

# SMART RACKGUARD iQ **RF11iQ**

8 X REMOTE CONTROLLED  
DUAL CIRCUIT PROTECTION  
AND FILTRATION



**MODEL:** RF11iQ

## USER MANUAL

**THOR**

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# RF11iQ Warranty & User Manual

*Thor Technologies Pty Ltd reserves the right to alter or change the specifications and/or product as and when deemed necessary to keep in line with the Company policy of ongoing improvement in research, development and features of the product range.*

## 1. INTRODUCTION

Thank you for choosing the THOR Smart Rack Guard iQ (RF11iQ).

The Smart Rack Guard iQ (RF11iQ) has been designed with industry leading technology of integration of secure IP based monitoring functions with the ability to communicate via a web browser or Smartphone application. This remote access will allow users, particularly service technicians, immediate advice of any high voltage incident or damage affecting the premium-filtered protector. This manual will explain how to setup and use these features of the product to ensure integrity and security standards are maintained.

### *Purpose*

Why is there a need to communicate with a filtered surge protector? Today many electrical appliances have the ability to be turned on or off remotely. In many instances service personnel can monitor systems and equipment to ensure they are performing correctly. Instant advice of a problem can save on downtime and reduce associated call outs. Early detection to faults and the ability to reset equipment remotely can relieve expensive call out costs.

The RF11iQ can alert via email should the product sustain any damage from a power surge or other high voltage incident. If either of the two separate inbuilt power circuits are affected, an email will be sent immediately to advise of such an event. At the same time an automated on board alarm sounds (within the unit), if damage has been sustained and the product needs replacing. Once the email has alerted a service technician of a problem they can log into the site through a web browser or mobile application, diagnose and make a decision on what needs to happen next. The alarm can be turned off remotely by the service technician. The ability to switch off the alarm may alleviate concern or potential annoyance once the fault has been detected and the need for an alarm expires.

If connected equipment is not functioning correctly service personnel are able to log in and reset this equipment. The ability to turn each circuit on or off becomes an invaluable time and cost saving function.

### **Conventions**

The product programming software will run a web server that serves simple and uncluttered HTML and/or XML pages to indicate system status. Industry Standard Internet Protocols are used. In addition the software has inbuilt email functionality.

## 2. OVERVIEW

The RF11iQ has two isolated circuits. One circuit set contains 7 individually controlled Australian pin outlets while the other circuit set contains a single control for 4 IEC outlets giving a combined 11 outlet configuration. Each circuit has spike and surge protection as well as filtered technology to ensure safe and clean power is supplied to any connected devices.

Given the nature of rack applications often being in mission critical installations, the design of the RF11iQ provides an immediate alert that it has reduced or exhausted its protection capacity but still continues to allow power through. This allows service technicians to work on a replacement unit while not affecting the site operations

### 2.1 FEATURES

#### Current Limits

240VAC Total unit current is 10A Max

**NOTE:** Each Australian pin outlet (1 – 7) has capacity to supply 10A maximum per outlet; REAR CIRCUIT 8 – IEC x 4 outlets combined can supply 10A output in total.

#### Individually controlled switchable circuits

Seven individually controlled Australian pin outlets and a single control for 4 IEC outlets via the Smartphone App or through the web browser. This allows the user to select outlets to be switched of when not in use or required remotely as well as controlling individual circuits if a fault condition is apparent while allowing other sections to still remain operational (Providing the RF11iQ unit is fully functioning and has not sustained any damage)

**NOTE:** If a circuit is switched "OFF" via the Smartphone App or the web browser or by Factory Reset Default condition, if the RF11iQ is powered "OFF" and then "ON" with the power switch or a natural power outage ... ONLY THE OUTLETS THAT WERE SET TO ACTIVE "ON": before the events outlined, will; automatically be switched "ON" . To activate the outlets that are "OFF" you must use the Smartphone App or the web browser to switch the outlets "ON". The unit MUST be LAN connected and all the parameters in your browser and server network set correctly... See the section on setting up the web browser and Smartphone App outlined later in this booklet.

