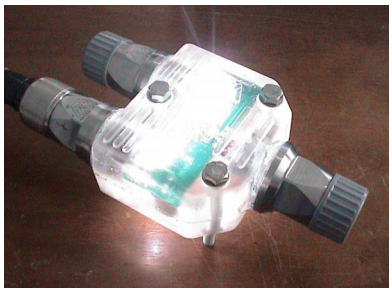
Seismic Stuff...

Tailbuoy Encapsulated PSU & Charger Module



User Manual

Seismic Stuff Technology Pte. Ltd.

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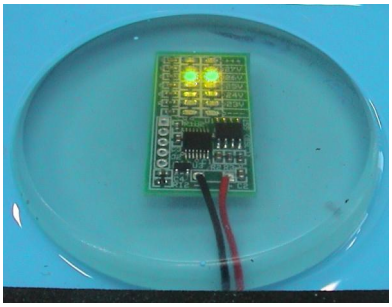

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Seismic Stuff Technology Pte. Ltd.
11 Changi North St. 1 #02-03
Changi North Industrial Estate
Singapore
498823

Co.Reg. 200821575R

Tel. : +65 65420411
Fax. : +65 65425411
email : info@seismicstuff.com
Website : www.seismicstuff.com

Introduction

This manual covers Seismic Stuff Technologies Encapsulated Streamer Power Regulator.

The regulator interfaces to power typically from Sercel's Seal system at 40 to 50 volts (Streamer Power) and converts the power to a regulated nominal 24 volts output.

The regulator output can be used to directly connect to a GPS beacon and/or to charge a lead acid battery. The design is capable of powering a single Seatrack or Buoylink unit even if no battery is connected.

The regulator also incorporates multiple white LED's which are flashed to identify the streamer hazard.

Encapsulation Material

Material	Polyurethane Resin
Colour	Water Clear
Hardness	Shore A 90
Temperature	-50 to 120 ºC

Fig 1. Encapsulated Regulator “Mid Flash”

Mounting

The module includes three feet per side which have three 8mm holes through the polyurethane molding.

The mounting template for this is as follows:

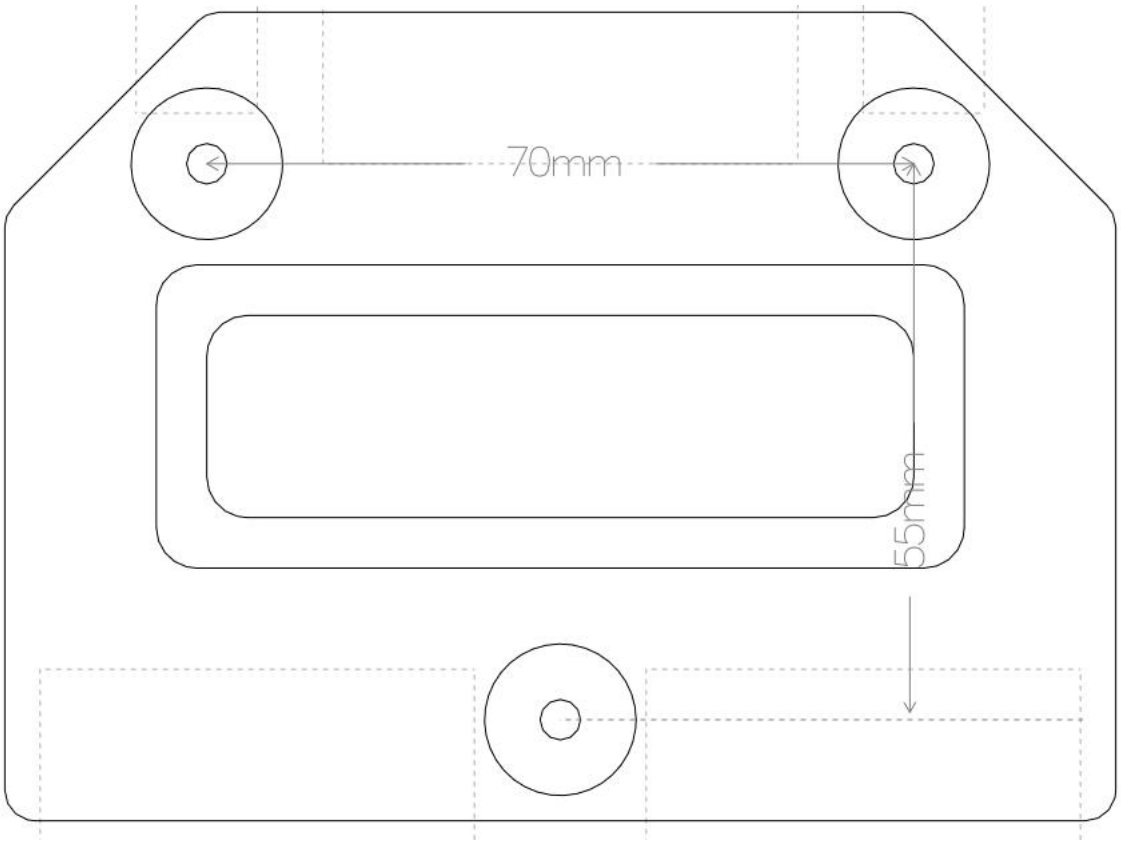

Fig 2. Mounting Template

The unit should be mounted with three A4 Stainless Steel 8mm diameter bolts at least 60mm long and washers used to spread the load on the PU molding. A mounting kit is available containing the following parts:

05-01-1101 Encapsulated PSU & Charger Module Installation Kit

Contains:

3 x 05-02-1101 M8x80 A4 SS Bolt
6 x 05-02-1102 M8 A4 SS Washer

The regulator should be mounted at a suitable point on the tail buoy especially if visibility of the flashing light is a requirement.

The regulator is marked with the following information showing connector designations as well as pin out and part number information.

Fig 3. Insert Panel

Regulator Soft Start

The regulator monitors Input Voltage, Output Voltage and Input Current.

If the input voltage is less than 20V the regulator remains shut down without any output.

When the input voltage rises above 20V a soft start is initiated.

A soft start maintains the regulator output off for 3 seconds then the regulator starts and immediately tries to push 0.3 Amps (input current) into the load. This current limit is slowly increased over the next few seconds up to the regulator limit of 0.6 Amp input current.

If at any time during the soft start the regulator output voltage is achieved (27.6V) the regulator changes to Voltage Regulation Mode where the regulator drive is modulated to maintain 27.6V.

