



1603 S Eastside Loop
Suite 207
Tucson, AZ 85710

Houston 6-pad Launch Controller Product Documentation

The Rocketry Works Houston Launch Controller provides robust electrical ignition for up to 6 pads. It is designed for use with the Rocketry Works Cape Canaveral 6-pad launch pad, though it is self-contained and can work with many launch pads.





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Houston Launch Controller Features

- Robust internal electronics ensure safe operation using a variety of battery sources.
- Removable safety key as required by the NAR Safety Code.
- Large, covered red illuminated main power toggle switch permits quick and obvious safing the pad between flights.
- 6-pad rotary dial switch that allows only 1 pad to launch at once—a deliberate choice that is safer for group launches than permitting multiple simultaneous launches.
- Audible warning at the pad, and illuminated continuity indicator at the controller when you press the yellow Arm Pad button, exceeding the NAR Safety Code requirements.
- 2 buttons are required to launch—an additional precaution that reduces the chance of accidental launches and exceeds the NAR Safety Code requirements.
- A single 50 foot cable reduces launch range clutter and is plugs into the igniter lead distribution box, which hangs conveniently on the Rocketry Works Cape Canaveral Launch Pad (sold separately).
- Supports flights up to G power with its 50foot reach, exceeding the NAR Safety Code's 15 foot minimum safe distance requirement for up to D power, and 30 foot requirement for E through G power.
- Comes with 6 igniter leads that connect to the pad distribution box, plus extras so you're not stranded on launch day if you suffer equipment damage.
- Designed for use with 12 volt sealed lead acid batteries to reduce the incidence of battery-related misfires common with alkaline battery systems.
- Can also use a 12 volt car or boat battery as a power supply.
- Comes in a sturdy 19 x 9 x 9 inch carry case by Stanley Tools, with all components in the box, with more room inside the case for motors and a few small rockets.

This pad is an outstanding choice for classroom use, or as a launch controller for scout, 4H, or other community group or rocketry club launches.



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What's in the Box?

- Houston launch controller
 - Igniter lead distribution box
 - 50 ft length of 9 pin cable for connecting the controller to the igniter lead distribution box
 - Red and black battery cable
 - 8 igniter leads
- Includes 2 spare leads so equipment damage doesn't scrub your launch
- 19 inch tool box to carry it all and keep it safe between launches
 - Optional 12V SLA battery and trickle charger (if purchased with controller)



The blast deflector plates shown in this photo
are not included with the launch controller



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Controller Setup

You can set up the Houston launch controller and Cape Canaveral launch pad in less than 15 minutes.

1. Connect the red and black battery cable to the red and black battery port on the controller.
A small table is useful for storing the launch controller and battery during a launch.



2. Connect the red battery connector clip to the positive (red) battery lead; connect the black battery connector clip to the negative (black) battery lead.
The controller is protected against reverse wiring; it won't work if wired backwards, but you won't damage the controller if you reverse the polarity of the battery connection.
3. Connect one end of the 9-pin cable to the 9-pin connector on the controller.
Which end of the cable you use does not matter; they are both the same.



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4. Extend the 9-pin cable to the launch pad, and connect the loose end of the cable to the igniter lead distribution box.

The cable gives you plenty of distance to your launch pad, which can give you flexibility in launch site setup. Remember, the NAR minimum safe distance to the pad of 15 feet for D motors and below, or 30 feet for E through G motors, is a minimum. It is often better to provide more distance when you have a large or inexperienced crowd watching.

