Perimeter Patrol Interface

Technical Manual

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Contents

1 INTRODUCTION

The JVA Security Electric Fence Energisers and Peripheral Devices are designed and manufactured in Brisbane, Australia.

This document is a manual for the Perimeter Patrol Interface used to control the Security Energisers remotely using Perimeter Patrol and an Ethernet connection
This manual relates to:
PCB version: 1v00 and higher
Firmware version: 1.00 or higher
Current Firmware: 1.00

Scope and Purpose

- This document is intended for the training of engineering and technical personnel.

- As a reference for the features and specifications per version, as such it will be kept up to date and re-issued with each revision of the PCB or firmware. Please ask JVA for the latest version.

Part Numbers

PCB assemblies have a PAE prefix; while complete Products in enclosures are have a PTE prefix.

Glossary

Zone	–	A high voltage fence output and return to provide perimeter security.
Bi-polar	–	A Bi-Polar fence is an all-live wire fence. A Bi-Polar Energiser has the ability to pulse synchronised positive and negative pulses down alternate wires of the same fence line.
Conventional	–	A Conventional electric fence is wired in such a way that alternate live and earth wires are on the fence.
Feed Voltage	–	(Also Fence Feed) The Voltage connection from the Energiser to the start of the fence zone.
Return Voltage	–	(Also Fence Return) The Voltage connection from the end of a fence zone to the monitoring circuit of the Energiser.
On/Armed	–	The Energiser is transmitting high (or low) voltage pulses onto the fence. The fence is secure.
Off/Disarmed	–	The fence zone is unsecure, but is safe to perform maintenance on.
Positive Voltage	–	The Positive fence voltage on a Bi-polar Fence.
Negative Voltage	–	The Negative fence voltage on a Bi-Polar Fence.
Low Power mode	–	The fence live wires operate at a much lower voltage, typically 500V peak. This ensures detection together with public safety.

2 SPECIFICATIONS

Table 1 - Specifications Table

Specification Name	Specification
Number of Energisers Controlled	14 PTE1013 or PTE1023 Energisers
Required Software	Perimeter Patrol (Version 4.1 or newer)
Energiser Connection	Keypad Bus (+12, 0V, DAT)
Ethernet Connection	10BaseT via RJ-45
Power Consumption from Keypad Bus	10mA
User Inputs	None
Switched Outputs	None
Recommended Operating Temperature	-15°C to +50°C
Enclosure (Optional)	IP4x ABS Plastic
Size – PCB only	90mm high, 60mm wide, 30mm deep
Size – Enclosure	120mm high, 72mm wide, 35mm deep
Weight – packed (PCB only)	80 grams
Weight – packed (with Enclosure)	120 grams

Notes for all Z-Series energisers

2.1 ☠ DANGER ☠

- *There are potentially lethal high voltages inside the Z Series Energisers.*

- *The high voltage inside the Z Series Energisers may take a long time to discharge. Wait at least 10 minutes after turning off before opening the case.*

- *Before working on the high voltage wiring of an electric fence, it is recommended that the energiser be disarmed and an intentional short circuit is placed from the fence live wires to earth. This is a sensible precaution against the energiser being turned on by others or malfunctioning while working on the fence.*

- *If an electric fence is part of a multiple energiser system and the distance between two separate electric fences, each powered by separate energisers, is less than 2.5 meters, the energisers must be configured to operate in group mode.*

3 INSTALLATION

It is recommended that all installations are performed by qualified technicians

1. Read this section entirely first!
2. Configure the Security Energisers into Group Mode as Slaves even if only using 1 Energiser.

   NOTE: The Energiser IDs MUST start from ID=2 as the PAE212 is already configured as the Master with an ID=1.