#### Soft Start

The RF11iQ has an in built "Soft Start" feature to allow the unit to be switched on without causing a major overload of the 10A Circuit Breaker in the unit as may connected devices have a 4 to 7 times greater inrush current then the final current drawn.

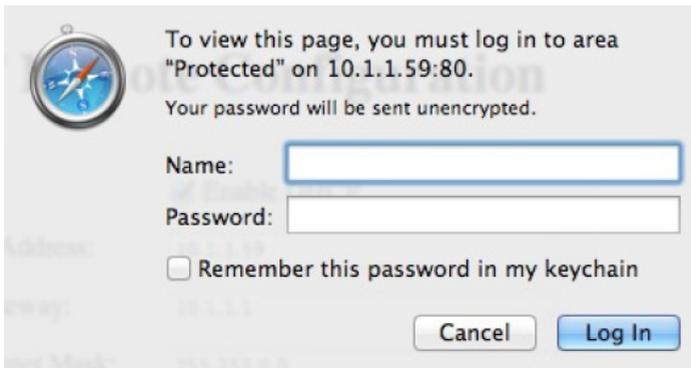
### 3. INSTRUCTION

#### Procedures

Please note these procedures have been produced assuming an experienced IT person is doing the configuration. It is assumed that the person configuring this device has knowledge of networking and protocols.

#### 3.1 IP BASED MONITORING

To log into the RF11iQ, prior to connecting through DHCP, type factory default IP **10.1.1.18** in the address field of a browser such as Internet Explorer, Firefox or Safari and the following screen should appear.



- Enter text to field User name: admin
- Enter text to field Password: THORRF11
- Press "OK" or "Log In" button (once Username and Password fields are populated) and this screen should appear below.

# RF Remote Status

	<b>Normal</b>	<input checked="" type="checkbox"/> Faults will sound buzzer
		<input type="checkbox"/> Output 1      0.0
		<input type="checkbox"/> Output 2      0.0
		<input type="checkbox"/> Output 3      0.0
		<input type="checkbox"/> Output 4      0.0
		<input type="checkbox"/> Output 5      0.0
		<input type="checkbox"/> Output 6      0.0
		<input type="checkbox"/> Output 7      0.0
	<b>Normal</b>	<input checked="" type="checkbox"/> Faults will sound buzzer
		<input type="checkbox"/> Outputs      0.0
	<b>Silent</b>	<input type="button" value="Silence"/>
	240.0	

RF11 (IP: 10.1.1.12)

[Configure](#)



You are now looking inside the browser of the RF11iQ. When both circuits are operational and protecting without being exposed to spikes or surges the status will be "Normal" and the text in green. As soon as the device is damaged or exposed to a high voltage incident then the status changes and the text colour also changes.

## 3.2 NETWORK & SECURITY SETTINGS

Please select "Configure" button on the bottom of the page to access the network settings. This will allow you to change the default IP address, User name and password and email configuration. Changing these settings is strongly recommended to maintain security protocols.

### *Enable DHCP*

When enabled, the device uses Dynamic Host Configuration Protocol to determine network settings. When DHCP is enabled you may not edit the network settings. If you open the configuration screen when DHCP is already enabled, the disabled fields will show the settings currently issued to the unit from your DHCP server.

### *IP Address*

The IP address of the unit.

### *Gateway*

The IP address of the default gateway, i.e. the address to which any traffic not destined within the local network will be sent for further routing.

### *Subnet Mask*

The bitmask which determines what portion of the IP address describes the network, and what part identifies a node within the network.

### *Primary DNS*

Address of the main DNS server. This is required to translate URLs to IP addresses (eg mail.yourcompany.com to 10.1.1.13).

