JETI speed controllers

Thank You,

For your purchase of the JETI series controller, a new generation of sensorless speed controller for brushless Motor Designs. Special programming options are provided to ensure the best possible power and performance from your motor system. Brushless systems offer high power efficiency combined with low weight and compact dimensions. For best performance and reliability from your controller use only high quality connectors, motors and batteries.

- Please, pay careful attention to the following instructions before you start to work with your new motor and speed controller.

Connections:

The speed controller can be connected to the motor by soldering or with high quality connectors. Always use new connectors, with should by soldered carefully to the cables and insulated with Heat shrink tubing. It is possible to extend the cables to the motor battery pack up to maximum of 8 inches. Deans Ultra or other high quality connectors are recommended for connecting the motor battery pack to the controller.

- Solder controller to the Motor wires
- Solder appropriate connectors to the Battery wires
- Insulate all Soldered connectors with Heat Shrink Tubing
- Plug the JR connector into the receiver throttle channel

Installing the controller:

Install the speed controller in the model so that it is isolated from vibration and shock, using Velcro or double sided foam tape. Allow space around it for cooling. Make sure there is sufficient cooling of the motor and speed controller by ducting air trough adequate holes from the outside airflow. Main power packs should by connected at one attempt.

Locate the controller to Avoid multiple touches of the connectors when installing a fresh motor battery pack.

Type	Timing Modes				Frequency Modes			Min. cut off voltage	# Cells	Amperage [A]	# Servos 7 cells	# Servos 10 cells	Size [mm]
	1	2	3	4	1	2	3						
Master 40-3P, *70-3P*	●	●	●	●	●	●	●	5 V	6-12	40 , *70*	6	5	52 x 25 x 8 , *10*
Master 40-3P OPTO, *70-3P OPTO*	●	●	●	●	●	●	●	5 V	6-16	40 , *70*	OPTO	OPTO	52 x 25 x 8 , *10*
Master 30-3P	●	●	●	●	●	●	●	4 V	4-10	30	4	3	42 x 23 x 7
Master 105-3P OPTO	●	●	●	●	●	●	●	5 V	6-16	105	OPTO	OPTO	52 x 25 x 12
Master 48-3P OPTO, *77-3P OPTO*	●	●	●	●	●	●	●	6 V	8-32	48 , *77*	OPTO	OPTO	52 x 25 x 10 , *12*
Master 99-3P OPTO	●	●	●	●	●	●	●	6 V	8-24	99	OPTO	OPTO	52 x 25 x 12
Advance 40-3P, *70-3P*	●		●		●			5 V	6-12	40 , *70*	6	5	52 x 25 x 8 , *10*
Advance 40-3P OPTO, *70-3P OPTO*	●		●		●			5 V	6-16	40 , *70*	OPTO	OPTO	52 x 25 x 8 , *10*
Advance 30-3P	●		●		●			5 V	6-10	30	4	3	42 x 23 x 7
JES 40-3P, *70-3P*	●				●			5 V	6-12	40 , *70*	6	5	52 x 25 x 8 , *10*
JES 40-3P OPTO, *70-3P OPTO*	●				●			5 V	6-16	40 , *70*	OPTO	OPTO	52 x 25 x 8 , *10*
JES 30-3P	●				●			5 V	6-10	30	4	3	42 x 23 x 7
Master NAVY 40-3P, *70-3P*	●	●	●	●	●	●	●	5 V	6-12	40 , *70*	6	5	52 x 25 x 13 , *15*
Master NAVY 40-3P OPTO, *70-3P OPTO*	●	●	●	●	●	●	●	5 V	6-16	40 , *70*	OPTO	OPTO	52 x 25 x 13 , *15*
Master HELI 40-3P	●	●	●	●	●	●	●	5 V	6-12	40	6	5	52 x 25 x 8
Master HELI 40-3P OPTO	●	●	●	●	●	●	●	5 V	6-16	40	OPTO	OPTO	52 x 25 x 8
Master HELI 48-3P OPTO	●	●	●	●	●	●	●	6 V	10-30	48	OPTO	OPTO	52 x 25 x 10

Type	Timing Modes				Cut off Modes			Min. cut off voltage	# Cells	Amperage [A]	# Servos 7 cells	Weight [g]	Size [mm]
	1	2	3	4	1	2	3						
Master 04-3P	●	●	●	●	●	●	●	4 V	4-8	4	3-4	2/6	25 x 17 x 4
Master 08-3P, *18-3P*	●	●	●	●	●	●	●	4 V	4-10	8 , *18*	4	5/9 , *11/21*	32 x 23 x 6 , *7*
JES 04-3P	●				●			5 V	6-8	4	3-4	2/6	25 x 17 x 4
JES 08-3P, *18-3P*	●				●			5 V	6-10	8 , *18*	4	5/9 , *11/21*	32 x 23 x 6 , *7*
Master HELI 08-3P	●	●	●	●	●	●	●	4 V	4-10	8	4	5/9	32 x 23 x 6

When connecting controller to battery pack, care should be taken to ensure that multiple touches of the connectors are not made.