Ethernet Port

Keypad Bus

J4
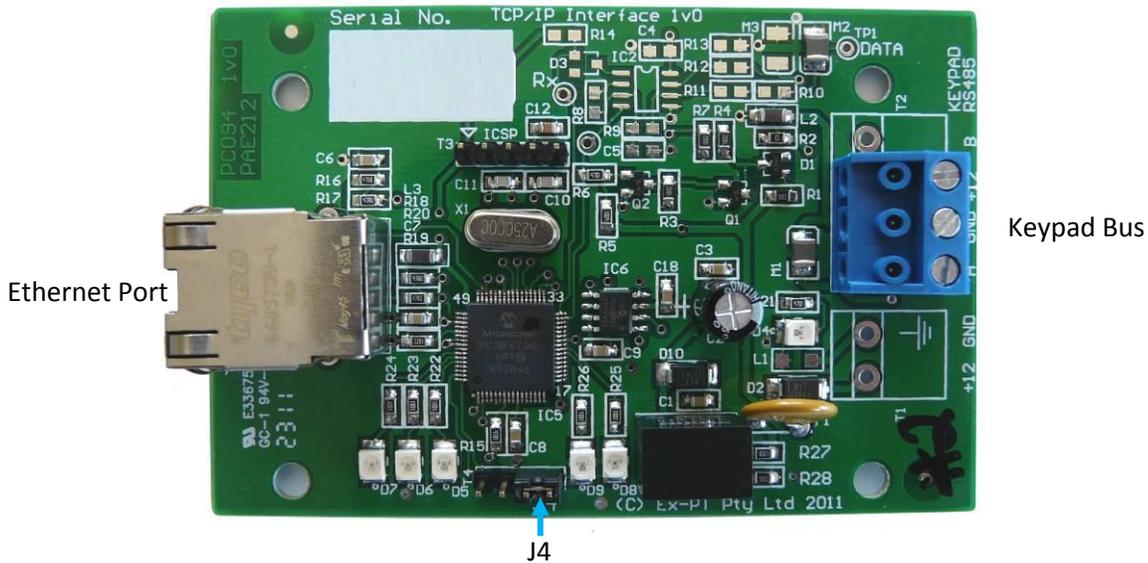
3. Wire the Keypad bus into the PAE212 (+12V, 0V, DAT) from an Energiser
4. Connect the Ethernet port of the PAE212 to the building Local Area Network (LAN)
5. Take a note of the Serial Number of the PAE212 as this is what Perimeter Patrol will use to identify the PAE212

Return to Factory Defaults (Jumper J4)

If for some reason the PAE212 is not being recognised by Perimeter Patrol, or it is not working as expected, it may be beneficial to return it to Factory Defaults. This is achieved by **removing the black Jumper located at J4 and removing the Keypad Bus connector**. When the Keypad Bus connection is returned, the LEDs D5 and D6 will light for ½ a second followed by D7 blinking once. **The D7 blink shows the PAE212 loading the Factory Defaults**. **Replace the Jumper across both pins of J4**.

LED Indications
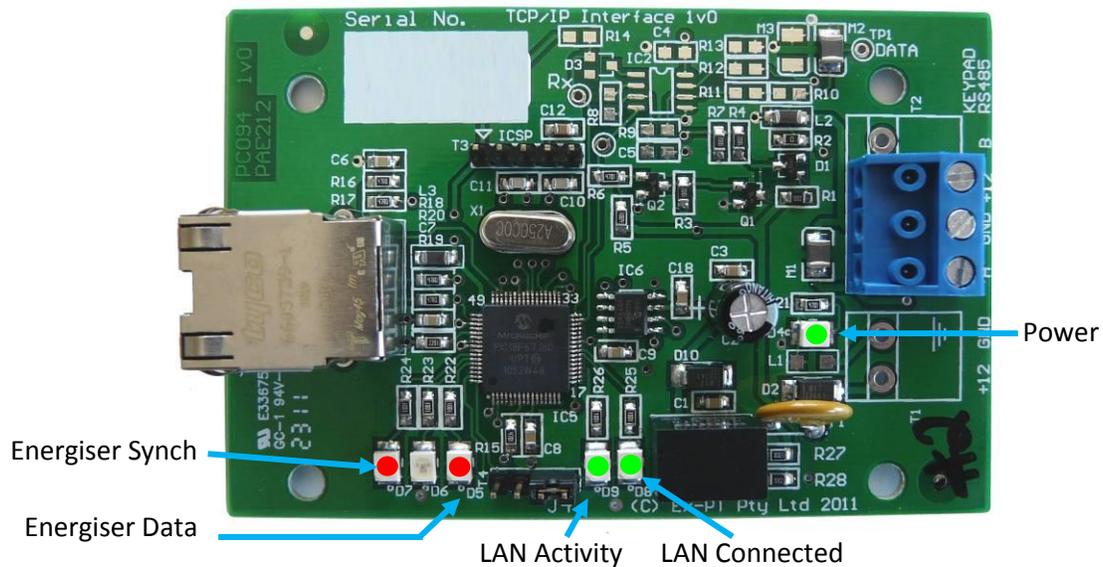
Power – the Green LED (D4) will be ON when the PAE212 has power

