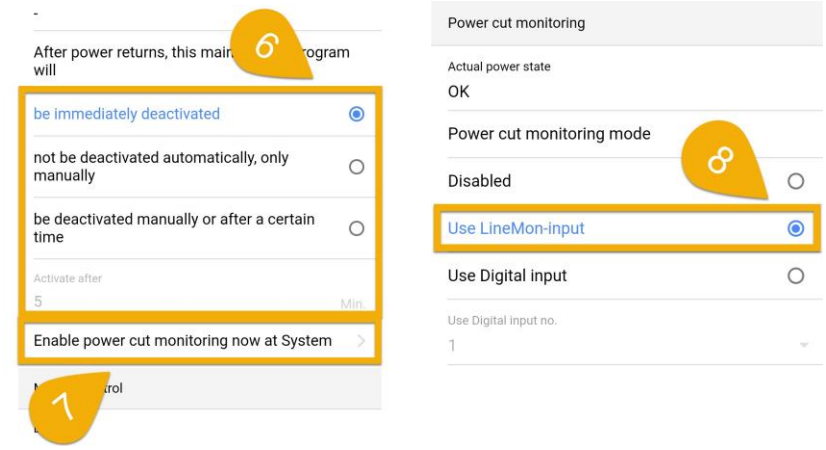
1. Connect the power cut adapter to the **LIN.MON** port at the back of the ProfiLux

SETUP POWER LOSS / EMERGENCY PROGRAM SETTINGS

1. Connect to the controller, press the **Menu** icon, select **Extras**, select **Maintenance/Power cut**
2. Select an unused **Maintenance** option
3. Type-in a description
4. Choose the **Sockets**, **1-10v interfaces**, or **Mitras Lightbar** that will react to the emergency program, then press **APPLY**
    i. **Sockets:** Select the desired outlets, then set them to turn ON or turn OFF when this mode is activated, then press **Apply**
    ii. **1-10V-interface:** Select the desired 1-10v channels and specify the percentage it will run on when this mode is activated, then press **Apply**
    iii. **Mitras Lightbar:** Select the channel(s) that will react and brightness, then press **Apply**
5. **Enable** “Activate this maintenance program during power cut” (As shown)

6. Specify what you'd like the P4 / 4e to do **after power is restored**
7. Press **Enable power cut monitoring now at System**
8. Set the Power cut monitoring mode to **Use LineMon-input**, then press **SAVE**
    - ➢ If you'd like to use a digital input to for this feature, select **Use Digital input** and choose the input number





Your power loss and emergency program is now setup!

If there is ever an outage, the ProfiLux will automatically run the emergency program and notify you.

How to backup and restore controller settings / probe data

Every now and then, it's a good idea to create a backup copy of your controller settings and probe calibration data. This backup file is especially useful if you want to create a backup before a firmware update or if you need to revert back to a certain time in your setup.

Backup settings: Controller and probe data

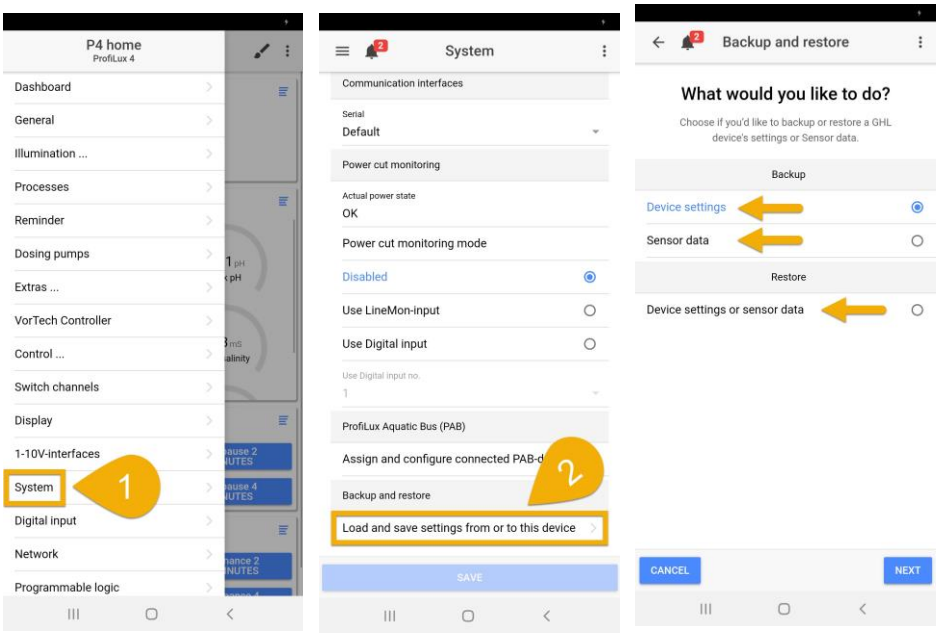
When it comes to handling data, the ProfiLux handles controller data **separately** from the probe calibration data. For that reason, when you backup your settings, we recommend you backup **both device settings and sensor data**.

(ILLUSTRATIONS BELOW)

To backup and/or restore, follow these steps:

BACKUP OR RESTORE PROFILUX CONTROLLER / PROBE DATA

1. Press the **Menu** icon, select **System**
2. Scroll to the bottom of the page and select **Load and save settings from or to this device**
3. Choose an option, then follow the on-screen prompts



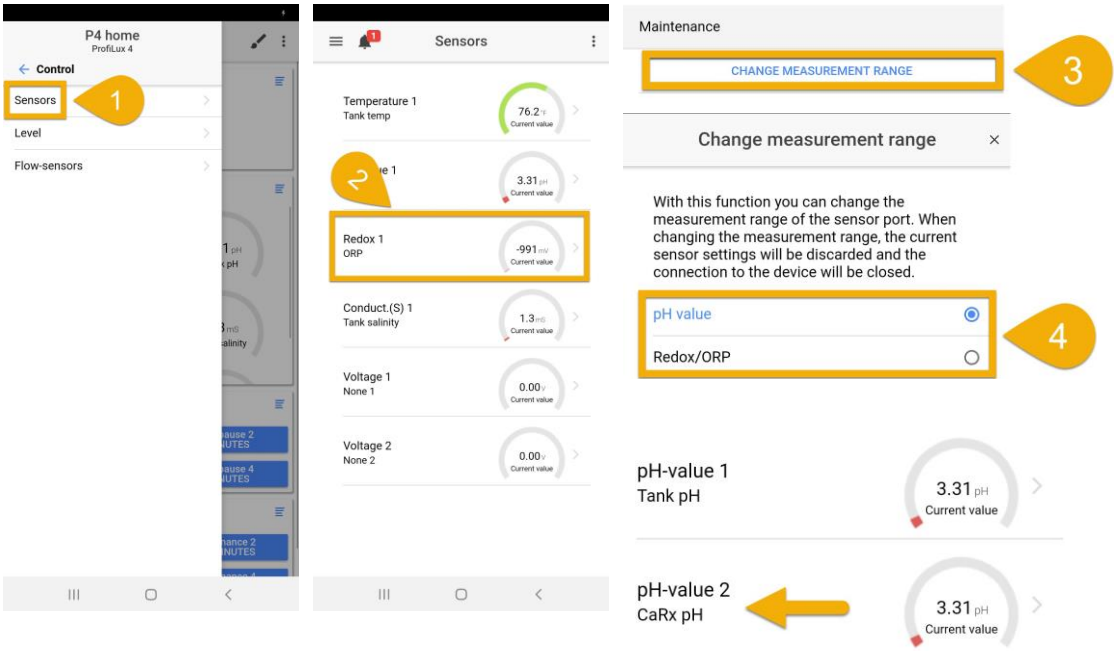
How to convert a redox port into a pH port / vice versa