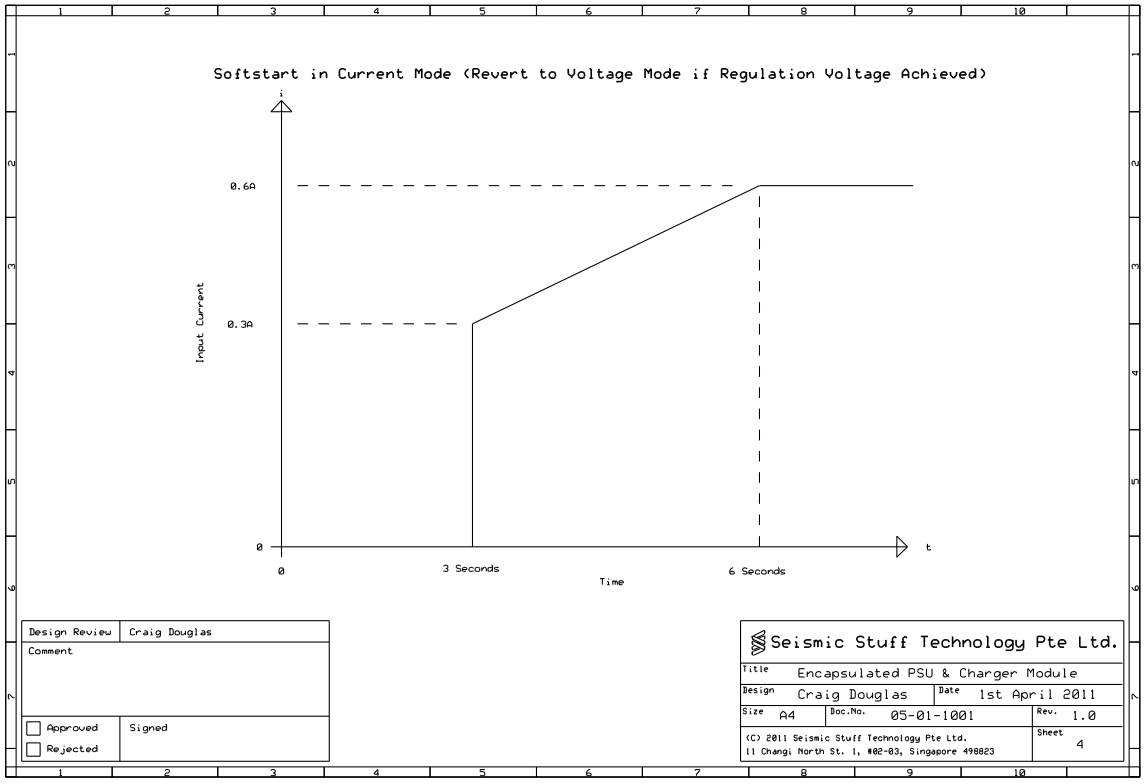

Fig 4. Soft Start Current Profile

Regulator Operation After Soft Start

The regulator continuously monitors Input Voltage, Output Voltage and Input Current.

If the input voltage drops below 20V the regulator shuts down and re initiates a soft start process described in the section above.

The mode of operation is determined by mapping the measured Output Voltage and Input Current into the regulator operational matrix (shown below).

