

RKM-PC4

User Guide



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Important Information

Icon Definitions



A exclamation point within an equilateral triangle is intended to alert the user of a cautionary notice to which attention should be given prior to the products usage.



A lowercase "i" within a circle is intended to alert the user to the presence of important operating information in the literature accompanying the product.



A jagged arrow within an equilateral triangle is intended to alert the user of a possible hazardous warning that involves the possibility of electrical shock.

Disclaimers

- As with most electronic devices direct contact with water will cause unreparable damage and is not covered under any warranty.
- The RKM-PC4 carries a limited 1 year warranty.

Commonly used abbreviations

Abbreviation	Definition
RKE	ReefKeeper Elite
PC4	Power Controller 4

1 Introduction

This is an overview of the RKM-PC4. Digital Aquatics recommends that you read the entire manual before using or installing this device into your system.

This module offers many advanced features from a resettable breaker/switch to current monitoring. With the PC4 connected to your RKE system you will have the ability to control four outlets based on any number of parameters that we offer. Making the PC4 a powerful component of your system!

If you have any questions after reading this manual please e-mail support@digitalaquatics.com.

2 Product Overview

2.1 Specifications

- 6 Feet Power Cable
- IntellaStrip Technology
- 15A Total handling Capability (All 4 channels)
- 2 Relay Outlets - 8A max on channel 1 and 4
- 2 Solid-state Switches - 3A max on channel 2 and 3
- 15A Breaker/Switch
- LED Status Indicators

2.2 Included Hardware

Each NEW RKM-PC4 will come with the following items.

- 1 x RKM-PC4
- 1 x 6' Bus Cable
- 2 x mounting screws

2.3 System Features

1. Bus Cable Connections
2. Status/Channel LEDs
3. Power/Break
4. Manual override on/off keys
5. Relay Channels
6. Solid State Channel

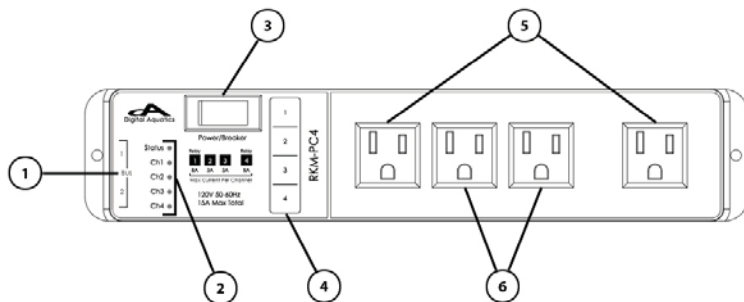


Figure 2a: PC4 Layout

3 Getting to Know the RKM-PC4

3.1 Care and Maintenance

The RKM-PC4 is relatively maintenance free. As mentioned earlier it is important as with most electronic devices to keep it dry!

If you experience issues with outlets on your PC4 first see the troubleshooting section for some common solutions that might help you. If that doesn't work please check our website for any service bulletins or email support@digitalaquatics.com

3.2 Installation, Setup and Use

3.2.1 Getting Started

The PC4 is the module that provides power to the rest of the RKE system. Without any PC4s, the system will not operate. Both power (via the 6' heavy duty power cord,) as well as a connection to the rest of the system must be powered.



There is no order in which the bus cables must be plugged into your PC4, meaning there is no "in" or "out".

3.2.2 Module Installation

Care and discretion should be used when installing the PC4. Proper installation practices should be used for continued safe operation of this device. Never place a PC4 directly on the ground doing so will allow water to flow down a cord to the PC4 and create a fire and safety hazard. Even if you properly mount the PC4 on a wall or cabinet drip loops must be used to help reduce the risk of water intrusion into the unit.



Figure 3a: Incorrect Installation w/o Drip Loop

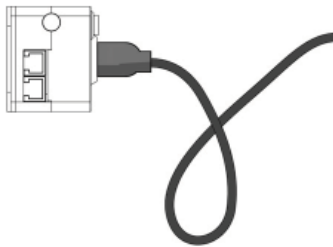


Figure 3b: Correct Installation w/ Drip Loop

3.2.3 Modes

The PC4 has two primary modes, manual and auto. Manual mode allows the user to control outlets with the keys on the PC4; auto mode will follow the program for the channels as defined by the.

3.2.4 Setup

When choosing a setup for your PC4 there are a number of things to take into consideration. First channels have different rating they can supply; however the PC4 has a total limit of 15 amps (1800W).

Channels 1 and 4 are mechanical relays and have a limit of 8 amps; while channels 2 and 3 are a solid state switch with a limit of 3 amps. Exceeding these rating can cause permanent damage and possible hazard. This type of use, outside specifications, that causes failures is not covered under warranty and is considered abuse.

When first powering up the PC4, prior to connecting it to the bus, it will be in a manual unenumerated state. Below is the state table that defines the indicator LED states for the PC4.