Using the controller:

- Switch ON the transmitter and check the throttle channel settings are +/-100% (for the computers radios). For Futaba Radios program the Servo Reverse function on the throttle channel. Set the throttle to closed or brake position.
- Switch on the speed controller. For speed controller without BEC, switch on the power to receiver (just connect the power pack for the Master 04-3P and Master 08-3P speed controllers).
- You must hear a 'beep'. Between switching on the switch and the 'beep' the throttle stick must not be moved. If you do not hear a 'beep', switch off the switch, disconnect the power connectors, wait for 5 seconds and repeat the procedure of connecting and switching on.
- If you do not hear 'beep' again, check the following:
  - Is JR connector plugged in throttle channel ?
  - Is the throttle stick in "closed" position (off) ?
  - Is the throttle channel in "normal" position? (for Futaba, in the Reverse position?)
- You will hear the 'beep' during switch on of the controller. If the switch was in off position more than 4 seconds you will hear the 'beep' again.
- The position of "full throttle" will be adjusted automatically
- Warning: Once the Motor Battery pack is connected, handle the model with extreme care! Ensure that you are well clear of the propeller at all times. Rotating propellers are extremely dangerous!
- Always Connect the motor battery pack just before flight and disconnected it immediately after landing the model.
- Warning: Even when the switch is "off" remember the Motor Battery pack may be connected, handle the model with extreme care and stay well clear of the Propeller!

Timing monitor:

- The controllers have timing monitor. The monitor gives information about actual timing setting.
- If you wait 5 seconds after controller activating (after one or two "beeps") you will hear set-up timing mode. It is possible to interrupt this beeping in any time by moving the throttle stick to forward.

Setting the Brake:

- All controllers except the Heli and Navy versions are supplied with Brake on.
- How to change the Brake
  - Switch "on" the transmitter and move the stick to "full throttle"
  - Connect the main power pack and turn on the receiver switch (if used)
  - Wait 5 seconds, you will hear 4 beeps (· · - ·)
  - Move the throttle stick to position "close"
  - After moving you will hear 2 "beeps" that means the brake is off. These two "beeps" you will hear after each controller activation.
  - If you want to activate the brake, disconnect the motor battery pack. Repeat the procedure.

Setting the Timing mode:

- It is possible to change the timing on this generation of speed controllers.
- All controllers are supplied in Timing mode 1. You can change to set the right timing for optimal efficiency for your type of brushless motor.

Timing mode 1 – (2-5 degrees) optimum timing for Hacker, Lehner, and other 2-pole motors
Timing mode 2 – (10 degrees) optimum for Aveox, Astro, and for maximum RPM on 2-pole motors.
Timing mode 3 – (18 degrees) optimum timing for Phasor, Mega, Plettenberg, and other 6-pole motors and for maximum RPM on Aveox, Astro, and other 4-pole motors.
Timing mode 4 – (30 degrees) optimum timing for AXI, Kohler, Actro and other Outrunner motors.

- How to change the Timing Mode:
  - Switch "on" the transmitter and move the stick to "full throttle"
  - Connect the main power pack and turn on the receiver switch (if used)
  - Wait 5 seconds, you will hear 4 beeps (· · · - ·)
  - Wait next 5 seconds
  - You will hear a 5 time single "beep" – mode 1 (· , · , · , · , ·)
  - 5 time two "beeps" – mode 2 (·· , ·· , ·· , ·· , ··)
  - 5 time three "beeps" – mode 3 (··· , ··· , ··· , ··· , ···)
  - 5 time four "beeps" – mode 4 (···· , ···· , ···· , ···· , ····)
  - Set the Timing mode by moving the throttle stick to position "close", while between the 1st and 5th "beeps" of the desired Timing mode.
  - Configuration of New timing mode, single "beep" (if you had brake on), double "beeps" (if you had brake off)
  - The timing mode is now memorized, that means it will not change after disconnecting the motor battery pack.
  - If you want to change the timing mode again, disconnect the motor battery pack. Repeat the procedure.