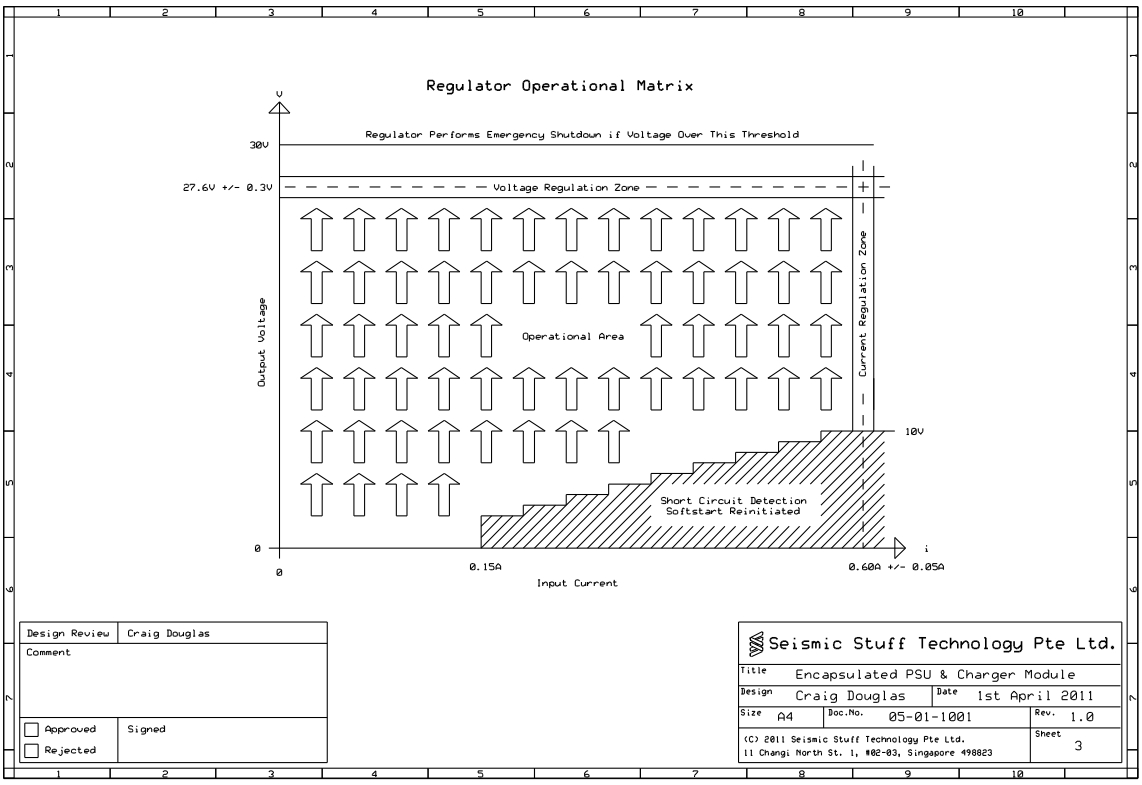

Fig 5. Regulator Operational Matrix

If it is determined that the device is in the “Operational Area” the regulator pushes increasingly more current into the load to raise the output voltage to be within the Voltage Regulation Zone.

If the Input Current Limit 0f 0.6 Amps is reached, the regulator changes mode from voltage to current regulation mode. In this case the regulator simply continues to push the maximum input current into the load maintaining the maximum current limit of 0.6 Amps.

If, whilst pushing more than 0.15A into the load, it is detected that the output voltage isn't rising as expected – a case typically seen when the output is shorted out or impedance of the load is too low, then the regulator re initiates another soft start. The limit to detect a short circuit condition is that the output must be less than 10V at the maximum input current of 0.6A.

Note that regulator converts input power to approximately the same output power minus a small drop due to the conversion losses within the converter. For example, if the input voltage is 50 V and input current 0.6 amps, this corresponds to 30 Watts “Input Power”. If the output voltage has dropped to 10V then the output current would be approximately 3 amps - 3 Amps x 10 Volts is also 30 Watts “Output Power”.

Specification

Input Voltage	20V* to 60V Max
Regulated Output Voltage	27.6V (05-01-1002, 24V)
Input Current	0.6 Amp Maximum
Startup Input Voltage	20V Min
Startup Delay	3 Seconds
Initial Current	0.3Amp Max
Short Circuit Detection	10V Max @ 0.6 amp 1V Min @ 0.15 amp
Flashing LED	24 x InGaN/Sapphire 8000mcd Mega Bright White LEDs
Flashing Code	Default = Morse “U” Other Patterns Selected with Magnet Swipe Contact Seismic Stuff Technology for details
Daylight Detection	Via LDR Daylight = LED's Disabled
Width	115 mm
Length	95 mm (185mm with connectors)
Thickness	52 mm
Weight	1.380 kg

* Note that although the regulator drive circuitry starts at 20V, it is unable to drive a higher voltage from the output than from the input. The output voltage will only be as high as the input voltage. The on board logic & processor will startup when the input voltage rises above approximately 7 volts or when an external battery is connected.

Connection Information

Streamer Input

AGP2708F

with the following pin outs: -

1 No Connection
2 No Connection
3 Streamer + (nominally 50 V at 0.6 amp)
4 Streamer - (nominally 50 V at 0.6 amp)
5 AUX +
6 AUX -
7 No Connection
8 No Connection

