

Setting Up your Berg 6*DSP GIII or Hyperion DSP*6-FS Receiver

Consult your Transmitter manual to see which receiver channels will control each model function

Viewed from the side, the servos should be connected to the receiver like this:

Top Pin:	Signal	White or Orange servo wire
Middle Pin:	(+) Positive	Red servo wire
Bottom Pin:	(-) Negative	Black or Brown servo wire

First turn your transmitter ON, and then turn on the switch for the receiver. For electric models using BEC speed controller without switch, the receiver is ON when you connect the main power pack to the speed controller.

Make sure that the propeller is removed from the motor during initial receiver set up.

These are rather special receivers... As soon as powered ON, the receiver learns the characteristics, or the 'signature' of your transmitter. For 72MHz radios (Berg 6 DSP) this includes type of modulation (positive shift, JR, Airtronics, Multiplex) or negative shift (Futaba, Hitec), and the receiver automatically adjusts to work with either shift type. For 35/36MHz and 40MHz, shift is not an issue, so this feature is not required in the Hyperion DSP*6 receivers.

Then, it learns (and remembers) the number of channels, the keying pulse, and the approximate frame rate of the transmitter. After that process is completed (it takes all of a few seconds), the receiver will only listen to that particular transmitter. This process which we call Transmitter Signature Recognition, or TSR, gets 'refreshed' every time you turn the receiver ON.

The receiver then starts decoding your transmitter's commands and passes these on to the servos. Should the receiver temporarily lose the signal from the transmitter then it will 'fill in' the missing pulse or pulses. This condition is called HOLD. It does this indefinitely, but it will start passing good pulses to the servos again as soon as the radio link is restored. This process works much,

much faster than with PCM systems, and that is a very real advantage over PCM failsafe.

HOLD is the default method the receiver uses. You also have the option to pre-program all servo positions when signal is lost, using Fail Safe Mode.

Should you decide to turn ON the FailSafe (FS) mode, **then be careful!** You should plan the way you program Fail Safe with forethought. When signal is lost in Fail Safe mode, there is 2 seconds of HOLD, then all servos will revert to your pre-programmed position.

If you program the throttle FS position to FULL THROTTLE, for example, your system will go to full throttle about 2 seconds after the radio link is lost. If you taxi into the pits and forget to turn off the receiver switch before turning off your transmitter the Fail Safe mode will start at whatever positions you programmed. Obviously, then, you need to carefully consider the Fail Safe programming - especially throttle position!

NEVER TURN THE TRANSMITTER OFF BEFORE TURNING THE RECEIVER OFF.

TURNING ON: TRANSMITTER ON FIRST, THEN RECEIVER ON.

TURNING OFF: RECEIVER OFF FIRST, THEN TRANSMITTER OFF

But you will find that this receiver has quite a bit of range, so you may never experience the HOLD or FS mode entry in actual flight. In most cases of poor signal recovery occurs well before fail safe mode is entered.

User Programmable:

- *channel 5 output on channel 5 pins (factory default).
- *channel 7 output on channel 5 pins.
- *fail-safe mode ON.
- *fail-safe mode OFF (factory default)
- *Fail safe position for all servo outputs

Required for programming: your transmitter, and two jumper "programmer" plugs (supplied).

Defaults: the receiver is shipped with HOLD mode ON, Fail-Safe mode OFF, and channel 5 output on #5 pin set.

Programming:

- 1. Place a jumper on **channel 2 output**
- 2. Install a servo on **channel 1 output** (the servo is your programming success indicator)

All programming steps start with receiver OFF.

CAUTION: Don't remove power from the transmitter or the receiver during a programming cycle. If you do, you will not damage anything, but you will have to start your entire programming cycle over.

To select channel 7 output on channel 5 pins:

Put **second jumper** on **channel 4 output**.

Transmitter ON

Receiver ON

Wait for the servo on channel one to complete one cycle.

Turn receiver OFF

To select channel 5 output on channel 5 pins (default factory setting):

Put **second jumper** on **channel 3 output**.

Transmitter ON

Receiver ON

Wait for the servo on channel one to complete one cycle.