Setting the Switching Frequency of the controller:

- It is possible to change the switching frequency on this generation of speed controller. (Note: the 06-3P, 08-3P and 18-3P can not be changed)
- All controllers are supplied witch 8 kHz Switching Frequency
  - Frequency Mode 1 – (8 kHz) for all types of iron motors
  - Frequency Mode 2 – (16 kHz) for motors with extreme low resistance
  - Frequency Mode 3 – (32 kHz) for Tango or Samba motors
- How to change the frequency Mode:
  - Switch "on" the transmitter and move the stick to "full throttle"
  - Connect the main power pack and turn on the receiver switch (if used)
  - Wait 5 seconds, you will hear 4 beeps (· · · - ·)
  - Wait next 5 seconds you will hear the Timing beeps, Wait … after Mode 4 Timing
  - You will hear a 5 time "long tone" – frequency 1 (- - , - - , - - , - - , - -)
  - 5 time "tone + beep" – frequency 2 (- · , - · , - · , - · , - ·)
  - 5 time two "beeps" – frequency 3 (· · , · · , · · , · · , · ·)
  - Set the Frequency mode by moving the throttle stick to position "close", while between the 1st and 5th "Tones" of the desired Frequency mode.
  - Configuration of New Frequency mode, single "beep" (if you had brake on), double "beeps" (if you had brake off)
  - The Frequency mode is now memorized, that means it will not change after disconnecting the motor battery pack.
  - If you want to change the Frequency mode again, disconnect the motor battery pack. Repeat the procedure.

Cut off setting:

- It is possible for the Master 04-3P, 08-3P and 18-3P to set cut off mode.
- This part of setting is on the same place like frequency change (at Master 30-3P and more)
  - Cut off mode 1 – (min. 4 V), "long tone" – NiCd/NiMh (- , - , - , - , -)
  - Cut off mode 2 – (constant 5,3V), "tone + beep" – 2 Lithium cells (- · , - · , - · , - · , - ·)
  - Cut off mode 3 – (constant 7,95 V), two "beeps" – 3 Lithium cells (· · , · · , · · , · · , · ·)
- The speed controller will turn-off the motor when the main power pack voltage falls under 5V (4V for Master 04-3P, 08-3P, 18-3P and 30-3P in cut off mode 1) or reaches 0,7 V/cell. It depends on which occurs first. Soft Power Cut Off except you have controller with BEC and set-up brake on.

How to change rotor rotation

- Exchange two output wires from controller or Exchange by software (only for MASTER controllers)
  - Switch "on" the transmitter and move the stick to "full throttle"
  - Connect the main power pack and turn on the receiver switch (if used)
  - Wait 5 seconds, you will hear 4 beeps (· · · - ·)
  - Wait next 5 seconds you will hear the Timing beeps and frequency beeps, Wait … after frequency Mode 3
  - You will hear a 5 time "tone" – (- · · , - · · , - · · , - · · , - · ·)
  - Throttle stick back in motor off position
  - If you want to change the rotation, disconnect the motor battery pack. Repeat the procedure.

HELI controller

- The very first setting of the Heli controller
  - Full throttle
  - Transmitter on
  - Receive on
  - Wait until 4 "bleeps" (· · · - ·)
  - Throttle stick back in motor off position
  - One "bleep" => Mode 1: Normal control
  - Two "bleeps" => Mode 2: Constant speed (RPM control)
  - If you want to change the mode, disconnect the motor battery pack. Repeat the procedure.

NAVY controller

- The very first setting of the NAVY controller
  - Full throttle
  - Transmitter on
  - Receive on
  - Wait until 4 "bleeps" (· · · - ·)
  - Throttle stick back in motor off position
  - After moving you will hear 2 "beeps".

Notes about Operation and Warranty:

- Reversing the motor direction is achieved by the exchanging the position of any two wires connected to the motor.
- Do Not exceed the 10 cells or 4-5 servos when using BEC.
- Temperature overload protection is built into the speed controller, it turns off the motor when the temperature reaches 230°F/110°C.
- These speed controllers are equipped with protection functions that take care of correct start and operation of the motor across the whole range of RPM, current and voltage.
- Do Not connect the speed controller to just 'any' kind of power source. Take care to ensure the right polarity of NiCd, NiMH or Lithium power packs only.
- Do Not connect the motor battery to the wrong polarity, the speed controller will be severely damaged.
- Controllers connected to the wrong battery polarity, WILL NOT be covered under the warranty.