



Apex PAR Monitoring Kit (PMK) with Advanced Sensor Module



Setup Guide

Table of Contents

PAR MONITORING KIT – INTRODUCTION	3
PHYSICAL INSTALLATION	3
INITIAL CONNECTIONS	3
CONFIGURING THE PMK	3
VERIFY THE INSTALLATION	4
PROGRAMMING EXAMPLES	4
NEPTUNE SYSTEMS LIMITED WARRANTY	6

PAR MONITORING KIT – INTRODUCTION

The PAR Monitoring Kit is the first 7x24 PAR monitoring solution to be integrated with the Neptune Systems Apex Aquacontroller. You can continuously monitor the health of your tank AND equipment. It's the perfect tool to tune your lighting to your specific tank configuration and livestock needs. And you can incorporate your PAR readings into your aquarium control requirements.

PHYSICAL INSTALLATION

 **WARNING:** Your Apex Base Unit must be running firmware version 4.40 or higher to support the PAR Monitoring Kit (PMK). The current firmware version can be checked from the Apex Display on the Self Test screen. If needed, please upgrade the Apex Base Unit firmware before proceeding with the installation. See the *Apex Setup and Programming Guide* for firmware upgrade instructions or visit the *Support – Firmware Updates* page at www.neptunesystems.com.

Some suggestions for placement in your tank:

- Place the meter in a location where it will receive a full spectrum of light.
- Avoid placing in locations where it will be shadowed by corals or rock.
- Place in a location that it can be moved easily for logging measurements in other locations and probe cleaning
- Place in a location where it will be easy to hide the sensor wire — near the sand bed or behind rock.

INITIAL CONNECTIONS

The PAR Monitoring Kit comes with the Advanced Sensor Module (ASM). The ASM is the interface between the PAR probe and your controller. Simply plug the ASM into any available Aquabus port on any module with the included Aquabus cable. Within a few seconds your controller will recognize the ASM module and assign it a position on the Aquabus.

Now connect the PAR probe to the ASM. It has a twist-lock BNC connector. The actual optical sensor is then inserted into the supplied Real Reef Rock. It's a snug press fit, designed to be easily removed for cleaning yet secure for in-tank usage.

CONFIGURING THE PMK



Once connected, you must tell the ASM that a PAR sensor is connected. You will only need to do this once. You may do this using the display menu or through the Apex dashboard. This cannot be done through APEX Fusion.

If using the display menu: Go to *Setup* → *Module Setup* → *Config Module* → *ASM_#* - *Set Probe Type*. 'Par' will usually be preselected; if it is not, use the up or down buttons to scroll until 'Par' is shown. Press the center button, then press the Home button.

If using the Apex dashboard: Navigate to Configuration -> Module Setup, and select the ASM. In the ASM Configuration block, use Probe Type dropdown to select 'Par' if it not already selected. Then click the Update button. Do not change the default values for Range Minimum and Range Maximum.

You will begin seeing PAR readings within a few seconds. Note that graph data will appear on your dashboard once data is accumulated. Based on your logging interval and system performance, this may take a few minutes to an hour.

You can rename your probe from the default Parx_Y where 'Y' is the module number assigned by the controller to your ASM module. For our examples, we'll assume we've renamed it to 'PAR'. You can do this using either your Display module (*Setup* → *Module Setup* → *Modify Name*) or using the native dashboard by navigating to the *Configuration – Probe/Input* web page. Note that you cannot rename probes in Fusion at this time.

VERIFY THE INSTALLATION

After your ASM is connected to your Aquabus and the PAR probe attached, you can verify your installation either with your Display module (navigate to *Setup – Module Setup – Modify Name* to see it listed) or via the classic Dashboard via the *Configuration – Module Setup* web page.

You can add your PAR probe to your dashboards (native and/or Fusion) by dragging it from the unused tiles bin to the active dashboard. With the native dashboard you click on the EDIT button, drag then save. In Fusion you click on the padlock icon, drag then click on the padlock icon a second time to lock. You can find more detailed instructions at Neptune Systems Support web page.

PROGRAMMING EXAMPLES

The PAR probe values may be used in outlet programming just like your other probes such as Temp, pH, ORP or Conductivity. All of the program statements that work for those probes will work for your PAR probe. For example, if you want an email alert whenever

your PAR falls below a certain value, you would add this to your email outlet, substituting a PAR value that makes sense for your tank:

```
If PAR < 250 Then ON
```

If you wanted to limit this to only daytime, then you could create a virtual outlet for the purpose and use this programming.

```
[ PAR_Check ]  
Set OFF  
IF PAR < 250 Then ON  
If Time 18:00 to 08:59 Then OFF
```

Then you would simply check if the virtual outlet is ON (if PAR is lower than expected) in your email outlet program by adding a program statement like this:

```
If Outlet PAR_Check = ON Then ON
```

Your PAR probe can alert you indirectly to several conditions in your tank that you might find helpful. For example, a reduction of PAR over time could indicate:

- Algae growth
- Bulbs that need replacing

The PAR sensor readings can also be used to alert you if:

- Your lights are off when they should be on
- Your lights are on when they should be off

You can also use your PAR sensor as a real-time measurement of your lighting spectrum and intensity. With the advanced graphing capabilities of APEX Fusion, you can superimpose your PAR readings during the day with your lighting schedule in Fusion using the 'Compare' option. As you experiment with different color combinations (assuming you have LED lighting) and intensities you can see the impact on PAR and analyze the resulting effect on your livestock.

NEPTUNE SYSTEMS LIMITED WARRANTY

Neptune Systems warrants this product to be free from defects in material and workmanship for a period of 1 year from the date of purchase. If repair or adjustment is necessary and has not been the result of abuse, Neptune Systems warrants this product to be free from defects in material and workmanship for a period of 1 year from the date of purchase. If repair or adjustment is necessary and has not been the result of abuse, misuse, or accidental damage, within the 1-year period, please return the product with proof of purchase, and correction of the defect will be made without charge.

For your protection, items being returned must be carefully packed to prevent damage in shipment and insured against possible damage or loss. Neptune Systems will not be responsible for damage resulting from careless or insufficient packaging. Before returning please obtain a return authorization (RMA) number from Neptune Systems. Returned merchandise will not be accepted without a RMA number. To obtain assistance with your Neptune Systems product, contact Neptune Systems technical support by phone or via the [Technical Support Contact Web Page](https://www.neptunesystems.com) at <https://www.neptunesystems.com>.

Except for the warranty set forth above, Neptune Systems is not responsible for any damages including, but not limited to, consequential damage occurring out of or relating to the delivery, use or performance of Neptune Systems' products. Buyer's remedies for breach of warranty shall be limited to repair, or replacement and full or partial adjustment to purchase price.

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The symbols to the right mean that according to local laws and regulations your product should be disposed of separately from household waste. When this product reaches its end of life, take it to a collection point designated by local authorities. Some collection points accept products for free. The separate collection and recycling of your product at the time of disposal will help conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment.

