



RKM-NET
Network Interface Device

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, contact with water will cause unrepairable damage and is not covered under any warranty.

Commonly used abbreviations

RKE	ReefKeeper Elite
PC4	Power Controller 4
SL1	Sensor Lab 1
MLC	Moon Light Controller
SID	System Interface Device
GC1	ReefKeeper Elite Headunit
ALC	Advanced Light Controller
NET	Network Interface Device

Quick Installation

Package Contents

- 1 x RKM-NET Module
- 1 x 7ft Ethernet Cable
- 1 x 6ft Digital Aquatics Bus Cable
- 2 x Mounting Screws

Firmware Requirement

The NET module requires the ReefKeeper Elite system to be running V1.10 firmware or greater.

Networking Notice

The NET module requires a general knowledge of computer networking. This includes a basic understanding of the following terms; IP Address, Hostname, DHCP, MAC Address, DNS, SMTP Server and Network Ports.

It is also required that the user has basic knowledge of all third party devices located within their network, such as Routers and Modems.

Additionally, some of the NET module's more advanced features require the user to have a detailed knowledge of restrictions and settings imposed by their Internet Service Provider. This applies to both internet and email service providers.



It may be necessary to reconfigure network settings or third-party networking equipment within the network in which the NET module is connected when setting it up.

Internet Browser Requirements

All of the following requirements must be met in order for the NET modules webpage to be displayed and operated correctly.

- Javascript must be enabled
- Flash Player 8 or greater must be installed for graphing
- Internet Browser must support .png transparency layers

List of verified browsers

- Internet Explorer 7.0 +
- Firefox 2.0 +
- Safari 3.2 + (Known issue when using the back button)

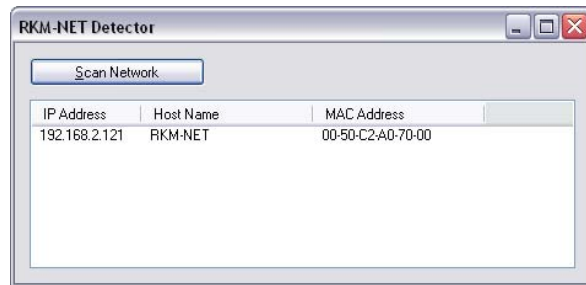
Connecting to the RKM-NET module

1. Plug the RKM-NET into the bus of the ReefKeeper Elite system. Verify that the status light on the module is lit.
2. Connect the Ethernet cable from the RKM-NET to the local network. The amber LED on the Ethernet connector should light up. The RKM-NET has DHCP enabled by default allowing it to easily communicate with a network. It is encouraged that DHCP be turned on when initially setting up the NET module.
3. On the computer, open a verified web browser listed earlier in this section and navigate to the following URL, "http://rkm-net".
If the webpage loads correctly the "Welcome to the Digital Aquatics RKM-NET Webserver" page should appear. This indicates that the NET module is ready to use. Skip to step 7.

If the webpage fails to load, please continue to step 4.

4. Run the NET Detector application and click the "Scan Network" button. The NET Detector application will identify the IP address, Hostname and MAC address of any NET modules connected to the network.

Some anti-virus utilities may display a popup to allow or deny the NET detector application to scan your local network. If this occurs, please be sure to allow or unblock this communication.



5. If an entry appears, record the IP Address and double click on the entry within the application. This will initiate your default web browser to open and will automatically navigate to the IP address of your NET module.

If the webpage loads correctly the "Welcome to the Digital Aquatics RKM-NET Webserver" page should appear. This indicates that the NET module is ready to use. Skip to step 7.

If the webpage fails to load, please continue to step 6.

6. If steps 3 through 5 have not resulted in a connection to the NET module, DHCP is most likely not operating on the network. The NET module, in this case, will use its default network settings as shown below.

IP Address	192.168.1.3
Gateway	192.168.1.3
Subnet Mask	255.255.255.0
Primary DNS	192.168.1.1
Secondary DNS	192.168.1.1

On the computer, open an approved web browser listed earlier in this section and navigate to the following URL: http://192.168.1.3.

If the webpage loads correctly the "Welcome to the Digital Aquatics RKM-NET Webserver" page should appear. This indicates that the NET module is ready to use. Skip to step 7.

If the webpage fails to load, please see the Digital Aquatics Support forum.

7. A connection to the NET module has been made and the system is ready to use. The private area can be entered by clicking the "Enter" image. The default user-name and password are:

Username	DigitalAquatics
Password	password

Commonly used icons

The list below defines the commonly used icons found on the NET modules webpage. When an icon is described to navigate, the icon will be clickable and act as a standard web hyperlink.



Navigates to a module's information page.



Navigates to a port's graph.



Navigates to the NET module's RSS Feed.



Indicates a success.