### *Secondary DNS*

Address of the backup DNS server, used if communication to the primary server fails.

### *MAC Address*

This is the low-level hardware address of the device, which must be unique on your network and any network containing a machine trying to access the device.

The factory supplied MAC Address is guaranteed unique worldwide, it is recommended that you do not change it unless you have a very specific reason for doing so.

### *Admin Password*

Required to access the web interface for the device. Username is fixed as "admin", the password defaults to "THORRF11" on factory reset.

### *Host Name*

The name of the device on the network. It will be included in alert messages to help you identify which device is having a problem.

### **Email Server**

The IP address or name (eg mail.yourcompany.com) of the SMTP server used to relay outgoing messages.

### **Email User & Email Password**

The user id and password the device will use to log onto the SMTP server. Note that only clear text logins are supported (no SSL etc).

### **Email Address**

The email address to which alerts will be sent.

### **Save**

Click save to store any changes into the device's permanent Flash memory.

You will be asked to verify your current username and password.

You will then be re-directed to the status page again.

If you have changed the Admin Password, the status page will then ask you for the new username and password.

### **Cancel**

Aborts changes and returns to the status screen.

**Security:** *Although every effort is made to maximise Internet security within the unit, the capabilities of such a small device are limited, thus it is recommended that the unit be operated with an external firewall and other such security measures. The other advantage of this is that the firewall will be more up to date and better integrated with the site security policy.*

### 3.3 MAIN PAGE

The main page shows some buttons and the current status –

- ◇ AUS (this is for the 7 Australian pin outlets)
  - Green = all OK
  - Red = Damaged to protection and needs replacement
  - Power = Checked, activates power on the circuit
  - Buzzer = Checked, the buzzer will sound if the circuit is damaged. Either way, if the email settings are configured then an alert will be sent via email.
- ◇ IEC (this is for the 4 x IEC or “kettle plug” type connectors)
  - Green = all OK
  - Red = Damaged to protection and needs replacement
  - Power = Checked, activates power on the circuit
  - Buzzer = Checked, the buzzer will sound if the circuit is damaged. Either way, if the email settings are configured then an alert will be sent via email.
- ◇ Alarm/Buzzer
  - Green = all OK
  - Red = Alarm sounding
  - Silence = click on this button to silence the buzzer.

### 3.4 FACTORY RESET



If a unit requires a “Factory Reset” the user must follow the following instructions.

- Turn OFF power to the unit (Power ON / OFF Switch on the Front Panel)
- Push and hold the CPU RESET Switch (Located on the rear of the unit near the LAN Connector) and Turn ON the unit... Keep holding the CPU RESET Switch till the buzzer sounds – approx. 10-15 seconds release the CPU RESET switch.

The unit has now been reset to factory default state.

**NOTE:** In a Factory Reset Default Mode **ALL** outlets are reset to the “OFF” position and must be switched on via the Smartphone App or through the web browser.

### 3.5 SMARTPHONE APP

The RF11iQ has a revolutionised remote control of a power filtration & distribution system the use of a Smartphone App. It has some additional features:

- Indication of circuits that are turned "ON" with green or orange shading.
- Outlets Alarm Indication and Reset
- **(Circuit 1) - AUS Aus** 1-7 Outlets Alarm indication and reset
- **(Circuit 2) - IEC** IEC X 4 Outlet Alarm indication and reset
- Buzzer Control allowing you to switch the buzzer of or on remotely.
- Incoming AC Voltage monitoring "~" displayed on screen
- Individual Outlet Current Monitoring displayed in yellow text.



