



# Linear 200 PWM HO-1/32 Instructions



### Linear 200 Adjustable Brake and Throttle Controls

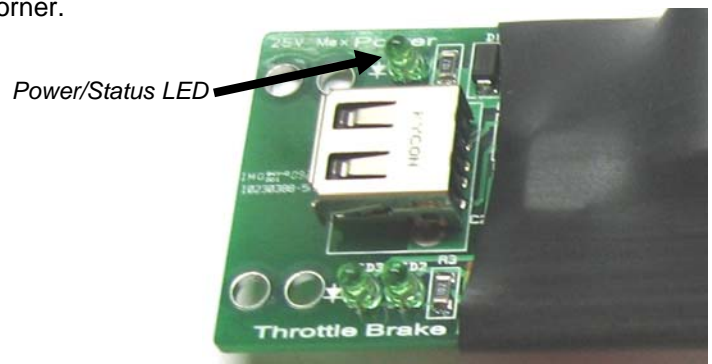
The Linear 200 PWM HO-1/32 is a high performance 24-band electronic controller. Its SOFTouch™ throttle control is designed to handle HO cars from T-Jets to Unlimteds and both magnet and non-magnet 1/32nd scale cars over a voltage range of 10V to 25V. It is very easy to fine-tune the controller response to suit any car, track condition or driving style by adjusting the settings of the brake and throttle potentiometers.

Turning the brake knob to the Max position makes the car stop faster and turning the throttle sensitivity knob to the Max position quickens the response of the car out of the corner.

### Controller Connections

Connect the controller to the track WITHOUT the car in your lane. Be sure to connect your brake (red) wire as the controller will not operate properly without it. The green Power/Status LED should be glowing to indicate track power is turned on, the track polarity is correct, and that your brake wire is connected. The Power/LED Status light is located near the USB connector.

Note: If you do prefer to put your car in the lane before connecting your controller, always connect the red line first.



### Throttle and Extended Range PWM Brake Control Setup

Set the throttle sensitivity and brake control to the Min position. Taking several laps, gradually increase the throttle sensitivity until the car has the desired snap out of the corner, but is still comfortable to drive. Gradually increase the throttle sensitivity to the desired setting.

Now turn your attention to the brake settings. Gradually increase the brake strength until you can dive deeply into a corner but can still drive the car smoothly.

If the car becomes to difficult to drive, back off on the brake and throttle sensitivity settings to smooth the car out.

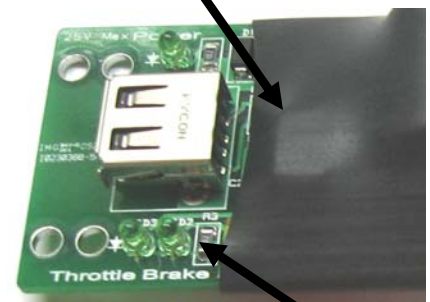
### Extended Range PWM Brake/Power Coast Option

Convert the brake control to Brake/Powered coast operation by installing our optional control chip MCU-PWM-ST-PC. When this chip is installed, the brake control will apply brakes over the first 2/3rds of its travel, then apply up to 25% of track voltage over the final third as indicated by the throttle and brake LEDs. Be aware that motors will tend to heat up if the control is left in powered coast and the car is motionless on the track.

Socketed control chip

### Negative Polarity Track Operation

The Linear 200 PWM HO-1/32 controller is preconfigured to operate on positive polarity tracks up to 25V. To operate on a negative polarity track, install our optional control chip MCU-PWM-ST-EPWM-NEG. When you hook the controller up at the control panel, reverse your power and brake lines...connecting the controller's white clip to the track's brake (red) post and the controller's red clip to the track's power (white) post.



Throttle and brake LEDs

### Convert to a Full Featured 1/24th Scale Controller

Convert your SOFTouch™ throttle control HO-1/32 controller to a linear response 1/24th scale controller by installing our optional control chip MCU-PWM-LIN-EPWM.