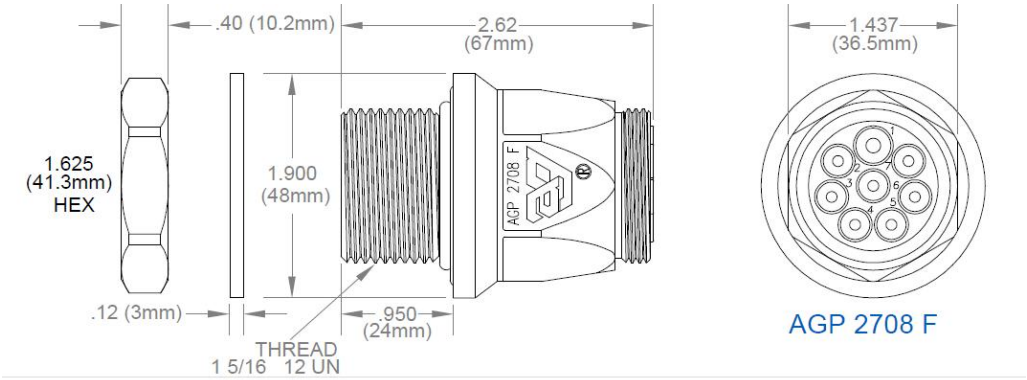

Fig 6. AGP 2708 F

Battery Output

AGP2704M

with the following pin outs: -

1 Charging + (regulated at 27.6V for 24V battery)
2 Charging -
3 No Connection
4 No Connection

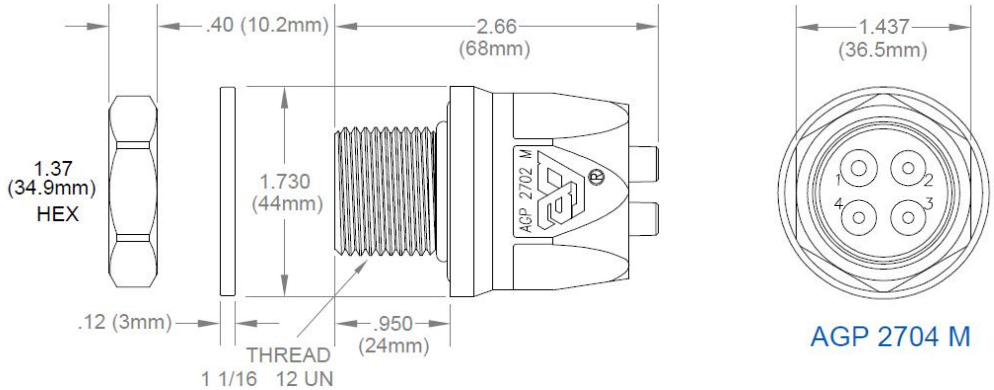

Fig 7. AGP 2704 M

GPS Output

AGP2704F

with the following pin outs: -

1 +24V (regulated at 27.6V)
2 0V
3 Aux + (from streamer pin 5)
4 Aux – (from streamer pin 6)

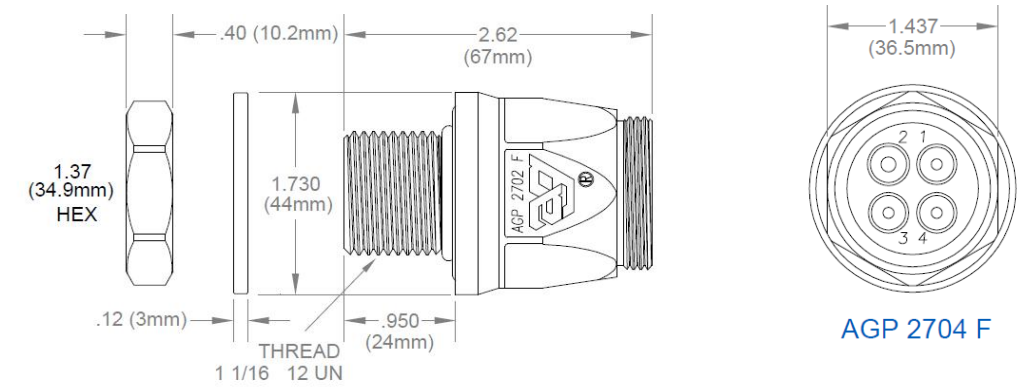

Fig 8. AGP 2704 F

Part Numbers and Description

05-01-1001 Encapsulated PSU & Charger Module 24V
05-01-1002 Encapsulated PSU & Charger Module 12V
05-01-1101 Encapsulated PSU & Charger Module Installation Kit

Associated Parts

05-01-2002 Encapsulated Battery 22Ah 24V
05-01-2001 Encapsulated Battery 44Ah 12V