**Note the coloured circle indications as they are important**

- Switched on current draw less than 0.3A
- Switched on current draw greater than 0.3A
- Switched off no current draw



Current Load (A)	Display (A)	Criteria	Switched
0	Black / Grey No Ring No Text	No load	OFF
0.1A - 0.3A	Orange/Brown Ring No Text	Insufficient load to register a display	ON
0.4A - 2A	Green Ring & Yellow Text 0.4A - 2.0A	Increments in 0.1A steps	ON
2.1A - 8.0A	Green Ring & Yellow Text 2.5A - 8.0A	Increments in 0.5A steps	ON
8.0A - 10A	Green Ring & Yellow Text 8.0A	Max display is 8A	ON

## 4. APPLICATION NOTE (HOW TO TURN ON/OFF STAND-BY POWER)

Use of HTTP interface to remotely control the RF11 unit.

The RF11 exposes an HTML interface via the /cpan.cgi url which allows the user to power up/down the output and enable the buzzer for faults on each circuit. It also allows the user to silence the buzzer if it is active.

The full syntax is as follows:

```
http://<address>/cpan.cgi?param=<p>&value=<v>
```

### <address>

The address of the unit, either as an IP address (eg 10.1.1.7) or as a DNS name if this has been configured (eg rf11.yourcompany.com)

### <p>

### <v>

p1		Circuit one power.
	0	Power off.
	1	Power on.
b1		Circuit one fault buzzer
	0	Faults do not sound buzzer
	1	Faults sound buzzer
p2		Circuit two power.
	0	Power off.
	1	Power on.
b2		Circuit two fault buzzer
	0	Faults do not sound buzzer
	1	Faults sound buzzer
bz	*	Silence buzzer (the "value=" part of the command must still be specified but the actual value is ignored and can be blank)

### Some examples

To turn circuit 1 off:

```
"http://10.1.1.7/cpan.cgi?param=p1&value=0"
```

To disable the buzzer for circuit two:

```
"http://10.1.1.7/cpan.cgi?param=b2&value=1"
```

To silence the buzzer if it is active:

```
"http://10.1.1.7/cpan.cgi?param=bz&value="
```

Note that the login details are still required to perform these commands, as you will discover if you enter them straight into the address bar of your browser.

The authentication method used is BASIC, the username is fixed as "admin" and you choose the password – which defaults on factory reset to THORRF11.

Given that the device has an HTML interface which displays status and provides a user interface for this cpan.cgi command interface, the URL is not especially useful on its own. When, however, it is combined with the cURL utility (available for Linux, Mac and Windows) it means that any of these functions on the unit may be operated from the command line on any application.

**NOTE: These methods all rely on the address being valid permanently. It is recommended that you configure your RF11 with a static IP address if you are going to rely on the address remaining valid, as your DHCP server may change the address periodically.**

The syntax required for using cURL in this manner is as follows:

```
curl --user admin:<pass> "http://<address>/cpan.  
cgi?param=<p>&value=<v>"
```

<address>, <p> and <v> are the same as above.

<pass> is your currently configured admin password for the unit.

Make sure you wrap the url in double quotes.

cURL is a built-in command on Linux, BSD and the Mac. There are several implementations available for Windows and a simple search will reveal them.

Once this is configured, you can use other applications or utilities to drive (for example) the outputs of the RF11 units based on a schedule or other network management alarms and so on.

A classic example – some devices may only be required during the day. By using the task scheduler (Windows), cron (linux/BSD) or launchd (Mac) you can power up your rack in the morning and shut it down in the evening to conserve power.

**NOTE: Obviously, you will need to ensure that the appropriate shut-down of any equipment powered off the controlled circuit has been performed or that the equipment is tolerant of repetitive, unexpected power outages before using this procedure.**

### *Linux Example*

From a terminal type:

```
export EDITOR=<editor>
```

<editor> could be vi, nano, whatever your favourite text editor is.

```
sudo crontab -e
```

You'll need to enter your password, and be an admin on the machine. Add the following lines:

```
0 9 * * 1-5 curl --user admin:THORRF11 "http://10.1.1.58/cpan.  
cgi?param=p1&value=0"
```

```
0 17 * * 1-5 curl --user admin:THORRF11 "http://10.1.1.58/cpan.  
cgi?param=p1&value=1"
```

Save and exit.