Indicates an error.

Home Page

The Home page has been structured to display and frequently update the port information for up to 8 modules at a time. The page is formatted into three distinct columns; System Status, Power Controllers and Other Modules.

System Status

This area displays the quick status of the ReefKeeper Elite system. This includes the System Time, Module Count and the Alarm Status.

System Time

Shows the system time and date of the headunit. This time and date does not reflect the computer time.

Module Count

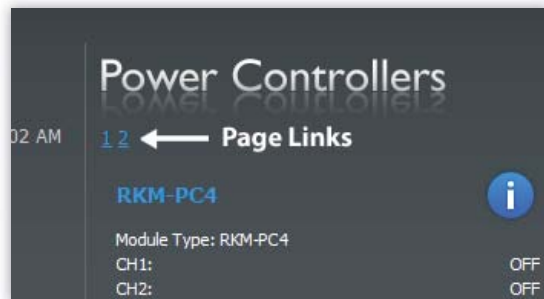
Displays the total number of modules that have been registered by the headunit. This includes modules that have been disconnected. A more detailed list of the registered modules can be found on the System Status page.

Alarm Status

Displays the Alarms that are currently present on the system. In order for an alarm to be displayed in this section, email capability must be configured on the headunit. See section 4.2.5 in the ReefKeeper Elite User Guide for more details.

Power Controllers and Other Modules

Power controllers (PC4s) have been separated from the other modules as they serve a distinct function, different than other modules. Each of the two columns can display up to four modules at a time. When more than four modules are connected to a system the user can scroll through multiple pages of these modules by clicking on the page number displayed directly below the column title as shown below.



Power Controller Page Links

Both the module name and the information icon link to the module information page for that module. More can be found on this in the Module Information Page chapter.

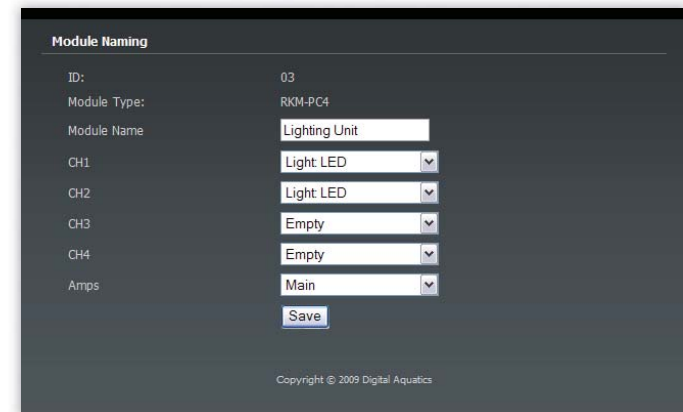
Module Information Page

The module information page gives a detailed summary of the module as well as the option to add custom module naming.

Module Naming

Module naming allows the user to associate a custom name for the items in the system. The module naming window can be opened by clicking the “Edit Module Naming” button. Each module allows for a custom 18 character text string to be entered for its name. Each port on a module can have a pre-defined description associated with it. Once a module name or port description is set, it will be used wherever module information is displayed. This includes, but not limited to, the following:

- Home page
- Module Information page
- Graphing Page
- RSS Feed
- Email Alerts and Notifications



Module Naming Window

Example

In the above image, the module name has been set to “Lighting Unit”. This is a custom name entered by the user to identify this module. Ports CH1 and CH2 on this module have been set to “Light: LED”.

Logged Ports

The Logged Ports area allows for quick access to the ports on a module that have been configured to be logged. The graphs for a sensor can be viewed by clicking on the View Graph icon for a specific port. A port that is not configured to be logged will have a “None” displayed.

Logging is described more in the Logging / RSS Page section.

General Page

The General page includes many of the settings that are not specific to a single area.

General Setup

Date/Time Style

Allows for the setting of 12 Hour or 24 Hour time display. This setting will not affect the time displayed in port graphs.

Temperature Style

Defines the symbol and conversion to be used when displaying temperature.

Login Username

Defines the username to be used when logging into the NET module's private area. The default username is "DigitalAquatics".

New Login Password

This area is used to set a new private area password.

Current Password

For security purposes the current password must be entered when setting a new password. The default password is "password".

New Password

Defines the password in which the user would like to set.

System Resets



Be aware that resetting the Naming and Logging/RSS configurations are permanent. These configurations cannot be retrieved after they have been reset.

Naming Reset

This button will reset the custom naming for all modules and their ports.

Logging and RSS Reset

This button will reset all the Logging and RSS configurations that have been set. This will also reset all logged data and should only be performed when captured data has been exported or is not wanted.

Complete Factory Reset

A complete factory reset can be performed by pressing and holding the external reset button on the outside of the NET module for longer than 10 seconds.