Status LED	Mode
Amber	Manual Mode
Amber (Blinking)	Manual Mode (unenumerated)
Green	Auto Mode
Green (Blinking)	Identification Mode Key Lock (when unenumerated)
Red	Overload state

Figure 3c: Status LED table

Channel LED	Mode
Blue Steady On	Channel is "ON"
Blue Steady Off	Channel is "OFF"
Blue Blinking	Channel is in "Sure-On" or "standby delay" mode and will come on after the set duration

Figure 3d: Channel LED table

3.2.5 Manual Interface

There are four keys on the PC4. These keys are used to manually set the state for the individual channels when in manual mode.



Figure 3e: Manual Interface Keys

To enter manual mode, hold any of the keys for 2 seconds. The status LED will change from GREEN to AMBER. The four channels on that PC4 will hold there last programmed state until changed by pressing the associated key.

To leave manual mode, hold any of the keys for 2 seconds. The status LED will change from AMBER to GREEN. Again the channel will hold its last state until it receives a command from the head unit based on the normal operational program.

3.2.6 Channels

There are four channels, outlets on a PC4. They have been designed to cover a wide range of needs and conditions in an effort to make the PC4 as versatile as possible.

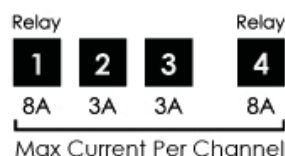


Figure 3f: Channel Configuration

Channels 1 and 4 are traditional mechanical relays and while you can program them to any of the functions the RKE system has there are extra useful in certain cases. Channels 2 and 3 are solid state switches and provide quiet operation. There are some devices that have what is called a poor power factor. It's devices like this that can cause the solid state switches to not release or turn the channel off. In that case the device should be moved to the relay channels where that is not an issue.

Also note that channel 4 is offset. This is for use with wall brick type power supplies where more room is needed to accommodate the extra size. This is also a relay channel because many of these devices have been problematic with the solid state switches for the reasons listed earlier.

3.2.7 Programming Channels

Please review the RKE system guide for programming channels.

3.3 IntellaStrip Technology

IntellaStrip technology enables the PC4 to monitor the total current that the module is supplying to the devices connected to it and make decisions based on that information.

The PC4 powers the entire system; IntellaStrip technology will help prevent a system wide failure if the breaker were to trip do to a single failed device. This helps ensure uninterrupted power to the rest of the system*.

Because there are different limits for the two types of channels, (CH 1 & 4 have a 8 amp limit each, while 2 & 3 have a 3 amp limit each,) IntellaStrip will attempt to ensure these limits are not exceeded. By monitoring the differential in current when a channel is turned on or off, the PC4 can determine if a single channel is exceeding its limit. In that case the PC4 will go into an override state and report a fault.

Depending on the type of fault detected the IntellaStrip will shut off either, channels 2 & 3, or the entire bank. Care should be taken to ensure the items plugged into the PC4 adhere to the posted limits to ensure continued safe and uninterrupted operation.

To reset a fault touch any key for two seconds. If the cause of the fault has not been corrected the PC4 will quickly return to a fault state. The cause of the fault must be cleared for the unit to return to normal operation.



If there is damage to the electronics of the PC4 such as water intrusion or salt creep there is 15amp breaker on the PC4 for added protection. If the damage is to the electronics of the PC4 IntellaStrip technology can not protect against that and the strip may shut down completely.

3.4 Updating Firmware and the Interface Module

The Interface Module that came with your ReefKeeper system will be used to update or reprogram the RKM-PC4 if needed. To update the firmware follow the instructions that came with the Interface Module or in the help menu of the updater application.

4 Troubleshooting

Troubleshooting

Issue	Possible Solution
<p>The channel will not shut the device off even though the LED indicator is off.</p>	<p>Test -First unplug the device and plug in a regular light bulb. If the light stays off as you expect it to the see the following solution.</p> <p>Solution -This may be related to the device you're trying to control. If it has a poor power factor it will not allow some switches to release the device and shut off. If that's the case the solution is to move it to Ch1 or Ch4 on the PC4.</p> <p>Other -If the bulb stays on no mater the state of the outlet (auto or manual modes) then the channel may be stuck on and the device must be serviced by Digital Aquatics.</p> <p>Contact: support@digitalaquatics.com</p>

Issue	Possible Solution
<p>The PC4 keeps going into the Overload state.</p>	<p>(With items plugged in)</p> <p>-There may be a device that's faulted. Remove all the items plugged into the PC4 and see if the issue continues. If not, start plugging in items one at a time until you find the cause.</p> <p>(With NO items plugged in)</p> <p>-The firmware may be corrupted. Reinstall the latest firmware for the PC4 and retest.</p> <p>-There may be some damaged or issue with one of the outlets. This will require service.</p> <p>Contact: support@digitalaquatics.com</p>

A Appendix A

Technical Notes

There is currently no information in this section.

B Appendix B

Modules and Accessories

The following is a list of approved accessories for the RKM-PC4.

Accessories	Ordering Part Number
Bus Cables (Various Lengths)	See the Digital Aquatics Online store.

Warning



We do not recommend that customers make their own bus cables. Poorly made cables will cause system-wide failure that is not covered under warranty! We recommend ordering an approved and tested bus cable from Digital Aquatics if a longer cable is needed.



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