Energiser Synch – the Red LED D7 should BLINK once every second to indicate Energiser Synchronisation

Energiser Data – the Red LED D5 will BLINK rapidly (one blink per Energiser connected) when the PAE212 is receiving data from the Energiser

LAN Connected – when the PAE212 is connected to the Local Area Network (LAN) through the Ethernet Port, the Green LED D8 will be ON

LAN Activity – information sent by the PAE212 to Perimeter Patrol will be indicated by the Green LED D9

WAN Configuration

To access the PAE212 via the Internet, the modem connecting the LAN to the Internet must be updated. This may need to be performed by the Customer's IT Support staff.

The Modem/Router must have a Port Forwarded/Redirected to the static IP address of the PAE212.

This is achieved by accessing the settings of the Modem and configuring a Port Forward/Redirect in the Network Address Translation (NAT) section. The following example re-directs port 8087 of a Modem to the PAE212's IP address at Port 17289.

Required settings:

Protocol – TCP

Public Port – Any un-used port

Private IP – The static IP address of the PAE212

Private Port – 17289

To Determine the IP Address of the Customer's Modem:

- Open Google and type "**what ip address am I**" into the search bar
- Enter http://whatismyipaddress.com/ into the Web Browser address bar

Both options will return something similar to:

IP Information: 123.456.687.9

Perimeter Patrol needs to be configured to access this IP address and Port number.
In the Add/Remove Zones section update the IP and Port for each Energiser connected to the PAE212.
NOTE: The Scan function will not work with a WAN connected PAE212. All Zones will have to be
   Manually Added
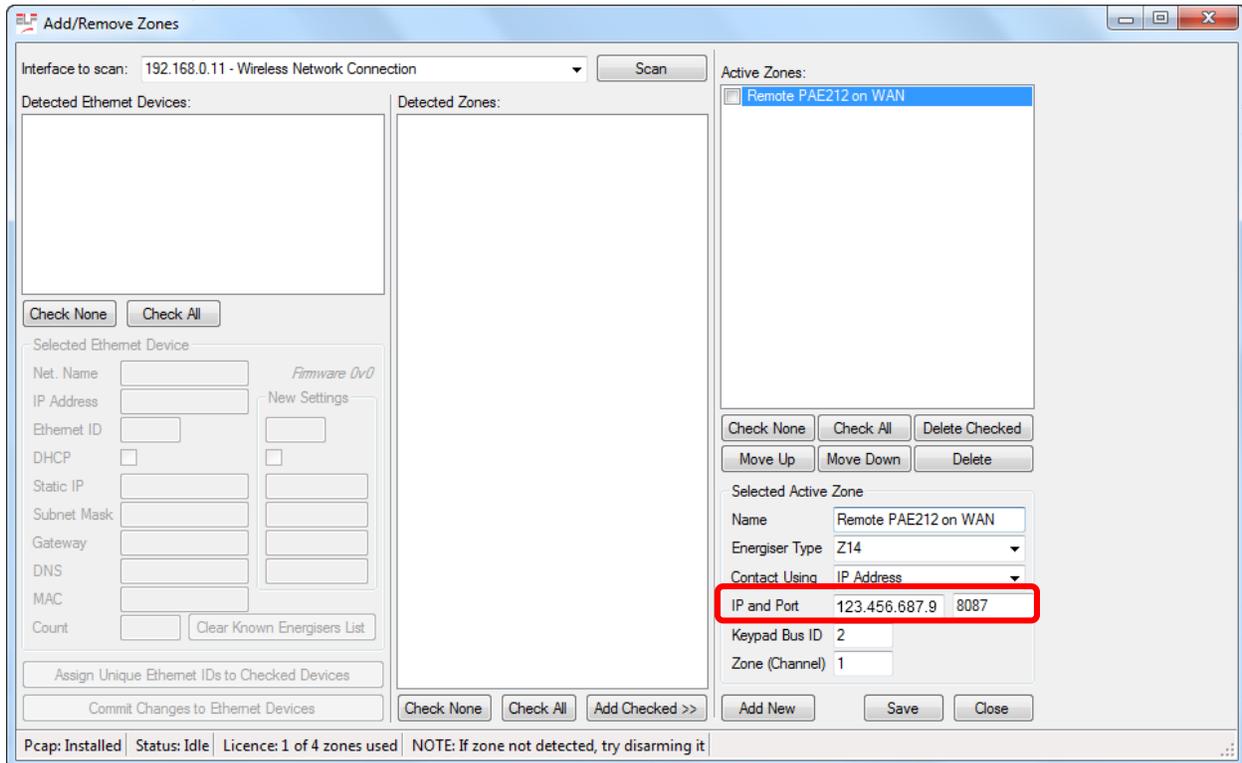
For the above example enter 123.456.687.9 in the IP box and the Public Port number 8087.

