

POWER PLUS VOLTAGE REGULATOR

READ 100% BEFORE INSTALLING IN AIRPLANE!

Specifications

- 8 Bit Microcontroller
- 3.3 ~ 8.2 Volt Output User Adjustable
- Deans Plugs
- 10 Amp output - 70 watts
- Daylight LED's
- Voltage input max 10 Volts D.C [(2) cells Li-Poly - (2) A123 cells - (7)-Ni-Mh Cells]
- Max output 8.20 Volts D.C [8.40 volts input]
- Min Output 2.33 Volts D.C
- Max Current output 10A [14 Amps Peak 30 seconds]
- Low voltage indication point 6.8 volts [under 20% of pack remaining]
- Duty cycle 100% when volts > 6.50 (10 Amps 100% of the time)
- Duty cycle 70% when volts > 6.0 (7.0 Amps 70% of the time)
- Duty cycle 50% when volts < 6.0 (5.0 Amps 50% of the time)
- 5.0V or 5.1V should only be used if you MUST have it for a Heli system. The system gets very hot running 5.0 volt outputs.

A word on batteries:

This is a High Power voltage regulator system with >10 amp draws at any one time.

Your purchase/selection of cells can greatly affect its performance to the point of creating an UNSAFE situation! It's your setup that keeps you and your airplane safe!

Always select a battery that can output at least 10/15 amps 100% of the time.

We use a Min of 2000ma Per Regulator and 25C rated cells (2Cells 8.60V 15/20 C rated Min) use of any 10C cells can have your airplane hunting for Dirt! We tested some top name brand cells that said they were for Receiver applications 0 of 5 even got close to giving 10 amps @ > 7.50 Volts! Meaning the regulator was staving for power, along with your servos and radio gear! We have found it's best to just buy a pack rated for electric flight, EVO is the Top Dog, Thunder Power is also good. Any other cells MUST be rated at least 15C if not 25C!

Our successful tests used 25 C packs!

Some proven packs we have tested:

EVO - #EVO1500-2s1p - 25C rated pack (29% to 31%)

EVO - #EVO2170-2s1p – 25C rated pack (31% to 33%) (33% and bigger add 1 per 3%)

Thunder power – 2100 - 20C pack (31% to 33%) (33% and bigger add 1 per 3%)

Watts are watts:

This regulator can deliver > 70 watts to the load. 20Ga wire or better should be used. When possible they should also be twisted wires. MPI & Air Wild both have great wire sets in almost every size needed MPI is 20Ga , Air Wild is 22Ga Twisted pairs. We have used both and they are both great wires, there are many vendors with good wire sets.

A digital volt ohm meter or watt meter is a MUST! *STOP NOW IF YOU DON'T HAVE ONE*

The Astro-Flight watt meter is a good unit there are also many just like it. This can detect stalled and binding servos. It doesn't take many servos to over amp your system. Any amp readings over 1~1.5 amps @ ea regulator at idle and there is most likely binding and it must be addressed before flight. Idle being defined as no servos are being actively moved their simply holding their positions. It's also a good idea to sweep all servos and observe current readings after you take a reading at idle. It's a safe bet that with flight loads it's going to be double at some point or more. If you get a 1 ~ 2.5 amp reading when moving back and forth as many servos as you can your doing ok, this is on a per regulator used test. Test ea unit used for voltage and current to be sure there are no issues before any flights. This is including looking at the input and output for proper voltage *7.50- 8.40* Input & your set voltage at the output without drop out under load*

If you were running (8) HS-5995TG / 8611A Servos you would have a 24 Amp load if they are stalled / under heavy 3-D loads. We run 7 HS-5995TG on our 35%TOC-SD Yak 54 with 2 regulators and 2 EVO 2170 25C packs along with our 2 Pac backer to bring them together.

For every set of 3 Hs-5995TG / 8611A you would need 1 Regulator or (3-4) for the Avg 40% plane. For HS-5645MG /DS-821 Etc you can double the servo count above per regulator.

(1) For the Avg 25~30% plane and (2) for anything 31%~35% and (3-4) for 36~42%

Based on 8611A Or HS-5995Tg servos used

Double that # for any other digital servo used

For a HS-5645MG stalled is about 1.5 amps an 8611A is 4 amps plus!

HS-5645MG 1.5 amps max per servo

HS-5995TG 3.5~ 4.0 amps max per servo

DS-821 1.0 amps max per servo

8611A 4.0~4.5 amps max per servo

Most digital servos 1.0~1.5 amps per servo max (8 "digital" servos could be used)

Add up all servos using the above ratings to get your amp total then select how many regulators your system needs to be safe.