ProfiLux 4 / 4e controllers and certain expansion cards come with the capability to switch between pH and Redox modes. For example, if you have a Calcium reactor and do not plan on using the on-board Redox port on your P4 / 4e, you can convert this port into a 2nd pH port without having to do anything more than change a setting within the ProfiLux. In this case, you would only need the 2nd pH probe.

(ILLUSTRATIONS BELOW)

To switch a Redox port to pH mode or pH port to Redox mode, follow these steps:

1. Press the **Menu** icon, select **Control**, select **Sensors**
2. **Select the probe that you want to convert** to pH or Redox
3. Type-in a new description for this probe, scroll to the bottom of the page and select **Change measurement range**
4. Specify what this port shall be converted to, then press **SAVE**
    - ➢ Reconnect to your ProfiLux and navigate to the **Sensors** page to see the new port listed
    - ➢ In this example, a Redox port is now **pH value 2**



How to switch the measurement range of a conductivity port (SW / FW)

By default, the conductivity port on a ProfiLux 4 / 4e is set to measure conductivity within saltwater ranges. If you wish to change the measurement range of your probe so it reads freshwater, do the following:

1. Press the **Menu** icon, select **Control**, select **Sensors**
2. Select the desired Conductivity probe
3. Type-in a new description for this probe, scroll to the bottom of the page and select **Change measurement range**
4. Select **Conductivity freshwater**, then press **SAVE**
    - Reconnect to your ProfiLux and navigate to the **Sensors** page to see the conductivity port updated to (F)
    - You may now calibrate this probe using the **1.41mS** calibration fluid

How to update ProfiLux firmware

This section will show you how to update the firmware on your ProfiLux controller. A firmware update will allow you to benefit from the newest ProfiLux features. The steps below will involve connecting to the controller via USB and using GHL Control Center.

IMPORTANT: Preparing for the update

In order to access the newest ProfiLux firmware, you must first download the newest version of GHL Control Center. Included in the GCC download are all firmware files for the P4 and other GHL devices and accessories.

Click here to download the newest version of GCC:
https://www.aquariumcomputer.com/downloads/

IMPORTANT: Backup your settings!

Before performing a firmware update on your ProfiLux, **we highly recommend you:**

- Backup your ProfiLux settings and sensor data to a file and save on your PC
- **If you do not know** how to back up your settings, click here

- Perform an update ONLY on a PC that is grounded and connected to a power source

How-to video

Click the link below to watch our how-to video.

ProfiLux Firmware update video:
https://youtu.be/yUa5VuOwBis

(ILLUSTRATIONS BELOW)

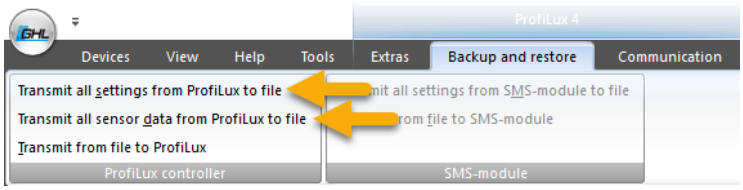
To update your ProfiLux firmware, follow these steps:

PREPARING FOR THE UPDATE

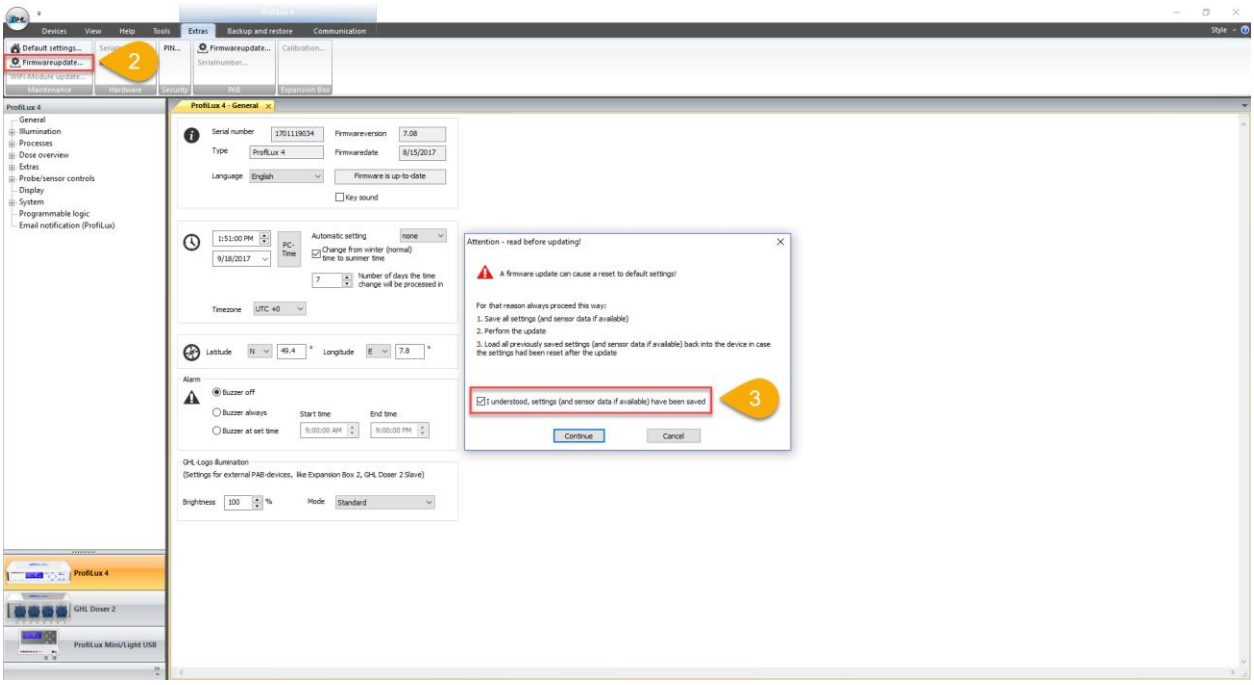
1. Go to our website's downloads page and download the newest version of GCC
   - You can find this option to the right of the screen, see *Related downloads* column
   - Software is also located in the *Software, Tools & Driver* section at the bottom of the page
2. Install this new GCC version to your PC and open it
3. Connect each end of the included USB cable to the P4 and your PC

PERFORMING THE UPDATE

1. Connect to the ProfiLux via USB
   - **First time users:** Click here then come back to this page when connected
   - We **highly recommend** you back up your settings and probe calibration data before continuing. **If you do not know** how to back up your settings, click here.