Note: There is currently no security to prevent someone with another copy of Perimeter Patrol "stealing" control of the devices. This can only occur when your version of Perimeter Patrol is turned OFF, or not actively connected to the PAE212.

4 ENERGISER CONFIGURATION FOR USE WITH THE PAE212

Example system

PAE212 (number 1; Serial Number 123456) is connected to Perimeter Patrol via the Ethernet connection and 2 x Z-14s will be connected to it via the Keypad Bus. These Energisers are Zone 1 and Zone 2.

PAE212 (number 2; Serial Number 654321) is connected to Perimeter Patrol via the Ethernet connection and 1 x Z-14 and 2 x Z-28s will be connected to it via the Keypad Bus. These Energisers are Zone 3 to Zone 7.

Zone 1 Energiser (Z14) should have its Group ID programmed to 2 via the Keypad (2602#)
Zone 2 Energiser (Z14) should have its Group ID programmed to 3 via the Keypad (2603#)
These should now be connected together via the Keypad Bus and connected to PAE212 number 1

Zone 3 Energiser (Z14) should have its Group ID programmed to 2 via the Keypad (2602#)
Zone 4 and 5 Energiser (Z28) should have its Group ID programmed to 3 via the Keypad (2603#)
Zone 6 and 7 Energiser (Z28) should have its Group ID programmed to 5 via the Keypad (2605#)
These should now be connected together via the Keypad Bus and connected to PAE212 number 2

NOTE 1: The Group ID of Energisers connected to a PAE212 must be between 2 and 15. This number does not represent the Zone number of the Energiser.
NOTE 2: As a Z28 is two zones, there should be a Group ID 'gap' left between it and the next Energiser

The procedure for adding Energisers and PAE212 into Perimeter Patrol follows this section
In Perimeter Patrol, these Energisers will be displayed in the Detected Zones list as:
ETH-123456:3:1(Z14)(This example is for Zone 2 Energiser above)
     ETH-123456 represents the PAE212 Serial Number of the Energiser it is connected to.
     :3 represents the Group ID of the Energiser.
     :1 represents the Energiser Zone number. This will be 1 for a single Zone Energiser or 1 or 2 for a Z-28.
This example system would have the following information in the Detected Zones section
     ETH-123456:2:1(Z14)   This is Zone 1 connected to PAE212 number 1
     ETH-123456:3:1(Z14)   This is Zone 2 connected to PAE212 number 1
     ETH-654321:2:1(Z14)   This is Zone 3 connected to PAE212 number 2

ETH-654321:3:1(Z28)   This is Zone 4 connected to PAE212 number 2

ETH-654321:3:2(Z28)   This is Zone 5 connected to PAE212 number 2

ETH-654321:5:1(Z28)   This is Zone 6 connected to PAE212 number 2

ETH-654321:5:2(Z28)   This is Zone 7 connected to PAE212 number 2

Once the Zones have been added, each should be selected in the Active Zone list and the Name altered to represent either the Zone number or a location.