Now, at 0 minutes past 9am, every day of the month and every month, on days of week 1-5 (Monday to Friday), the output of circuit 1 will be switched on. Similarly, at 5pm on these days it will be powered down.

## *Windows Example*

Start by finding a version of curl that works on your system. A good place to start is <http://curl.haxx.se/download.html>. Download and copy the curl.exe into your c:\windows\system32 directory. You may need to do this by running an explorer or cmd shell as administrator. Click Start, search for "cmd", right click on cmd.exe when it appears and run as administrator, then copy from there. You can do the same with explorer.exe instead of cmd.exe

Ensure that the curl command line call works, by clicking Start, searching for "cmd" and running cmd.exe. Enter the curl command and make sure the RF11 switches on or off correctly.

Now set up the schedule. Start->Control Panel, System and Security, Administrative Tools, Task Scheduler.

Create a basic task named "RF11 Startup", with a weekly trigger, starting at 9:00:00am and recurring every 1 week, with Monday through Friday checked. The task should start a program curl.exe, with the --user and url arguments to power up the circuit added.

Create a second task named "RF11 Shutdown" which is the same, except it should start at 5:00:00pm and arguments set to power down the circuit.

**YOU'RE DONE!**

## *Mac Example*

OS-X still supports the crontab utility as used by the linux example, although it has been deprecated in favour of launchd.

The configuration of launchd to call the curl utility is outside this scope: please refer to the Apple knowledgebase on the subject (searching for "launchd.plist" may also yield some good results).

## 5. EXTERNAL EARTH CONNECTION

### Add external earth

Terminate cable with a vinyl-insulated ring terminal similar to kst drvs5-1 or similar with a hole  $\varnothing$  to fit m4 stud ...

Hook-up wire 300v grn / yel or yel / grn min 16awg ... Similar to alphawire ul 1007 3057

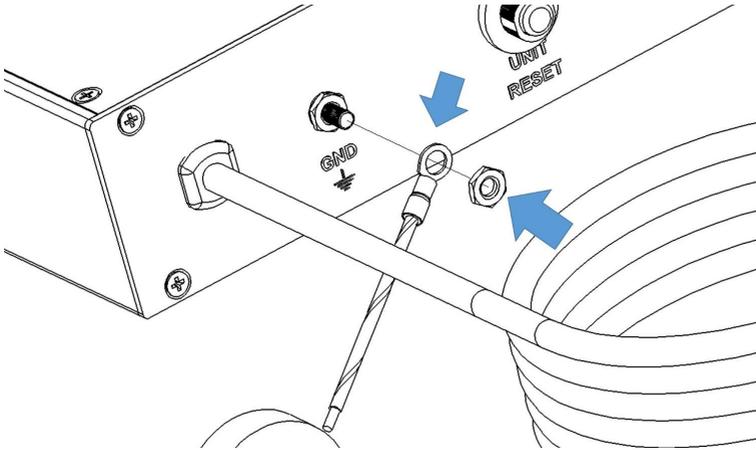


Figure 2

### OPTIONAL

An external earth can be added to selected RF11 Series products to meet earthing requirements with rack installations... use Figure 2 as a guide

1. Remove the TOP M4 nut but do not discard... keep for step 3.. DO NOT LOOSEN OR REMOVE THE SECOND NUT
2. Connect a correctly selected and terminated cable... See notes in picture...
3. Refit the M4 nut securely so that the ring terminal is held tightly in place.

## 6. BRACKET ADJUSTMENT INSTRUCTIONS

### ADJUSTABLE RACK MOUNTING BRACKET

The RF11 Series has a unique adjustable Rack Mounting Bracket to be set by the end user.