2. Click on the **Extras** tab and select **Firmware update**
   - Be sure to select the one located in the maintenance section within the tab
3. Read the information shown on the screen, check the box, then click **Continue**

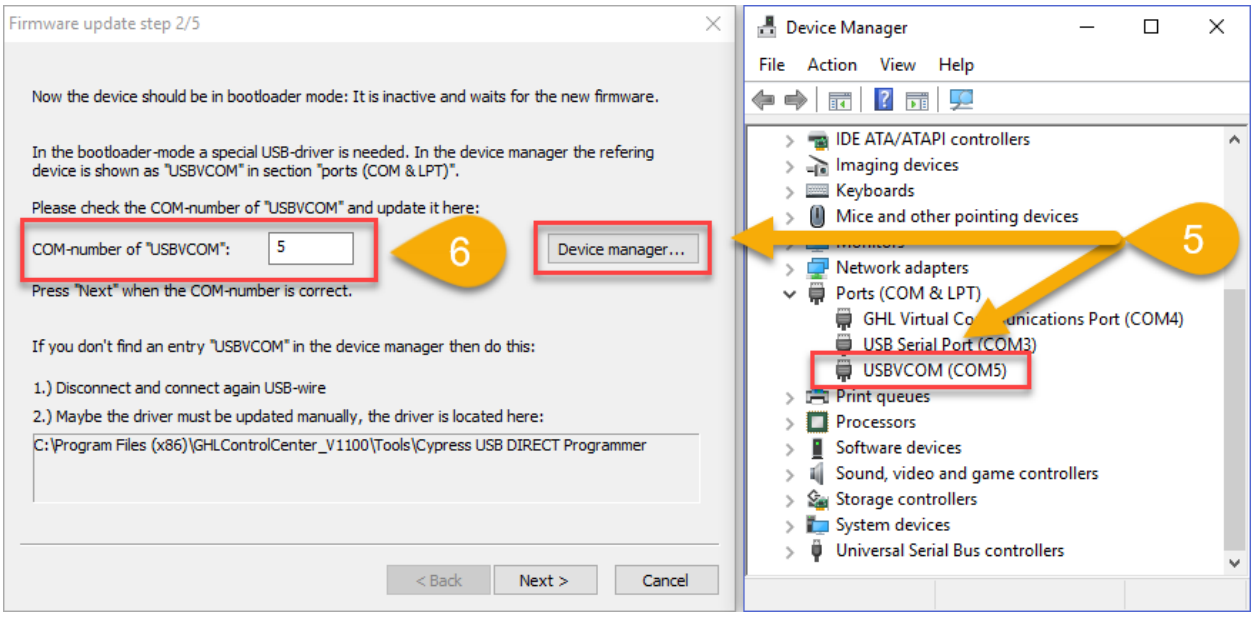


4. Click **Next**. ProfiLux will now go into Bootloader mode
   - **NOTE:** After 5 seconds, the P4 /4e's LED logo light and display will turn OFF. Only the touch key backlight on a P4 / 4e will stay ON. This is normal.
5. Click on **Device manager**, click on the (+) icon to the left of Ports (COM&LPT), and then look for the **USBVCOM** driver. Take a look at the COM number that is shown in YOUR Device Manager

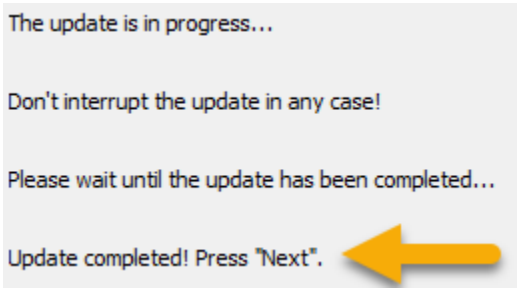
Don't see USBVCOM listed?

If you either do not see USBVCOM listed in Device Manager or see it with a Yellow exclamation mark, the driver must be manually installed. This can also show as an "Unknown Device". To manually install the USBVCOM driver, follow the steps shown in this how-to video: https://youtu.be/P33rmGvw53g

6. Type in this COM number and click NEXT



7. Select the firmware file to use for this update and click NEXT to begin the update
   - ➢ If you are using the newest version of GCC, the software automatically selects the newest relevant FW file
8. The update will now begin. You may notice a pop-up message that states to reset the device and click OK. IGNORE that message as it will go away on its own
9. When you see the “Update completed!” Message, click NEXT



10. Click FINISH, then restart your ProfiLux 4 by disconnecting it from the power and plugging it back in
    - ➢ Upon boot-up, the P4 will display the new firmware version

How to update ProfiLux Wi-Fi module, Web Server, and Web Interface

Updating the Wi-Fi module firmware on your ProfiLux allows you to benefit from new web-based features and Wi-Fi signal improvements. This section will show you how to update network-based firmware such as Wi-Fi module, Web Server, and Web Interface on your ProfiLux controller.

There are two ways to do this update

These kind of updates can be performed in two ways; via web browser or USB connection via updater tool. These steps will show you how to do the update using a web browser. This method will require you to know the IP address of your ProfiLux.

Do this before proceeding any further!

In order to access the newest firmware files for this update, you will need to download the newest version of the **WiFi module update tool**. Download this from our website and extract the folder to your phone or computer **before** proceeding any further.

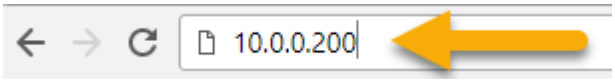
NOTE

Before proceeding with the update, please make sure you are NOT wirelessly CONNECTED to the P4 over the app or GCC. This means that you should NOT have an **active** wireless connection over the app or GCC.

