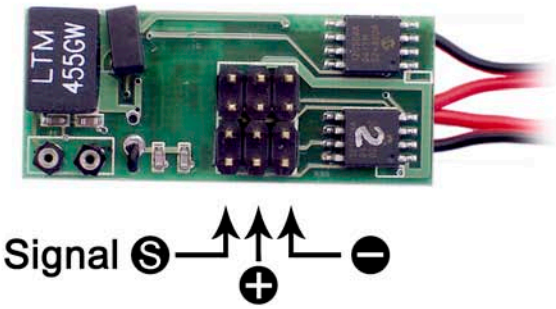
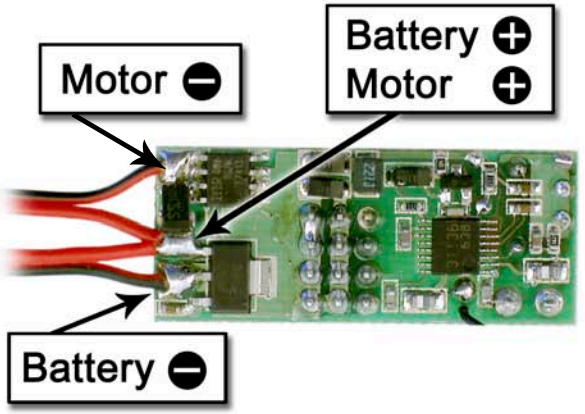
Quick start instructions for using your new DSP4-SC with Electronic Speed Control

- Plug your servos into the connector block, shown in the photo below. The black or brown servo wire is the "-" or "GND" lead. The photo shows polarity and channel functions.
- Your motor can be soldered or plugged into the motor wires of the DS4-SC. The motor wires are labelled with a sticker that says "To Motor". For larger motors, keep them as short as possible for best performance. **Warning: Shorting the motor leads together during operation can cause permanent damage to your DSP4 and is not covered by warranty.**
- Plug the DSP4 "Battery" (mini-MPX Female) connector into a 2.5 to 18 volt battery. The mini-MPX locking microconnector mates to all Plantraco LP lithium polymer cells and packs. If you want to use different connectors, or will be soldering new connectors to your cells, **Observe proper polarity!** Incorrect polarity will cause permanent damage to your Electronic Speed Control.





- Turn on your transmitter and test your servo movements. Then, move the throttle lever to the lowest position. After waiting for at least 1 second, advance the throttle lever. If your motor does not run, try reversing the throttle servo direction on your transmitter (and see other side, also) .

Tips

- You may remove the DSP4 plastic case to save weight. If you do, be careful to insulate the DSP4 from carbon fiber or any other conductive components. It is always a good idea to secure your socketed crystal with a small piece of cellophane tape.
- Your DSP4 BEC automatically supplies power to the receiver, your servos, and the built-in ESC from the Battery connector.
- The built-in Electronic Speed Control is the same one found in the popular GFS! from Mikro Designs, and functions independently from the DSP4 servo outputs. **You must turn on your transmitter and move the throttle lever to it's lowest setting for at least 1 second to "arm" the ESC.**
- If your transmitter signal is lost for more than 1 second, the built-in ESC will shut off your motor to prevent a fly-away. When a valid throttle signal is again detected, your motor will return to the proper speed.

- 4 Channels
- Ultra Narrow Band FM
- Digital Signal Processing
  For Long Range performance
- Use With Single Lithium
  Cell, or 2.5v to 18v battery
- Built-in GFS! Speed Control
  has 10 Amp Capacity
- Full 1.5 Amp BEC On Board
- Crystal Included!

Micro Receiver with Electronic Speed Control

DSP4-SC

DSP4-SC

Micro Receiver with Electronic Speed Control

DSP4-SC Specifications

Operating Voltage:.....2.5 to 18 Volts
Bandwidth: ...<10 KHz - exceeds AMA standards
Adjacent Channel Isolation: 60dB
Sensitivity: .....Better than 5 uV
Current Drain: .....16mA @ 9.6V
Receiving Range: ....Long Range-1500++ feet
Crystal: .....Use Plantraco crystal only
Modulation: .....Narrow band FM, -ve shift
Tx Compatibility: .....Futaba/Hitec
Dimensions: .....0.625" x 1.5" x 0.5"
Weight:.....4.5 - 8 grams

Built-In GFS! Electronic Speed Control

Rated Current: .....up to 10 Amps
BEC output: ..... 5V, up to 1.5 Amps
Switching Frequency: .....2 Khz

Technical Support/Manufactured By:
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Canada S7H 0S3
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Digital Signal Processing - The Wave of the Future is Here Now!

