

Arc Ignition Technologies

Electronic E-match

Thank You for choosing the Electronic E-match. Arc Ignition Technologies brings you into future of rocketry electronics.

We give you reliability, simplicity, and reduced cost per flight and static test of your deployment system. Included are two high voltage arc ignition modules to use in place of conventional ematches for use with your own dual-deployment altimeter.

The Electronic E-match uses plain, 2-conductor wire in place of a standard e-match to initiate your deployment charge. No special pyrogen coating, no resistance wire, no regulation. Reliable, high temperature, high voltage, continuous arc that fires as long your altimeter powers it's output channels.

When powered by a battery separate from the altimeter, the unique design eliminates high power draw from the altimeter battery reducing the risk of brown-out conditions that can lead to failed recovery system deployment. Very low idle current eliminates worry about long wait for launch.

Package contents:

2 Electronic E-Matches
1 Set terminal blocks
3' of ignition wire

Parts necessary to complete installation:

Additional battery(Optional)
Battery connectors and wire
4-40 bolt, nut, and spacer mounting hardware

Specifications:

Battery Voltage:	3.5-9 Volt DC	Input Voltage (From altimeter):	2.5-9 Volt DC
Battery Current:	2.5-6 Amps DC	Input Resistance:	1K Ohm
Output voltage:	10-20 Kilovolts		
Idle Current:	3mA with 1S LiPo, 6mA with 2S LiPo or 9V (Powered on, no fire condition)		

Battery Selection:

1S or 2S LiPo
9V Lithium, rechargeable NiMh, or good quality 9V Alkaline. (All can be used, but are not recommended. See tips for successful deployment).

Setup

Mount the Electronic E-matches as close to the bulkheads as possible. It is best to keep the high voltage leads as short as possible. The input leads may be replaced with longer leads if necessary.

Use the Electronic E-match and a pencil to mark mounting hole locations for drilling. Drill mounting holes using a 1/8" drill. Secure using 4-40 bolts, nuts, and short spacers.

Drill a hole at least 1/8" diameter through each bulkhead to pass the high voltage wire from the Electronic E-match to your charge well. Seal this with hot glue or other sealant that can be easily removed when necessary. This protects all electronics from corrosive ejection charge residues.

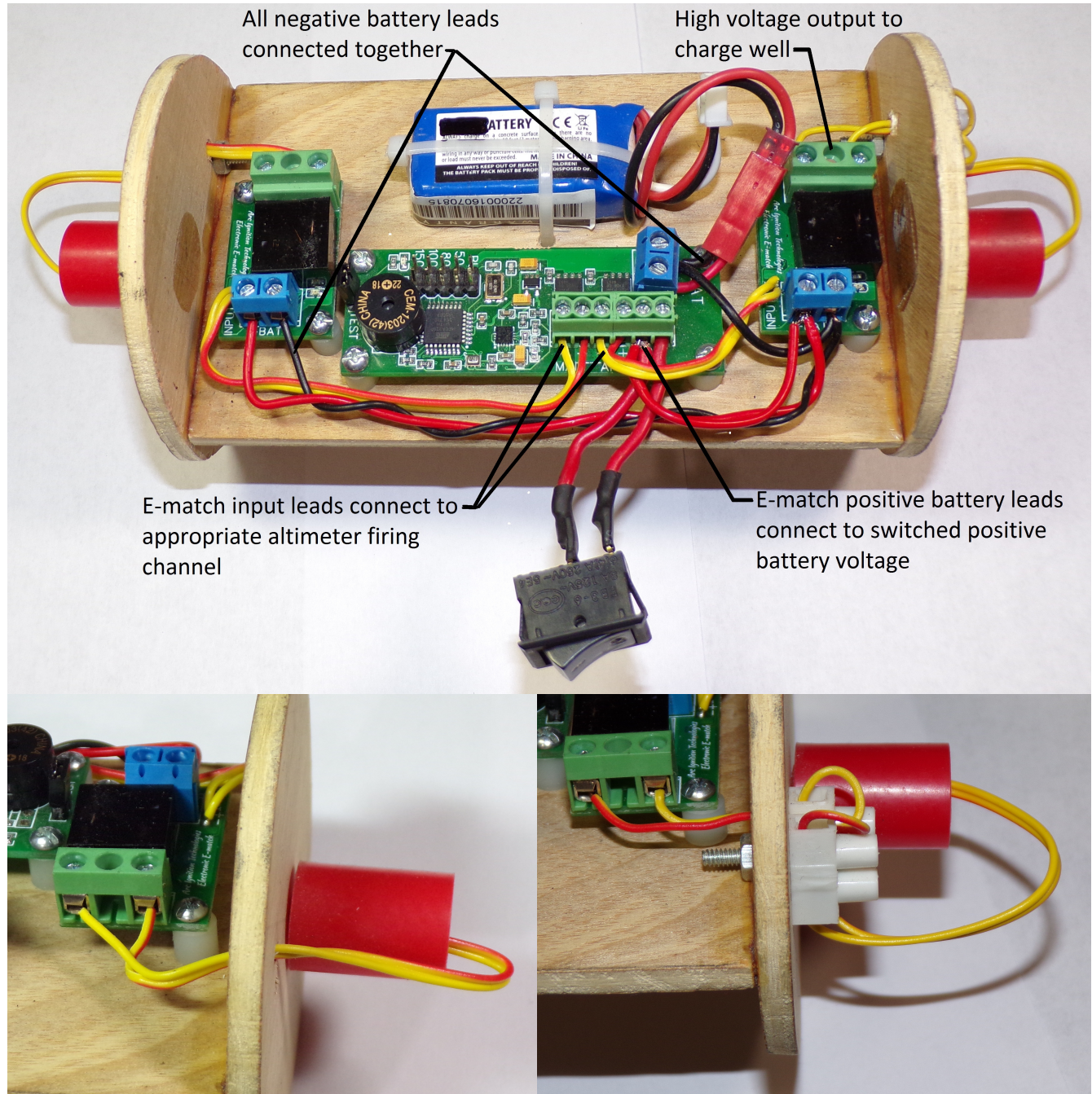
Optional;