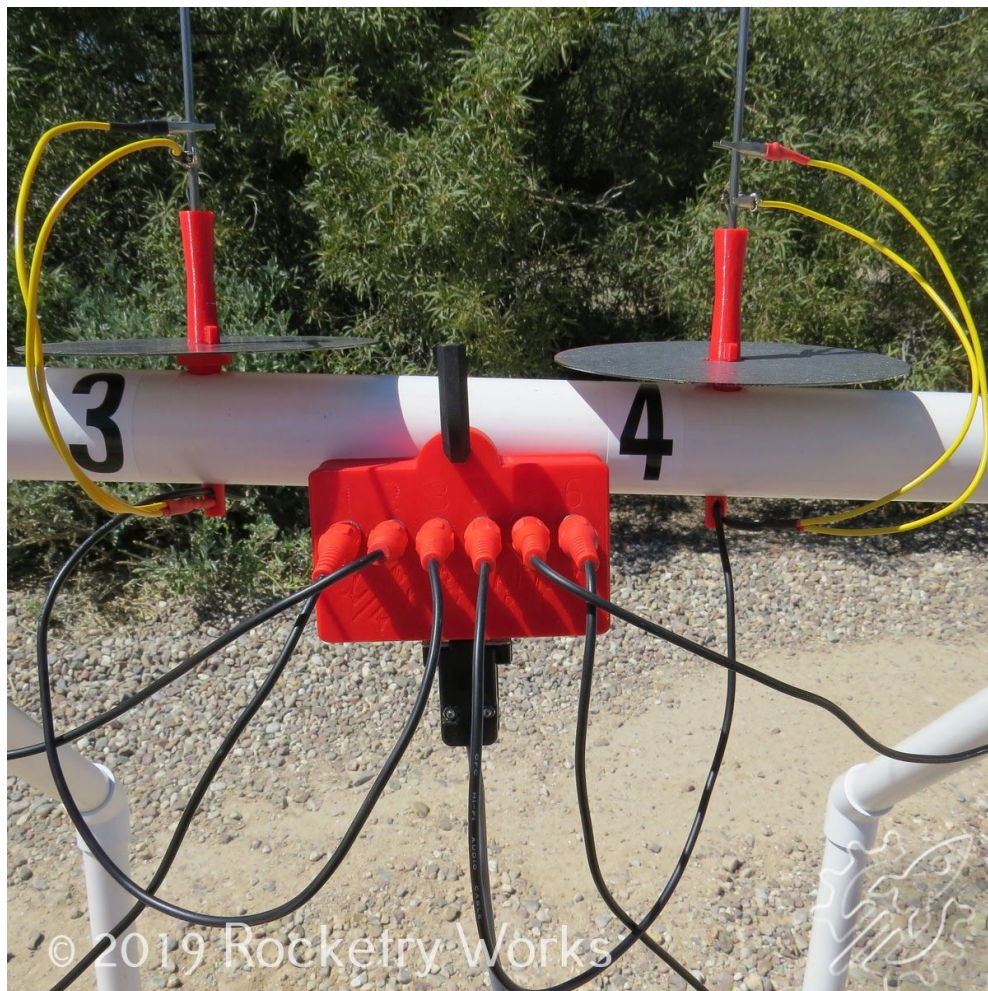




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5. Connect 6 igniter leads to the distribution box.

You'll find some of the igniter leads are longer than others; you can use the longer leads on pads 1 and 6. You can hang the distribution box between pads 3 and 4 on the Cape Canaveral launch pad (sold separately) using the launch pad's included hex wrench.





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6. If you're using a Rocketry Works launch pad, you can easily fasten the igniter lead to its assigned pad by making a loop in each igniter lead near the location of the split between the single cable and the 2 igniter leads. Pass the loop through the eyelet in the base of the Rocketry Works launch rod mount.

This technique helps identify which igniter lead belongs with which pad.





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Controller Operation

The Rocketry Works Houston launch controller is designed for large low to mid power rocketry launches in schools, scout units, or other community organizations. As such, it is intended to support safe and efficient workflow. These key safety features are obvious when you are using the Houston launch controller:

1. Insert the safety key and turn on the main power switch to use the controller.

The main power LED and the selected pad LED will light.

As the Launch Control Officer (LCO), make it a habit to keep the safety key in your possession at all times, so you know the pads are safed when you are not at the controller.