Conventional Receivers: Dumb and Dumber

Conventional receivers use analog pulse shaping networks and shift registers to decode the incoming transmitter pulses. This old technique has two major problems: it is complex to build, and it cannot tell the difference between noise or interference, and the desired R/C signal. The result: servo jitter, excessive servo wear, and in severe cases, crashes.

Digital Signal Processing: Smarter is Better

A microcomputer is the ideal way to implement intelligent processing. The DSP4 microcomputers have a whole array of built-in algorithms to selectively weed out noise and interference, and allow only clear, clean signals to reach your servos and motor.

Valid Signal Detector

VSD will throw away invalid R/C pulses. In addition, it will ignore short gaps in the signal that are common when flying in very noisy electrical environments, or when you are near the limits of radio range. The result is very smooth operation, even under adverse conditions.

Ramp-Up, Ramp-Down Filtering

The built-in speed control has our exclusive Time Domain Filtering algorithm. This ensures motor speed will always increase or decrease smoothly, greatly reducing motor and gearbox stresses.

Safety Arming: No signal = No Glitch

Go ahead, turn on your receiver first! The Safety Arming algorithm will not allow your servos or motor to move until it determines that a proper, stable, R/C signal is present. No more out-of-control thrashing, and no more broken servos!

Loss of Signal Shutdown

The Loss Of Signal feature will shut down your motor when NO valid R/C signal is received for 1 second. When a valid throttle signal is again detected, your motor will return to the proper speed automatically.

Range and Selectivity: More is Better, But . . .

With conventional receivers, amplifying the signal more also amplifies noise and adjacent channel interference. DSP4 solves these problems by using higher quality crystal filters in the "front end" to reject more of the unwanted signals. The remaining noise can then be effectively removed with the highly sophisticated Digital Signal Processing computer.

Try This!

Place a brand "____" receiver on a table and power it up with a servo attached. (Oh, did you remember to turn on your transmitter first?!) Turn on another transmitter on an adjacent channel. You will probably get "hit". Now, do the same thing with a DSP4. No glitching. Move the correct transmitter across the room. Still no glitching. Turn the correct transmitter OFF. Still no glitching! (Yes, we've done this many times.)

More Features: the 1.5 Amp BEC

Your DSP4 BEC is capable of 1.5 Amps continuous current. This should be plenty to run the receiver and any combination of small servos you have. The BEC chip is soldered to an area of solid copper to aid in heat dispersion. HOWEVER, as servo load and battery voltage increase, so does heat generated by the BEC. When using a battery of 12V. or more, test the setup by exercising your servos continuously with your transmitter. If the BEC becomes too hot to touch, you are nearing the limits of heat dissipation, and you should either reduce the battery voltage, or use smaller servos. By the way, the BEC chip itself is protected against excessive temperature, and will gradually shut down if overheated.

Up to 10 Amp Capacity

Although the built-in ESC is designed for use with small electric motors, it is actually capable of delivering over 12 Amps of current. Since motors can draw surge currents many times larger than the average current, we recommend using a 10 Amp fuse between the DSP4-SC and motor when using any motor and battery combination capable of drawing more than 12 Amps when the motor is stalled.

If your motor will not run

The build-in speed control must see at least 1 second of LOW throttle (defined as a pulse width of <1.2ms) before it will arm itself. If your transmitter does not put out a "LOW" enough throttle signal, your motor will not run. Here are some things to check to ensure your transmitter is sending a "LOW" enough throttle signal:

1. Is your throttle trim lever set all the way to "LOW"?

If you have a programmable "computer" transmitter, also check:

2. Is your LOW throttle subtrim programmed to zero? You may also try setting it to the LOWest setting possible (plug in a servo, and watch it to ensure you are adjusting in the correct direction).
3. Is your LOW throttle endpoint adjustment programmed to the default (normal) setting? Try setting it to the LOWest possible setting also, as above.