The white terminal block can be cut in half and mount 1 on each external bulkhead near your ejection charge wells. The high voltage wire is then connected from the Electronic E-match to the external terminal block. The ignition wire now connects to the terminal block with the free end set into the charge well with your deployment charge.

This allows you to change out the ignition wire without disassembling your altimeter bay. It is best to mount the terminal blocks in a way it can be easily taped over or covered to keep clean.

Connect the Input leads to the appropriate output channel of your altimeter. The input leads are polarity specific with the red striped lead being positive. The e-match will not be damaged if these leads are reversed, but it will not fire.

It is best to power the E-Matches with a separate battery from the altimeter, however, you may power them all from the same battery as shown:



Igniter wire without terminal block

Igniter wire with optional terminal block

**These images are for basic setup reference only and do not show all aspects of properly setting up an electronics bay. The power switch, charge wells, and battery shown are only used to show typical connections. They are not necessarily the components you will use in your altimeter bay. There are parts of an actual altimeter bay that have been omitted for electronics layout clarity.

Operation

Install Ignition wires from e-match into your ejection charge wells making sure the end of the wire is completely covered by the ejection charge. Gently tap the charge well to make sure powder is settled. Use flame-proof wadding to fill the excess space in the charge well and tape over the top of the charge well to prevent movement of the ejection charge and ignition wire. When using conductive charge wells, care must be taken to insure the ends of the igniter wires do not short against the charge wells.

Test Fire

Your altimeter needs to have a test fire mode. Refer to the manufacturer's instructions.

Ignition wire must be connected to the electronic e-match for test firing, otherwise the high voltage arcing can occur inside the transformer damaging it.

During test firing, the Electronic E-match will produce a strong, continuous arc for as long as your altimeter fires its output channel.

Tips for successful deployment:

Use new, clean, undamaged ignition wires for every flight.

Damaged wire insulation can cause high voltage arc to occur in middle section of wiring resulting in failure to ignite pyrogen.

Keep high voltage connections and terminals clean.

Dirty terminals can result in high voltage arcing at the terminals resulting in failure to ignite pyrogen.

Use a good quality switch for powering altimeter and E-match. A low quality power switch can result in power cycling during flight with destructive results.

Use a good quality battery capable of supplying a minimum of 3 volts under igniter firing loads. Firing load for the high voltage module is 2.5 Amps at 3.5 volts up to 6 Amps at 9 volts.

Good quality 9V batteries can be used, but are not recommended.

Battery suggestions:

1 cell LIPO – minimum 150mAh, 20C rating

2 cell LIPO – minimum 300mAh, 20C rating

9V Lithium or NiMh rechargeable – A good quality, new battery will drop to about 4 volts while firing igniter. These batteries have been tested and will work, however, they are not rated for these electrical loads and their usable lifespan will be limited. Care must be taken to periodically check their voltage under firing load. If the voltage drops less than 3.5 volts during firing with a full charge, it needs replaced.

Excess lengths of commercial motor starter wire or standard e-match wire can be trimmed off before use and saved to be used as ignition wire with the Electronic E-match. Almost any insulated, paired wire can be used for ignition wire. However, **Ground Test Before Flight!!**

Important precautions to prevent damage to unit:

Make sure everything is securely mounted to prevent shifting or movement at any time.

Do not fire Electronic E-matches without an ignition wire connected. This could result in the high voltage arc occurring inside the module damaging it.

Due to the sensitive nature of electronic devices, it is advisable to have redundancy or secondary precautions in the event of failure when incorporated into the harsh environments of rocketry.

Disclaimer:

Arc Ignition Technologies, a Division of Greenhorn Customs LLC, takes considerable care in the design and construction of this product. Because the use, setup, application, and maintenance of this equipment are beyond our control, the purchaser or user agrees to hold harmless Arc Ignition Technologies and their agents from any and all claims, demands, actions, debts, liabilities, judgments, costs, and attorney fees arising out of, claimed on account of, or in any manner predicated upon loss or damage to property of, or injuries to, or the death of any and all persons arising out of the use of this equipment. The purchaser or user is responsible for simulating and testing in the actual conditions that this product is going to be used. Any use of this product signifies acceptance of the above terms by the purchaser and user.

Product Warranty

The Electronic E-match is warranted to be free from manufacturing defects for 2 years from the date of purchase. This warranty extends only to the original purchaser.

For warranty claims, return the Electronic E-match, along with a copy of purchase receipt, contact information, return address, and description of failure to:

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Rye, Colorado
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Contact Us at:

arcignitiontech@gmail.com

or call/text:

719-214-1336

<https://www.arcignitiontech.com/>