Selected Active Zone

Name	
Energiser Type	Z14 Bipolar
Contact Using	Network Name (useful if DHCP is enabled)

5 USING MULTIPLE PAE212 BOARDS
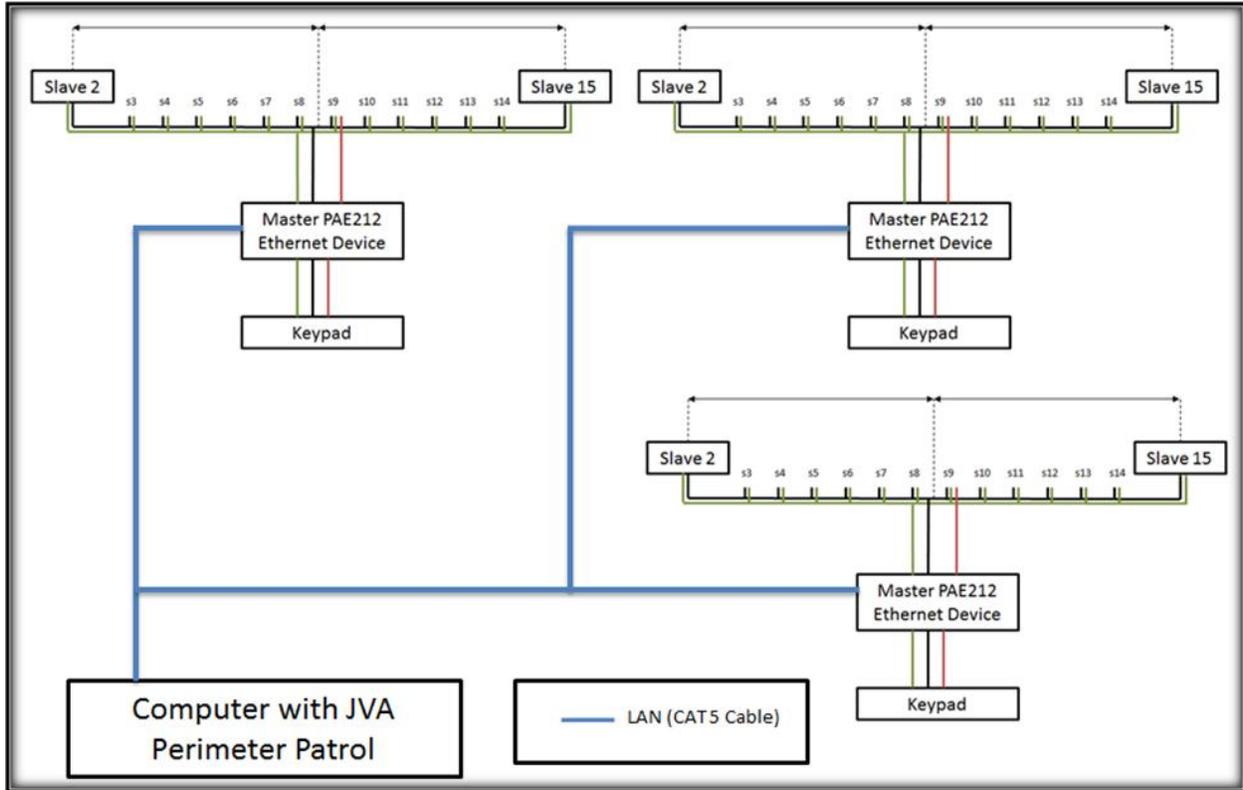
The Local Area Network can be used to connect multiple PAE212 Ethernet Adapter Devices to JVA Perimeter Patrol, giving JVA Perimeter Patrol the ability to monitor and command multiple groups of Security Electric Fence devices.

6 PERIMETER PATROL CONFIGURATION

1. In Perimeter Patrol open the System Configuration window (Setup→System Configuration…)

2. In the Zones Tab, Select the Ethernet option
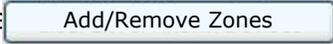
3. Press the [Add/Remove Zones] button
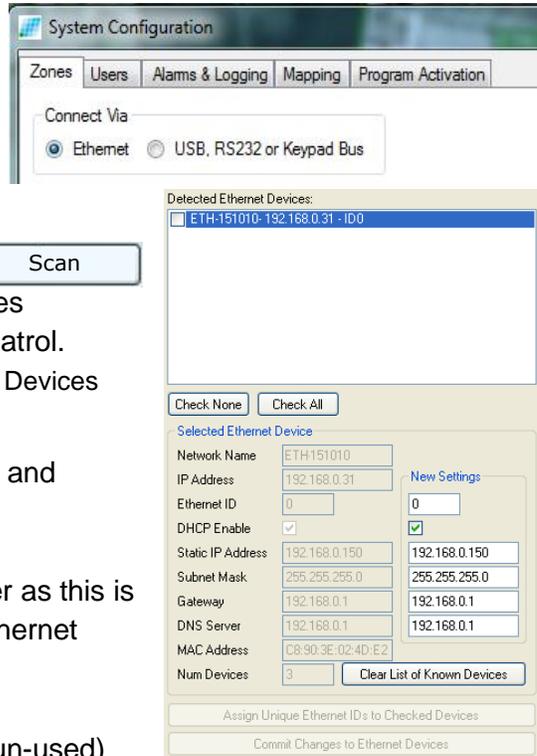
Automatically Detecting Connected Devices