Webpage Update

This function allows for quick and easy updating of the webpage on the NET module.

Webpage Upload

This field allows for the loading of a new webpage file. As a note, make sure that all webpage updates are checked against the firmware on the NET. Incompatible versions may cause the webpage to become inoperable. Webpage files are of the format, NET-X-XXXX.bin.

Network Page

The Network page allows for configuration of the network settings for the NET module. Each of the available fields on the network page are defined below.



The network page should only be used by advanced users. Incorrect configuration could result in failed communication with your network and could potentially lead to the requirement of a factory reset.

Network Settings

When the network settings are saved, the NET module will automatically restart itself. As a note, please remember that this will restart your system uptime counter.

MAC Address

Defines the hardware address that uniquely identifies the net module within a network. This address is hard coded into each NET module and cannot be changed.

Host Name

Defines the name that a DNS server will associate to the IP address of your NET module.

Enable DHCP

Enables the NET module to use the network settings assigned to it by a DHCP server.

IP Address

Defines the IP address that will be used if DHCP has not been enabled.

Gateway

Defines the static Gateway that will be used if the DHCP has not been enabled.

Subnet Mask

Defines the Subnet Mask that will be used if the DHCP has not been enabled.

Primary DNS

Defines the Primary DNS that will be used if the DHCP has not been enabled.

Secondary DNS

Defines the Secondary DNS that will be used if the DHCP has not been enabled.

Logging / RSS Page

This page is used to define the modules and ports that the user configures to be logged and/or added to the RSS Feed. There is a total of 16 slots that can be set on this page, each including a module, a single Logging selection, a logging interval and a single RSS selection.

Configuring a Slot

1. Click on the "Edit" button for a slot.
2. Select a module from the Module Selection drop-down. If the selected module has ports, the remaining drop-down boxes will become active.
3. Select a port to log from the Logging Selection drop-down. A selection of "none" will disable logging for this slot.
4. Select how often data should be captured for the port in the Logging Interval drop-down. A selection of "none" will disable logging for this slot.
5. Select a port to add to the RSS Feed from the RSS Selection drop-down. A selection of "none" will indicate that no ports have been added to the RSS feed for this slot.
6. Click save. The window will close and the Logging / RSS page will refresh, displaying the newly configured slot.

Example 1

If the user selects RKM-SL1 - ID:01, the user can then select only the ports on that module to be logged or added to the RSS feed.

Example 2

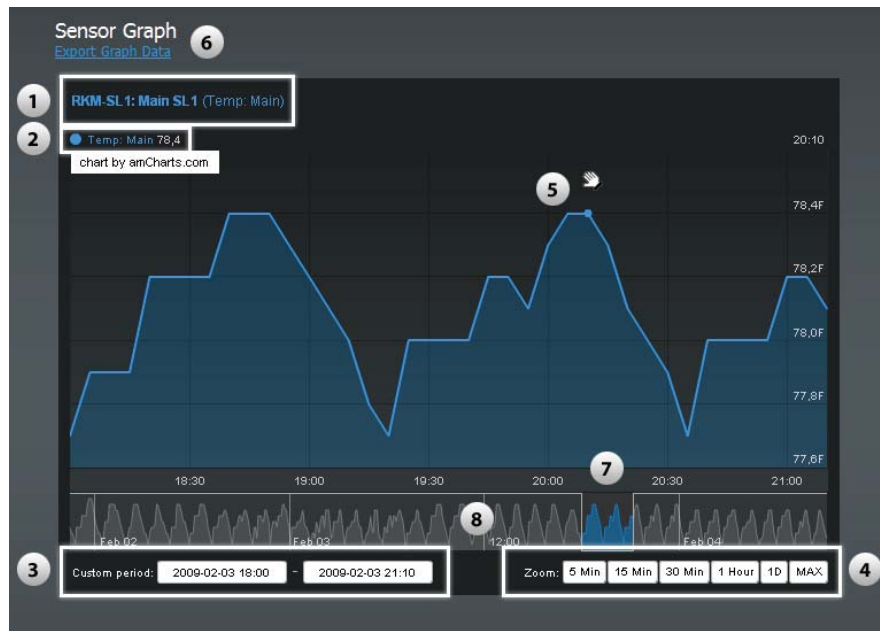
If the user would like to log the same port with different logging intervals, a slot must be used for each of the chosen intervals

Example 3

If the user would like to log both temp and pH from a single module, a total of two slots must be used.

Graph Page

The graph page displays all of the logged data for a specific port. The graphing utility requires that Flash Player 8 or greater has been installed.