Wiring and setup:

Dean's plugs are provided for power input and output.

Chances are your charge jack switch has radio type plugs for in and out.

Solder the set of plugs we provided onto the leads on the charge switch by cutting off the radio plugs, they then can interface to the regulator from your charge jack switch. We use the CERMARK charge switches in our airplanes. (Some have deans installed on them) You can also make extensions now to reach the mounting spot of the Power Plus if needed.

Use 18 or 20 ga wire and keep them short as possible.

The Power Plus is output adjustable and must be set before use. (3.3~8.60 volts out)

The factory setting is 6.80 volts. If you require any other output set it now using the setup below.

Voltage set:

Before mounting, plug Power - Plus into your 2 cell pack.

The unit on power up samples the voltage and blinks both Red/Grn LEDS letting the voltage stabilize for about 20 seconds then lights the RED or Green LED based on voltage it finds.

If the RED stays lit then the pack is LOW and must be recharged (6.50 volts trip point)

If the GREEN LED stays lit then you're ready to proceed to adjust the output voltage.

There is a BLUE trim pot that you can adjust to set your output. Looking from at the top right hand corner having the trim pot.

The trim is > voltage clockwise < voltage counter clockwise.

Use a digital volt meter or the watt meter to verify voltages.

Once voltage is set but still not mounted, do the idle current and other testing for trouble issues. Once confirmed that everything is ok proceed to mounting the unit.

You should have from 7.50 to 8.4 volts at input under load, and your set voltage at the output at this point before proceeding.

You need to have both the deans plugged into the Power Plus at this time. Put a cable tie though the slots at ea end and place the Power Plus over the mounts the ties should wrap around the deans plugs only, letting air flow under the Power Plus PCB. No foam or any other items should be under the Power Plus. There is no need to soft mount the Power Plus!

The Power Plus needs airflow above and below to cool itself. We provided Mounts and cable ties allowing air to go below and convection cool the unit, there should be at least 1/8" below and 1" above the unit. Measure 2.25 in and mount ea plastic mounting square at ea end of that line. Thin CA harden the foam on the mounts now if desired on the airplane. Feed SMALL amounts of thin Ca into the edge of the mounts to complete.

After the first flight open your canopy within 1 to 2 minutes after flight and check the temperature of ea unit. you should be able to hold a finger on the heat sink for 3 seconds or a max of 180 F if the unit is hotter than this, then you need to Add units or find what surface is binding in flight. If no binding or flutter is found you need more cooling or to add more regulators.

Using more than 1 Power Plus:

Using more than 1 Power Plus is just like using 2 battery packs on your airplane, there output must be summed before or after the input. If we sum them before the Power Plus we lose voltage to the regulators, since the output is adjustable on the Power Plus we are summing after the Power Plus to avoid this loss. We are going to use a 40% 2-Pac Backer for this function .We start with 2 charge jacks switches and 2 battery packs connect and set up ea Power Plus just as ea is a single unit, first charge switch to the first battery, output of first switch/battery to the first Power Plus input. Second charge jack switch to the second switch/battery output of the second charge switch to the second Power Plus. The output of both Power Plus's now go to the 2 deans plugs on the 2 Pac Backer inputs leaving a single Radio type output with the output from both Power Plus unit's . Be SURE you have both Power Plus unit's set to the exact same voltage output! I.e. 6.80 +/- 10Mv! Use a digital volt meter or your watt meter they Must match within the 10Mv range or your output won't be 20 amps!

The higher voltage unit would prevail and doing all the work until it shut off!

Be sure to look at the Output of the 2 Pac backer for your final voltage you desire, if you wanted say 6.00 Volts to your radio then you would set the Power Plus unit's to 6.30 volts adding the 300 mv to ea output for the loss at the 2 Pac backer. At 6.80 volts the factory setting, you would have 6.50 volts to the radio. Please find wiring diagram on next page for examples of many power systems and there wiring connections. If you require more then what is shown, we can design a system for you. Email our support dept.

If you are unsure about how to use this device or a watt meter contact us!

Your local dealer can also support you don't proceed until you get support!

You can also return it to us for a refund if you believe you are unable to safely install this device!

High power battery systems can cause fires or other damage if misused.

Understand that you are the only person to keep you and your plane safe.

42% & your dealer are NOT responsible for your safe handling of this device.

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