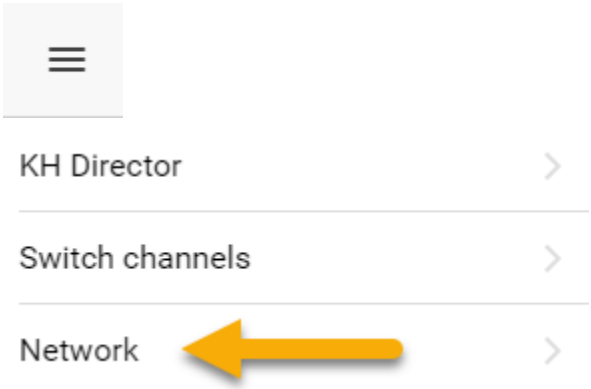
(ILLUSTRATIONS BELOW)

To update your ProfiLux Wi-Fi module firmware, follow these steps:

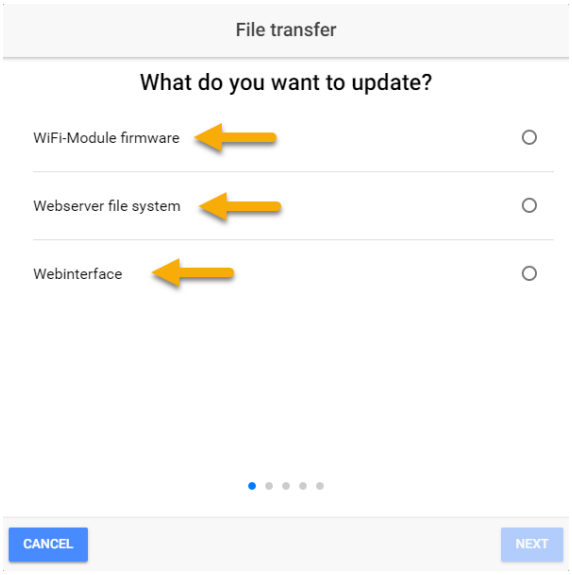
1. Open a web browser window; we recommend Chrome or Internet Explorer
2. Type-in the IP address of the ProfiLux into the website address bar and press ENTER



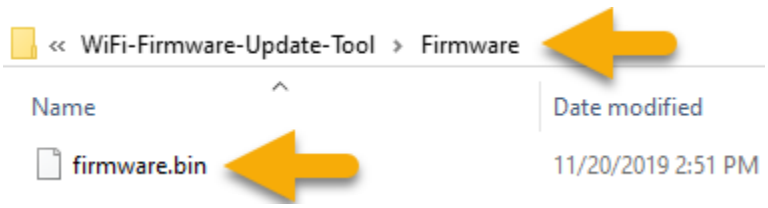
   - If you are asked to enter a USER NAME and PASSWORD, enter the following:
     i. **USER NAME:** admin
     ii. **PASSWORD:** Starfish
3. Click on the **Menu** icon, select **Network**



4. Select **File transfer**
5. Select the type of update you want to do



6. Navigate to the location of the firmware file. This will be located within the **WiFi firmware update tool** folder. **Select the correct firmware file.**
   WiFi module: *firmware.bin* (Found in firmware folder)
   Web interface: *index.html.gz* (Found in Webinterface folder)
   Web server: *spiffs.bin* (Found in Filesystem folder)



7. Follow prompts to proceed with the update.

How to update PAB-device firmware

After each ProfiLux firmware update, it is recommended that you also keep the firmware of your PAB-devices up-to-date. This section will show you how to update the firmware for all PAB-devices using GHL Control Center (PC software).

NOTE

When you download the newest version of GCC, included are also the most recent firmware files for all PAB-devices.

IMPORTANT

In order to perform this update, only the PAB-device which will receive the update must be connected to the ProfiLux. Disconnect all other PAB devices from the ProfiLux before proceeding any further.

How-to video

Click the link below to watch our how-to video.

PAB device update video:
https://youtu.be/XnhdJ4g0SuM

(ILLUSTRATIONS BELOW)

To update a PAB-device, follow these steps:

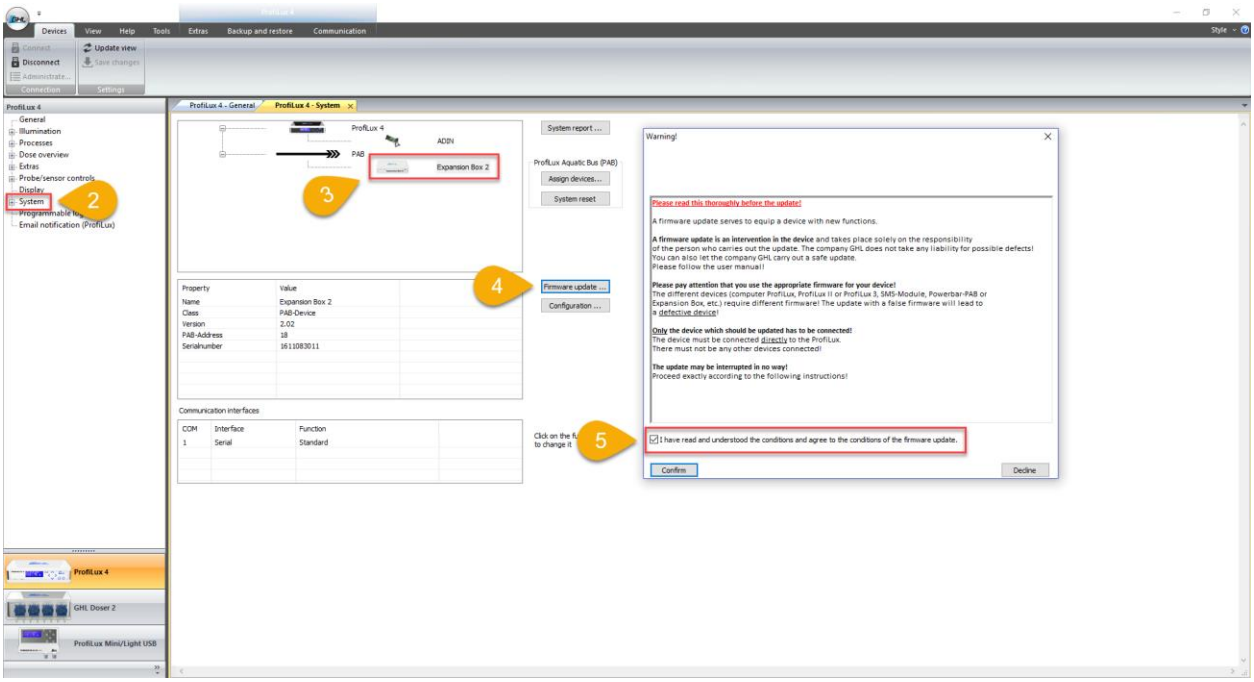
PREPARING FOR THE UPDATE

1. Disconnect all PAB-devices from the ProfiLux
2. Connect the PAB-device to receive the update directly to the ProfiLux

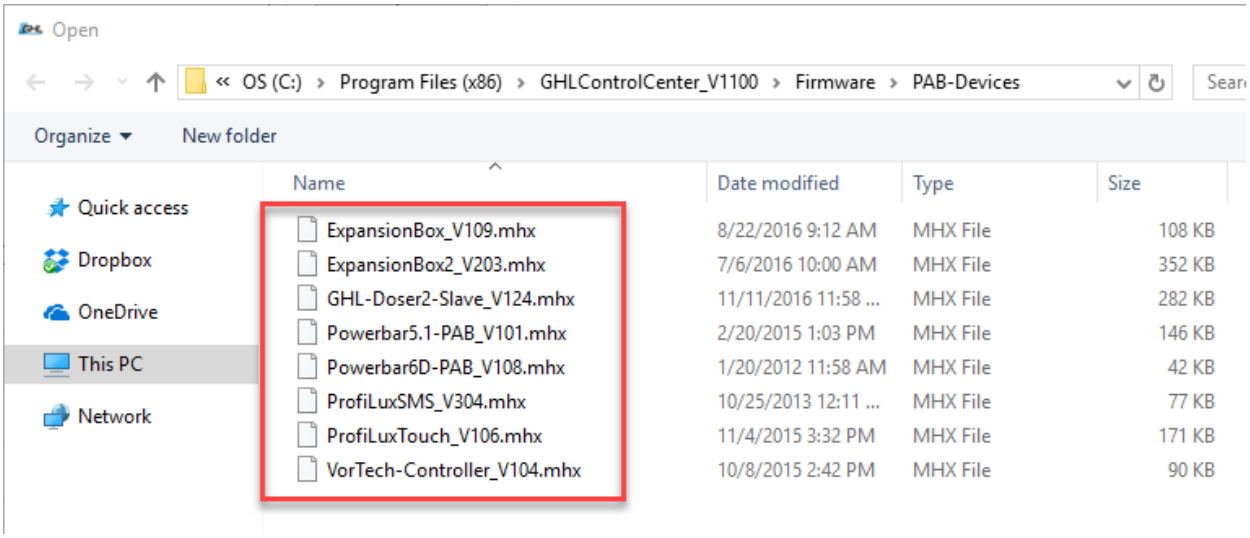
PERFORMING THE UPDATE

1. Connect to the ProfiLux via USB with GHL Control Center
2. Click on **System**
3. Click on the (+) icon to the left of PAB and select the PAB-device you wish to update
4. Click on **Firmware update**

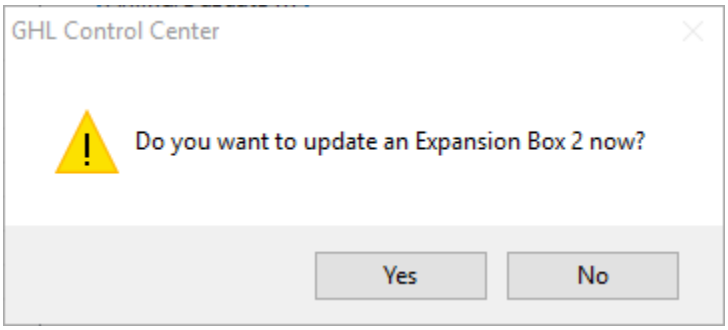
5. Read the information shown on the screen, check the box, then click **Confirm**



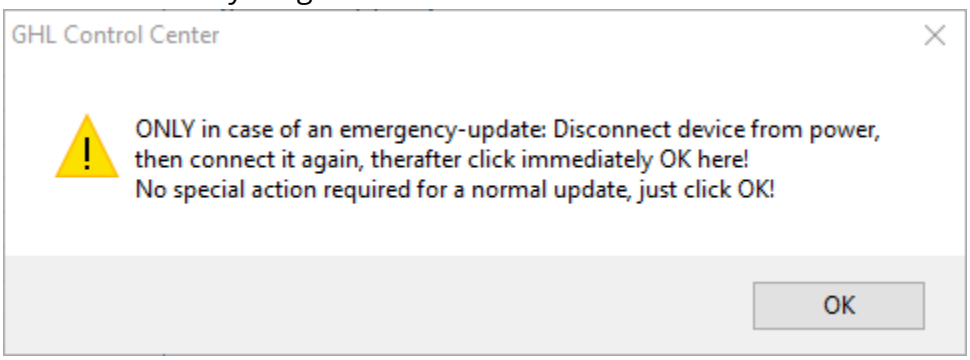
6. Select the firmware file belonging to the PAB-device you wish to update



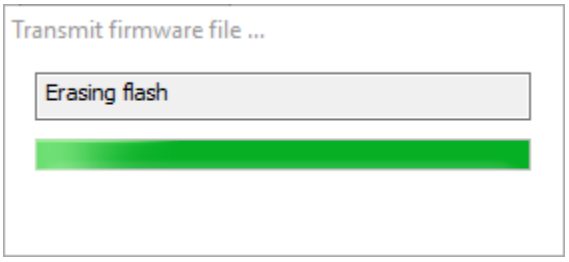
7. Click **OK** to confirm



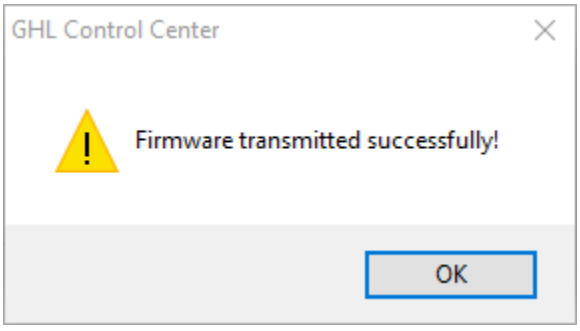
8. Click **OK** to continue with the update. Since this is a normal update, there is no need to disconnect anything



9. Update will now begin. Please allow the P4 / 4e to complete the update before proceeding any further



10. When update is complete, click **OK**



11. Restart the PAB-device and reconnect all PAB-devices in their original order

How customize info shown on ProfiLux display

If you wish to display certain bits of info on your ProfiLux display or adjust the display brightness, you can do so by connecting to your ProfiLux and following the steps below.

1. Press the **Menu** icon and select **Display**
2. Scroll the page and adjust as necessary
3. Press **SAVE** when done

Your ProfiLux will now display the chosen bits of information.
If you wish to adjust these settings, simply come back to this page and adjust as needed.

Programmable Logic Examples

If you're looking to combine two or more functions to a single Powerbar outlet, Programmable Logic (PL) is the way to go. Out of all PL function options, the, AND and OR function are the most commonly used. This section will provide examples and tips for using PL functions on your ProfiLux 4 / 4e.

How to create and assign a Maintenance mode delay

Scenario: You want to delay the Powerbar outlet that controls your skimmer or other equipment. During a manual water change, everything **except** the skimmer should turn ON immediately. You want to give enough time for the sump water level go back to normal before the skimmer turns back ON.

NOTE: 2 PL Functions will be used

In order to set a delayed ON reaction time for a socket, you will need to use 2 Programmable Logic functions. 1 will be for the actual delay and the other will be for combining the 1st PL function and any other function you wish to tie-in.