Example of Graphing Page Layout

1. Module Type, Custom name, Port Type and Custom Port Description
2. Port value at the cursor location (defined in the layout at point 5)
3. Entry area for a custom period
4. Zoom area with preset period lengths. These buttons will appear once the captured data exceeds the period length. For example, if only 45 minutes have been captured, the "1 Hour" and "1 Day" button will not be shown.
5. Cursor location
6. Export Graph link
7. Captured Data Overview selection. This selection is displayed in the main graph area.
8. Captured Data Overview. This overview displays the entire data set stored for a port.



Gaps in the data line indicate losses in communication where the NET was unable to sample data. This includes power outages and when the headunit has been disconnected.

RSS Feed

The RSS Feed in the NET module refreshes its data every second. The feed can be viewed by pointing an RSS reader or web browser to:

http://your_ip_address/rss/rss.xml.

RSS Configuration

RSS Enable

Enables the displaying of the RSS feed information. If this is not enabled the links and feed location will still function. However, no RSS data will be displayed.

Notification Page

The notification page is used to set up alarm notifications. Email alerts are sent from the NET module based on the alarms that are present on the ReefKeeper Elite system. The user is able to configure which alarms they would like to be notified of by programming the alarm through the RKE headunit.

There are three different types of notification messages that can be sent.

Alarm Triggered Emails

Alarm triggered emails indicate that an alarm is triggered and is currently taking place in the system.

Sample Alarm Triggered Email

```
*ReefKeeper Alarm Triggered*

Alarm: 1
Module: RKM-SL1
Sensor: Main 80.1F
```

Alarm Cleared Emails

An alarm cleared email indicates that the alarm has been cleared and is no longer taking place. Thus, for each alarm that is triggered, a single triggered message and a single cleared message will be sent per occurrence.

Sample Alarm Cleared Email

```
*ReefKeeper Alarm Cleared*

Alarm: 1
Cleared
```

System Critical Emails

System critical emails are generated when the NET module can no longer communicate with the RKE Headunit. These emails are not associated with any alarms and will automatically be sent if email notifications have been enabled.

Sample System Critical Email

```
*Status: Critical*

RKE system communication has been lost!
```

Notification Settings

Notification Enable

Enables the sending of email notifications.

From: Email Address

Defines the email address in which the user would like notifications sent from. This address should be the same as the account username and password used below.

To: Email Address

The first email address that the user would like to receive email notifications to. These fields must use a standard email format. If a text message is desired please contact your cell phone provider for the email address that is associated with your phone.

CC: Email Address

The second email address that the user would like to receive email notifications to.

Email Authentication Enable

Enables the usage of email authentication when sending emails. Most email providers require authentication.



This enable should not be confused with SSL authentication, as SSL type authentications are not supported by the NET module.

Email Username

The username associated with the email account in which the user would like notifications sent from.

Email Password

The password associated with the email account in which the user would like notifications sent from. This value will not be displayed in the notification settings for security purposes. If it is believed that the saved password may be incorrect or the module is having trouble sending emails, please re-type and re-save the password.

SMTP Server

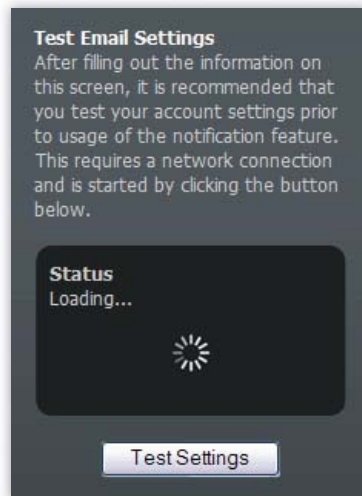
The SMTP server associated with the email account from which the user would like notifications sent. This information can be found on your email providers website.

Email Port

The email port associated with the SMTP server from which the user would like notifications sent. This information can be found on your email providers website.

Setting up Notifications

1. Input all applicable information into the Notifications page. Please contact your ISP or email provider for this information.
1. Click the "Save Configs" button to save the entered information.
2. Click the "Test Settings" button. The page will then refresh and open a testing area in the right side of the screen shown below.



Test Email Settings area

If the test is successful, it will display a status of "Test Completed Successfully". If this status is shown, continue to step 4. If a different status is shown, please see the Digital Aquatics Support forum.

3. Open or view the email account that was configured in the "To: Email Address" field. There will be an email sent from the account configured in the "From: Email Address" field. If no email has been received within a few minutes of the test please see the Digital Aquatics Support forum.
4. On the RKE headunit, enter the setup for the alarm that you would like to send

email notifications.

5. Turn on email by changing the "-" to an "E" in the alarm's mode and hitting save.

Email notifications have now been configured.

System Info Page

Part Information

Firmware Version

Current firmware version on the NET Module

Webpage Version

Current Webpage version on the NET Module.

System Uptime

Duration of time that the NET Module has been on since its last reset.

System Information

The system information section gives the total number of modules and the total number of each module type that has been registered with the headunit. The total quantity is also displayed on the Home page.