1. In the Add/Remove Zones window press the [Scan] button. This will detect all of the PAE212 devices connected to the same network as Perimeter Patrol. These will be displayed in the Detected Ethernet Devices box
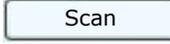
2. Click on each Detected Ethernet Device in turn and assign New Settings:
   - Enter a number in the Ethernet ID (1-128).
     Each PAE212 MUST have a unique number as this is used to synchronise the PAE212 via the Ethernet connection.
   - Disable DHCP (recommended)
   - Enter a new Static IP Address (one that is un-used)
   - Press the [Commit Changes to Devices] button

   This will ensure that all Energisers will be synchronised and able to respond to Perimeter Patrol Commands.

3. The Num Devices box at the bottom of the list indicates the number of Energisers the PAE212 has remembered. If this number does not match the number of Energisers connected [Clear list of Known Devices] button. This forces the PAE212 to re-evaluate the Keypad bus similar to the **68#** function of a Key[pad. Press the] [Scan] button again to update the Detected Zones box.
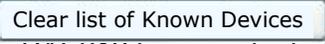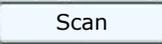
4. In the Detected Zones box, select and Add the Energisers to be monitored to the Active Zones box.
   The Detected Zones follow this numbering: ETH-XXXXXX:Y:Z
   Where **ETH** represents **Ethernet Interface**
   XXXXX is the **Serial number of the PAE212**

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> **Y** is the **Group Mode** Number programmed into the
>
> Energiser (26xx#) with values from **2** to **15**
> **Z** is the **Zone number** of that Energiser. **1** for a
> Single Zone Energiser, **1** or **2** for a Dual Zone
> Energiser

5. All Zones that are Added to the system will be displayed in the Active Zones box.
6. Select each Active Zone in turn and update the Name and Energiser Type to make it easier to distinguish the Energiser location

7. Press the [Save] button. If this is not done, all of the changes will be lost

8. Press the [Close] button

9. The Map window of Perimeter Patrol will now have all of the Active Zone boxes in the top Left Corner of the Map

Manually Adding Active Zones

An Active Zone can be added to Perimeter Patrol before the PAE212 is connected to the LAN, or before the Energiser is connected to the PAE212. This requires knowledge of the Energiser configuration and the PAE212 Serial number.

1. Pressing the [Add New] button in the Active Zones section will create a new Active Zone entry

2. Select the newly created Zone and then update all of the Zone information
   - Enter a suitable Name for the Zone
   - Select the Energiser Type from the list of available Z-series Energisers and Monitors
   - Enter the Network Name into the box. This is ETH-XXXXXX, where XXXXXX is the Serial Number on the PAE212. Eg PAE212 with Sn. 156876 = ETH-156876
   - Enter the Group ID of the Energiser into the Keypad Bus ID box
   - Enter the Zone (Channel) number. This will always be 1 except for a Z-28

Both Zones of a Z-28 need to be Added to the Active Zones box. The only difference between the settings for these is the Zone (Channel), one will be Zone 1, the other will be Zone 2.

3. When the Energiser and PAE212 are connected to the LAN, the Zone will become active on the Map page. Until this occurs, the Zone will display Coms Fail

APPENDIX A: Version Tables

PCB's (Including minor "schematic only" revisions)

Version	Release Date	Serial No. From:	Changes
0V2	March 2010		First dedicated TCP/IP board
1v0	May 2010		Fixed the reverse bias voltage protection for the Regulator Improved some trackwork Increased the readability of component designators

Firmware

Version	Release Date	Changes
0.5	August 2011	First release for Beta Testing
0.6	September 2011	Enabled the Arm/Disarm All feature Fixed the error that was causing a COMS FAIL in PP