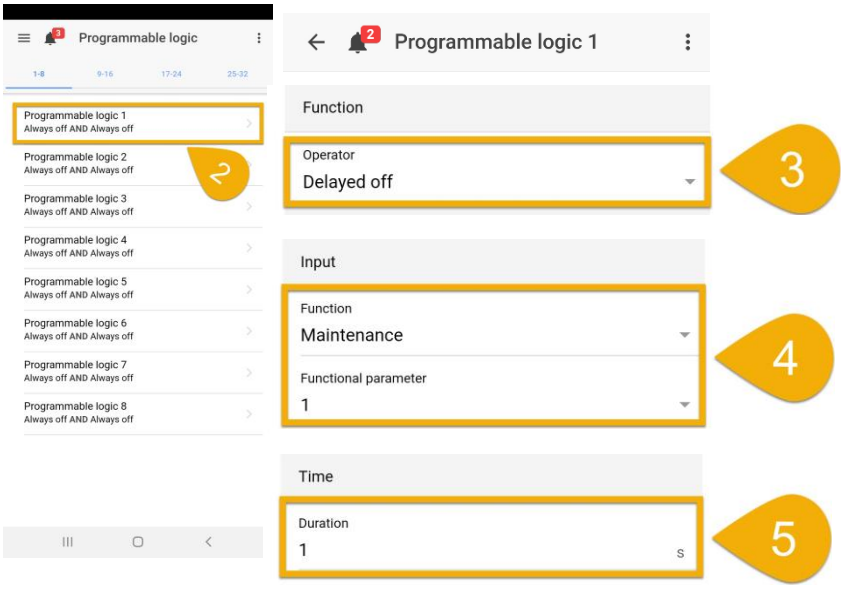
(ILLUSTRATIONS BELOW)

Here's how to create and assign a Maintenance mode delay:

CREATE THE 1ST PL FUNCTION: Maintenance mode delay

1. Press the **Menu** icon and select **Programmable Logic**

2. Select an unused ***Gate***
3. Set the function to **Delayed OFF**
4. Set the *Input* to **Maintenance**, then specify which maintenance number to use
5. Specify the length of the delay, then press **SAVE**



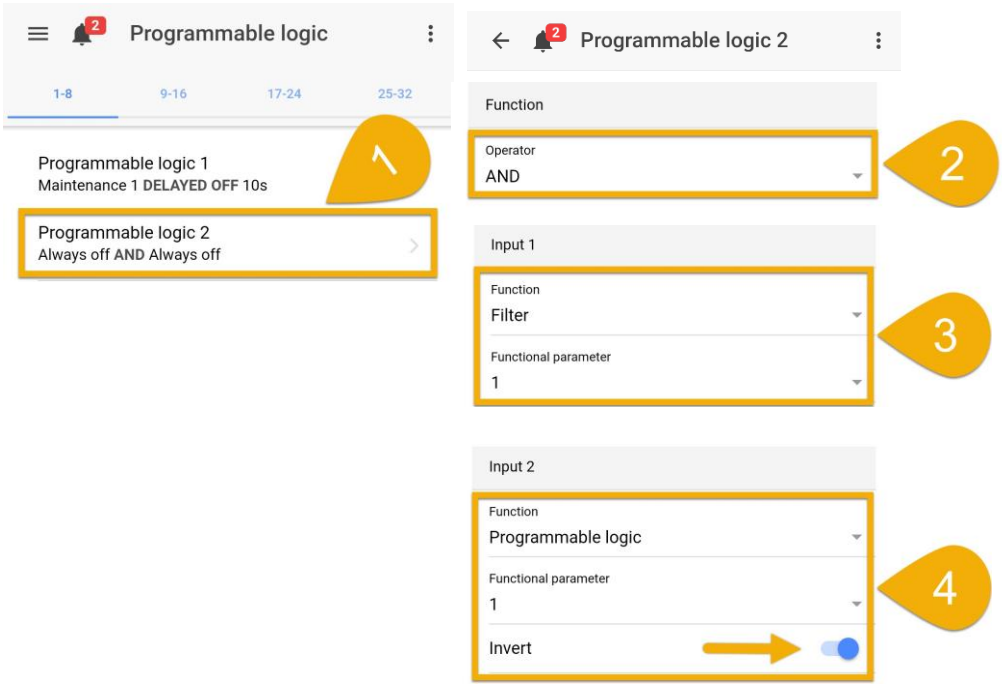
You've now created the maintenance mode delay!

Now's it's time to create a 2nd PL function so you can combine this delay with another function. This "other" function is usually the original function you had assigned to the Powerbar outlet that this delay is intended for.

CREATE THE 2nd PL FUNCTION: Combine first PL with another function

1. Press the back-arrow and select another unused ***Gate***
2. Set the function to **AND**
3. Set *Input 1* to any **existing function** you wish to assign
   - For example, if you currently have a skimmer set to turn OFF for a feed pause, select **FILTER**
   - If you do not have any existing function assigned to the skimmer, select **ALWAYS ON**
4. Set *Input 2* to **Programmable Logic** and select the PL Gate number you used when you created the 1st PL function (Maintenance delay). Invert this function.
   - For example, if you created the PL function on *Gate 1,* select PROGRAMMABLE LOGIC 1.

5. Press **SAVE**

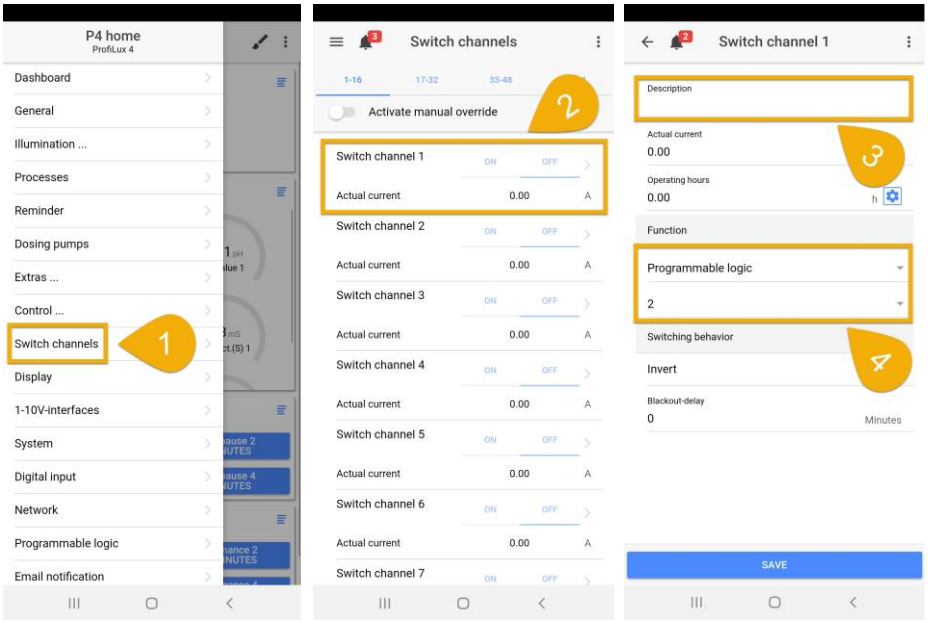


You've now combined the maintenance delay function with your original function!
Now it's time to assign this PL function to the Powerbar outlet you want delayed.