- (A) The bracket can be adjusted to accommodate the depth of the plugs that are connected. The bracket has a stop point limit and can be adjusted from flat, level with the front panel to its maximum point of travel as shown by the arrows in Figure 1 A.
- (B) Align the hole on the side of the unit with the hole of the Rack Mounting Bracket as shown in Figure 1 B.
- (C) Fit the M6 Screw provided in the packet to secure the bracket. The hole in the bracket is pretapped to suit the screw. One screw per bracket. As shown in Figure 1 C

### IMPORTANT NOTE:

Care should be taken that the screw is correctly positioned before attempting to screw it into position to avoid cross threading.

The process is repeated on the other side of the unit.

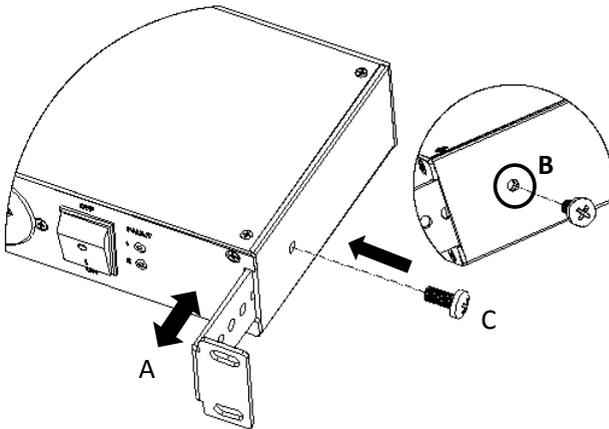


Figure 1

Additional 'Screws and Nuts (X 4)' are provided to allow the end user to mount the RF11 product in a rack. In most cases you will find that the racks systems have their own nuts built in but if they do not then these can be used.

## 7. REFERENCE

Error messages and causes:

### *Appendix A - Glossary*

Title	Title

### *Appendix B - Index*

Title	Title

## 6 YEAR PRODUCT WARRANTY

### **Congratulations on purchasing Australia's finest power protection.**

Unless otherwise stipulated in a separate and specifically superseding Product Guarantee, all THOR power protection products are guaranteed for a period of six (6) years from date of original purchase against damage or failure due to faulty components or workmanship. In addition in the event any THOR product is damaged or destroyed by a power related event while connected to the AC grid (including lightning), THOR may at its sole discretion repair or replace the damaged unit with a similar model for up to six (6) years from date of purchase.

Should you feel your THOR power board is malfunctioning, unplug the unit from the wall and contact our info-line 1300 766 140 during business hours (after hours please leave your details on the THOR info-line and we will return your call the following working day). Please have available at the time you speak with our service department the unit so you may identify the model number and the date of manufacture which is impressed on the back of the unit as well as a description of the difficulty you are experiencing and your retail invoice or bill of sale.

This warranty shall not cover normal and expected wear and tear, damage, malfunction or failure resulting from accident, misuse or misapplication, improper or unauthorised repair, neglect, modification or use of unauthorised replacement parts or accessories, operation of the unit beyond its technical and environmental specifications, infestation by insects or vermin or interfacing supplied by the customer or improper voltage. The warranty shall be void if the rating label or date code has been removed or altered.

This THOR product is sold by the Dealer or Agent as principal. The Dealer or Agent has no authority from THOR Technologies Pty Ltd to express any additional warranty or guarantee on the Company's behalf except as herein contained. This warranty only applies to the purchase and use of the product in Australia and New Zealand.

To the extent permitted by the relevant legislation in Australia and New Zealand, THOR Technologies Pty Ltd will not accept or have any other responsibility or liability whatsoever for negligence or liability for incidental, consequential, indirect or special damages, including without limitation, loss of actual or anticipated revenue or loss of data or for data being rendered inaccurate.

## REVISION HISTORY

Version Date Revision Description

1.0	07/07/2016	Manual Creation
1.1	07/07/2016	Update to match v1.0 of the firmware
1.11	07/07/2016	Update note application

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