Turn receiver OFF.

Turn Fail-Safe mode ON:

Put **second jumper** on **channel 6 output**. (put jumper on # 5 output to return to Fail Safe OFF again later)

Transmitter ON

Receiver ON

Wait for the servo on channel one to complete one cycle.

Turn receiver OFF.

When done, remove jumpers and install receiver in aircraft.

Programming Fail-Safe Servo positions

Caution: with electric powered aircraft, REMOVE THE PROPELLER !

Assuming you have previously programmed FS ON, then you can proceed to this step.

The default (factory preset) FS servo default "values" are:

Channels 1 and 3: 1 msec - with electronic speed controls this is MOTOR OFF, for safety.

All other channels: 1.5 msec - servo **neutral** for most transmitters

With the receiver in the aircraft and the aircraft on the bench, turn on transmitter and receiver, operate the transmitter sticks and set all your servo directions, trim, throws, mixing etc. to those positions you would like to have them in should a complete loss of signal occur. Have a helper hold your transmitter sticks in these positions. Be sure throttle is in OFF position, unless you are SURE that you want it on.

Keep transmitter ON.

Turn receiver OFF

Put a jumper plug on any open receiver channels: the aileron servo extension cable may be accessible, or the landing gear output, etc

Turn receiver ON

Count to 10

Remove jumper plug from receiver.

Finished

Test fail safe operation:

Transmitter ON

Receiver ON

Check for control of all servos on the correct channels (sticks).

Put all sticks in a random position and turn transmitter OFF.

All servos should stay in their position for about two seconds of HOLD mode.

If Fail-Safe is activated and properly programmed, all servos should move to their previously programmed position after about 2 seconds.

If they don't, start the above procedure over.

note: During the time the receiver is in HOLD or Fail-Safe condition, as soon as the radio link is re-established, then the servos will immediately respond to the transmitter control inputs. HOWEVER, when a transmitter is turned off and then on again, it may take up to eight seconds for the transmitter to 'boot up' when you turn it back, so the control delay may be up to eight seconds. So NEVER test your Fail Safe Programming 'in the air' by turning your transmitter OFF and then ON again, or this may be your last flight of the day!!

NOTE ON SPEED CONTROLLERS AND BEC

When being used in electric airplanes, the receiver and servos are frequently supplied their power via the throttle channel cable from the Electronic Speed Control (ESC). Most ESCs are equipped with a voltage regulator circuit, which acts as a Battery Eliminator Circuit (BEC). BECs are specified to supply a certain (maximum) current – should this current limit be exceeded then the output voltage will be reduced. This means that your receiver and servos could now be operating at voltage levels below their specified minimum. This may cause servo slowdown, motor cut-out and, in worst case, failure of the radio link. In most cases of reported receiver failure, the root cause can be traced to an overloaded ESC BEC.

Example: A typical 3-cell LiPo battery produces about 12 Volts. The BEC capacity of the ESC, when using only 2 miniature servos, is probably reached in this case. With 3 servos, the limit may be exceeded at short intervals; with 4 servos, failure is likely to occur.

Suggestion: Always check the maximum BEC current specified by the manufacturer of the ESC and dimension your servo count accordingly to prevent BEC overload and possible unexpected motor shut down and/or radio link failure.

Specifications: (that make the Berg Technology Receivers the Best in the World)

- Servo outputs = 6
- Fixed channels = 1-2-3-4-6 Selectable channels = 5 or 7
- Front end filtering: Triple tuned RF
- IF filtering: Transformer + 6-pole ceramic filter

- Shift: Auto Shift Detect with TSR
- Decoder filtering: True Digital Signal Processing (DSP) in the Microprocessor decoder with adaptive algorithms based on signal to noise ratio of the received signal.
- Sensitivity: ~ 2uv
- Dimensions: 0.525" x 0.85" x 1.65"
- Fly-wheel HOLD mode: All servo signals are held hard in position of last good signal seen before signal loss.
- Failsafe ON mode: Upon loss of signal, servo outputs will be held for approximately 1.5~2.0 seconds before driving to pre-programmed fail-safe positions.