ASSIGN THE 2nd PL FUNCTION TO A POWERBAR OUTLET

1. Press the back-arrow, press the **Menu** icon, select **Switch channels**
2. Select the Powerbar outlet that you want to delay
3. Type-in a description
4. Set the function to **Programmable Logic** and select the *Gate* number you used when you created the **2nd PL function**

5. Press **SAVE**



You've successfully created and assigned a maintenance delay!
If there are other outlets you want to delay with this same maintenance mode, repeat steps 2 – 5.

How to create and assign a feed pause delay

Scenario: You have a Tunze Osmolator connected to a Powerbar outlet and want to turn it OFF during a Feed Pause. After the feed pause ends, this 3rd party ATO should **remain OFF** for a few minutes to give the sump water level enough time to return to normal.

NOTE: 2 PL Functions will be used

In order to set a delayed ON reaction time for a socket, you will need to use 2 Programmable Logic functions. 1 will be for the actual delay and the other will be for any other function you wish to tie-in.

(ILLUSTRATIONS BELOW)

Here's how to create and assign a Feed Pause delay:

CREATE THE 1ST PL FUNCTION: Feed Pause delay

1. Press the **Menu** icon and select **Programmable Logic**
2. Select an unused ***Gate***
3. Set the function to **Delayed ON**
4. Set the *Input* to **Filter**, then specify which feed pause number to use
5. Specify the length of the delay, then press **SAVE**

CREATE THE 2nd PL FUNCTION: Combine first PL with another function

1. Press the back-arrow and select another unused ***Gate***
2. Set this function to **AND**
3. Set *Input 1* to **Filter** and select the same Feed pause number you chose earlier
4. Set *Input 2* to **Programmable Logic** and select the PL Gate number you used when you created the 1st PL function (Feed pause delay)
   - For example, if you created the PL function (FP delay) on *Gate 1*, select PROGRAMMABLE LOGIC 1.
5. Press **SAVE**

ASSIGN THE 2nd PL FUNCTION TO A POWERBAR OUTLET

1. Press the back-arrow, press the **Menu** icon, select **Switch channels**
2. Select the Powerbar outlet that you want to apply the Feed Pause delay to
3. Type-in a description
4. Set the function to **Programmable Logic** and select the *Gate* number you used when you created the **2nd PL function**
5. Press **SAVE**

Combining Feed Pause AND Leakage Detection (Using AND function)

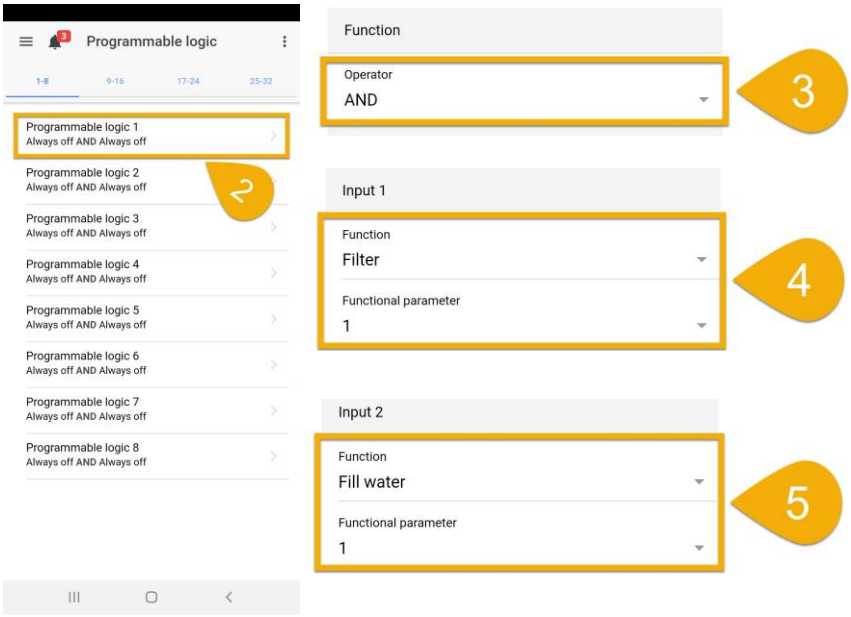
Scenario: You want to turn off the skimmer during a feed pause AND also turn it off if the sump water level gets too high. To do this, you will want to combine these two functions by using the Programmable Logic **(AND)** function.

Here's how to combine a Feed Pause and Leakage Detection function using the **AND** function:

CREATE THE PL FUNCTION: Combine Feed Pause and Leakage Detection

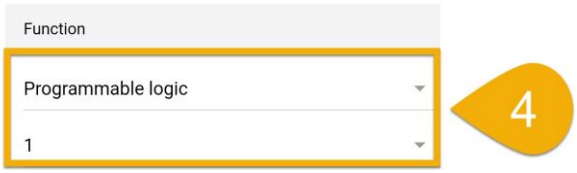
1. Press the **Menu** icon and select **Programmable Logic**

2. Select an unused *Gate*
3. Set the function to **AND**
4. Set *Input 1* to **FILTER** and select the Filter (Feed pause) number to assign.
5. Set *Input 2* to **FILL WATER** and select the Control circuit number where the Leakage Detection function was created.
6. Press **SAVE**



ASSIGN THE PL FUNCTION TO A POWERBAR OUTLET

1. Press the back-arrow, press the **Menu** icon, select **Switch channels**
2. Select the desired Powerbar outlet
3. Type-in a description
4. Set the function to **Programmable Logic** and select the *Gate* number you used when you created the PL function, then press **SAVE**
    a. For example, if you selected Gate 1 (G1) to create the PL function, select PROGRAMMABLE LOGIC 1.



Combining 2 functions w/ Programmable Logic (Using OR function)

Scenario: You want to run the skimmer off of a TIMER and also want it to turn OFF when a feed pause is activated. To do this you will combine these two functions using the Programmable Logic **(OR)** function.