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2. Select the pad you will launch next using the rotary dial pad switch. The selected pad LED will light, regardless of continuity at the pad.

This design prevents multiple simultaneous launches (drag races) which are a greater safety risk when launching with a large, young, or inexperienced audience.

3. Press the yellow Arm button to check continuity of the selected pad.

The Continuity LED on the controller lights when there is continuity at the pad. This also sounds the 85dB buzzer located in the igniter clip distribution box, so people will naturally look to the launch pad when they hear the audible warning that the pad is armed.

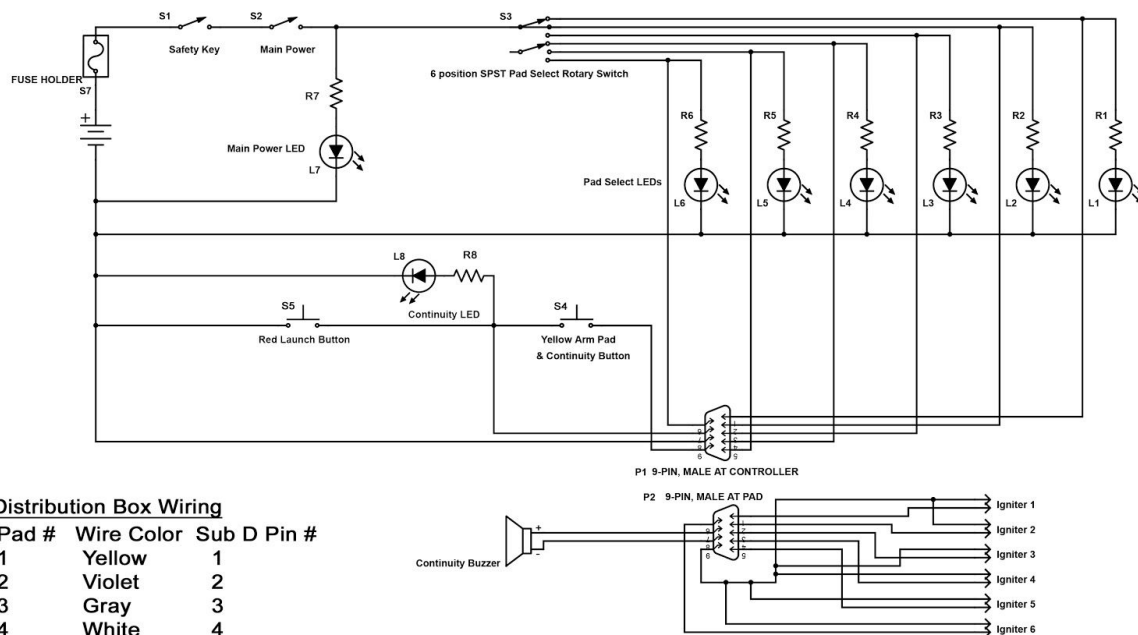




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4. With the yellow Arm button pressed, begin your countdown from 5, and press the red Launch button when you reach the end of your countdown.
Press and hold buttons for several seconds to ensure a strong electrical signal to the igniter.
Sometimes, igniters take a bit of time to ignite.
Requiring the use of two buttons reduces the chance of accidental launch. Make it a habit of arming the pad as you start the countdown, so specators have a few seconds to turn their attention to the pad.

Circuit Diagram





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Notes and Warnings

- The 3D printed plastic of the controller box and the igniter clip distribution box may deform if left in an enclosed car on a hot day. Field testing has shown the ABS plastic of the controller box can withstand temperatures of at least 57 degrees C (135 degrees Fahrenheit). Just to be sure, do not leave the launch controller boxes in a closed car on a hot day.
- Be careful with the Houston launch controller cables, making sure to remove cables by pulling firmly but gently on the cable end. Do not yank on the cable to remove a cable from the controller or distribution box.