Learn more about the JayGee Racing Linear 200 controllers at [www.jaygeeracing.com](http://www.jaygeeracing.com)



# Linear 200 PWM HO-1/32 Instructions

## Normal Maintenance

The PC board wiper bands should be kept clean and clear of excess gunk and oil with a dry cotton swab. If you need to apply any lubricant or braid juice, clean the board first. Apply a tiny drop to a clean cotton swab, wipe it over the bands, then wipe up any excess with a clean, dry swab. This process will leave a very thin film of lubricant on the bands.

If the wiper action becomes very rough, you can smooth out the wiper button with some fine grit sand paper by placing the paper under the button (grit side up) and working the trigger back and forth. NEVER SAND THE PC BOARD.

Keep the brake contacts clean and shiny by polishing them with fine grit sandpaper.

## USB Cables & Connections

The Linear 200 utilizes a USB cable to conduct low current analog control voltages between the handle and power module. It does not use the USB protocol to transmit or receive digital signals.

**NEVER PLUG THE LINEAR 200 HANDLE OR TRANSISTOR MODULE INTO ANY OTHER DEVICE'S USB PORT. DOING SO MAY DAMAGE THE CONTROLLER AND THE DEVICE IT IS CONNECTED TO.**

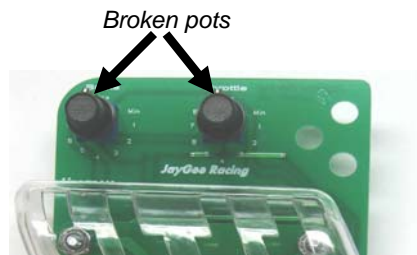
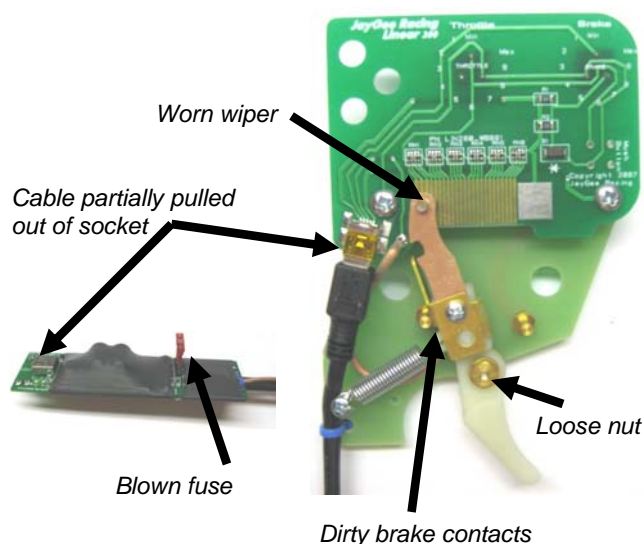
The USB cable is secured to the handle and power modules with strain relief cable ties. If you prefer, you can remove the strain relief on the power module so that it is detachable for easy storage. However, if you remove the strain relief you should never pick up the power module by the unsecured USB cable...it will fall.

## Troubleshooting

Other than the obvious problem of no power to the car due to a blown fuse on the transistor module, most any other problem starts off as an intermittent problem with the throttle or brakes. The good news is that these are field repairable with a minimum of time and effort.

Brake and throttle problems can be traced to the following causes:

1. **Dirty brake contacts:** Even if they look clean to the eye, as long as you have the handle apart, take some fine grit sandpaper and polish both the trigger contact and brake stop.
2. **USB cables partly pulled out of sockets.** Even though a strain relief is used, the cable can work loose if tugged on too hard. When this happens, the cable will still look completely seated in the socket, even though it is not.
3. **Lifting wiper button on PCB** due to worn button or loose trigger retaining nut
4. **Broken brake or throttle pot.**



## Technical Support

JayGee Racing Linear 200 controllers are designed, serviced and manufactured in the United States. Jeff Goldberg, the Linear 200's designer and owner of JayGee Racing, can be reached by email at [jeff@jaygeeracing.com](mailto:jeff@jaygeeracing.com) or through our website. The most up-to-date technical information and replacement component information will be found the website's Tech Info page.

**Learn more about the JayGee Racing Linear 200 controllers at [www.jaygeeracing.com](http://www.jaygeeracing.com)**