Here's how to combine two functions (FP / Timer) using the **OR** function:

CREATE THE PL FUNCTION: Combine Feed Pause and Timer

1. Press the **Menu** icon and select **Programmable Logic**
2. Select an unused ***Gate***
3. Set the function to **OR**
4. Set *Input 1* to **Filter**, then specify which feed pause number to use
5. Set *Input 2* to **Timer** and select the timer number to use, then press **SAVE**

ASSIGN THE PL FUNCTION TO A POWERBAR OUTLET

1. Press the back-arrow, press the **Menu** icon, select **Switch channels**
2. Select the desired Powerbar outlet
3. Type-in a description
4. Set this function to **Programmable Logic** and select the *Gate* number you used when you created the PL function, then press **SAVE**
    a. For example, if you created the above PL function using *PL Gate #2*, select PROGRAMMABLE LOGIC 2

Combining multiple PL functions (Using AND function)

Scenario: You want to assign more than 2 functions to a single Powerbar outlet. For example, you have a skimmer that should react to 3 separate functions:

- Turn ON from 8am – 8pm (**Timer** function)
- Turn OFF during a Feed Pause (**Filter** function)
- Turn OFF if sump water level gets too high (**Fill water** assigned for Leakage Detection)

CREATE THE 1st PL FUNCTION: Combine Timer and Feed Pause functions

1. Press the **Menu** icon and select **Programmable Logic**
2. Select an unused ***Gate***
3. Set the function to **AND**
4. Set *Input 1* to **Timer** and select the timer number you want to use
5. Set *Input 2* to **Filter** and select the Feed pause number you want to use
6. Press **SAVE**

You have now created a PL function which contains both a Timer and Feed pause function!

In order to combine the 3rd function, you must now combine this PL function with a new PL function.

CREATE THE 2nd PL FUNCTION: Combine 1st PL function (2 functions) with a 3rd function

1. Press the back-arrow and select another unused ***Gate***
2. Set this function to **AND**
3. Set *Input 1* to the **3rd function you want to assign (**Fill water) and select the *Control circuit* number that contains the leakage detection command
4. Set *Input 2* to **Programmable Logic** and select the PL Gate number you used when you created the 1st PL function (Combined Timer/Feed Pause)
   - For example, if you created the 1st PL function on *Gate 1*, select PROGRAMMABLE LOGIC 1
5. Press **SAVE**

You've now created a SINGLE PL function which contains all 3 functions (Timer / FP / Leak)!

Now it's time to assign this PL function to the desired powerbar outlet.

ASSIGN THE 2nd PL FUNCTION TO A POWERBAR OUTLET

1. Press the back-arrow, press the **Menu** icon, select **Switch channels**
2. Select the desired Powerbar outlet
3. Type-in a description

4. Set the function to **Programmable Logic** and select the *Gate* number you used when you created the **2nd PL function**
5. Press **SAVE**

You've successfully assigned a 3-function PL command to a single Powerbar outlet!
This outlet will now react according to the 3 assigned functions.

How-to videos

Our YouTube channel contains many how-to videos which walk you through various parts of the P4 / 4e setup process. If a video was not listed here, please refer to our YouTube channel:

GHL GmbH YouTube channel

How to connect via USB

When you connect your ProfiLux to the PC for the first time, a driver will begin to install itself. Please wait for your PC to finish installing this driver before proceeding with the steps below.

Did the driver not install? Nothing happening?

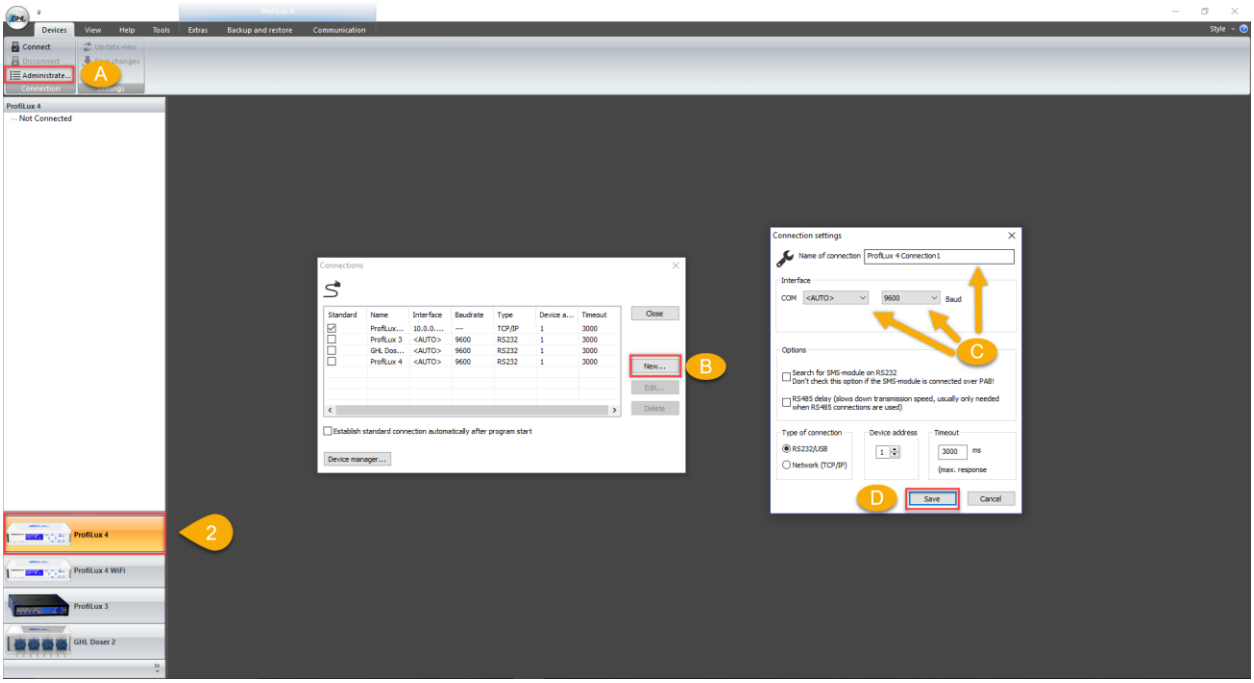
If the driver does not automatically install itself or fails to install, please see our how-to video for manually installing the necessary driver:

https://youtu.be/5arEm807628

1. Using the USB cable included in the box, connect one end to the PC and other end to the ProfiLux.
2. Open GHL Control Center and select the *ProfiLux* on the lower left side of the screen. If you do not see your *ProfiLux* listed, follow steps **a-d** before proceeding any further.
    a. Click on **Administrate**, a new window will pop up
    b. Click **New** and another window will pop up. Select the correct ProfiLux device to create a new connection.

c. Give this new connection a name, set COM to **AUTO** and Baud to **9600**
d. Click **Save**

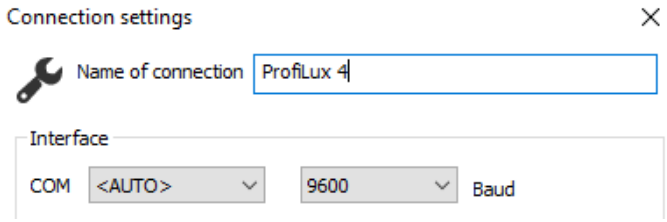
3. Click **Connect** and the ProfiLux will now connect via USB



Have trouble connecting?

If you followed the above steps and could not connect, please do the following:

1. Click **Administrate** at the upper left-side of the screen
2. Double-click on the ProfiLux connection
3. Make sure the COM is set to **AUTO**



4. Click **SAVE** and try again