



EC4A Troubleshooting

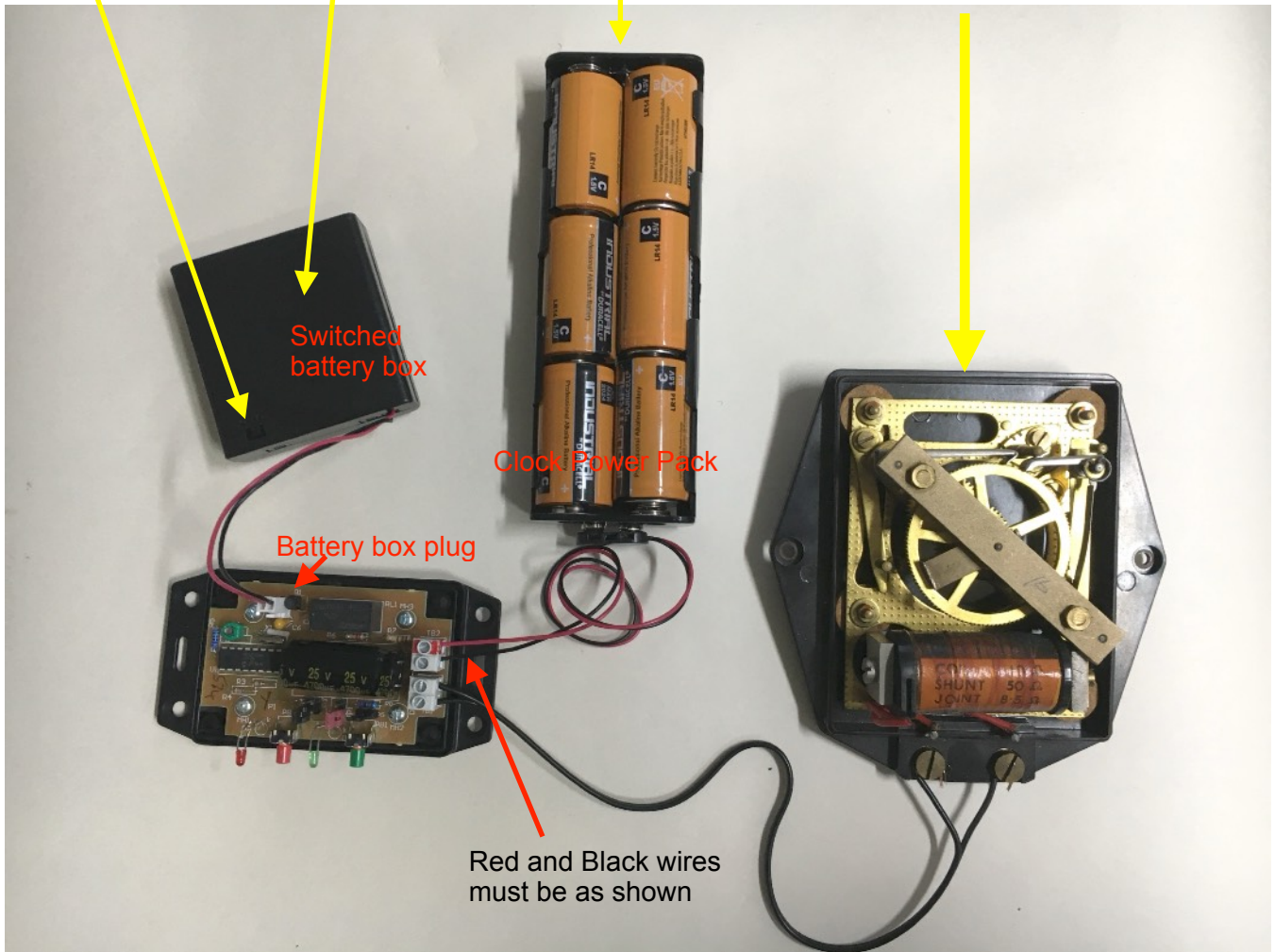
Switch

4 x AA battery pack.
This pack runs the
impulse driver

Clock power pack
powers the clock.
Can be 9v, 12v, 24v

Example of a standard
slave clock mechanism.

Note: will not pulse
properly laying down,
must be vertical.



It's wired like above and still doesn't work.....

Unplug the Clock Power Pack and clock mechanism

1. With the Switched Battery Box connected - turn the driver on with the Switch (DON'T press any buttons)

The Red and Green LED flash for a second then go out - **this is correct operation** ✓

The Red and Green LEDs don't flash

- check the AA batteries are **new** and **in correctly**
- check the battery box is plugged in correctly
- turn the battery box off and on again to check

If you still get no lights there is a fault ✗

2. Test the relay operation
- press **ONLY** the Green Advance button on the driver
(This pulses the driver forward one hour depending on the settings it will take roughly 1-2 minutes and will then stop)

Relay is clicking every second - **this is correct operation** ✓

No relay clicking can be heard - there is a fault ✗

3. Switch OFF the Switched Battery Pack

Connect the clock mechanism - polarity is not important.
Connect the Clock Power Pack - check the wire **polarity is correct**
- Check the batteries are new and in correctly

Turn on the Switched Battery Pack - The Red and Green LEDs flash for one second ✓

In 30 seconds or 60 seconds the driver will send a pulse - the relay clicks ✓

If you are in a hurry you can press the Green button (this will send pulses every second for 1-2mins and then stop [It's a DST feature])

The clock mechanism steps on one step (or multiple) - **this is correct operation** ✓

Continue to set up your system as per the settings in the EC4 manual

✗ The clock mechanism does not step..... - Check the wiring and power batteries again

It gets slightly more complicated now.....

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Some mechanisms (like the one shown) will work with 9v
Some need 12v. (Like double sided clocks)
Some need 24v

It depends on the Resistance of the coil in the mechanism, to know the resistance you can measure it using a multimeter or it may be printed on the coil. The resistance is usually around 4Ω - 30Ω .
If it reads 0Ω then the coil is broken.

If it is really high around 800Ω you need a different driver for battery operation

The EC4 Manual shows how to increase the power out of the EC4A slightly by moving Link 5. Using the link to connect the 2 pins will give more power.

Likely Problems

Too much power....

If you have connected 24v to a coil at 4Ω, things will have got very hot and the relay may be damaged or Diode and Resistors damaged.

- The driver may not work after this or it may work but with erratic timekeeping

Shorted output..... If you have shorted (joined together) the output and pulsed for any length of time the driver will be damaged as above

Loses time Check 30/60 Jumper setting - in the Manual

- For example 3 mins per day - could be a fault caused by too much power
- Could be mechanism not stepping correctly ie missing a tooth when it pulses

Gains time Check 30/60 Jumper setting - in the Manual
Could be mechanism not stepping correctly ie gathering 2 teeth when it pulses

Use the EC4A in DST ADVANCE mode and watch the clock step. It could be worth doing this a couple of times to see if it is stepping correctly. It takes a minute or two but you will see if it misses a tooth so doesn't step on, or gathers two teeth and steps on too quickly.

A note on Temperature

The EC4A uses a 32768 crystal to keep accurate time. However they are designed to work at an optimum temperature or around 18 -28°C.

Colder or hotter than that and the clock will lose time by a varying degree.

Temperature Stability Characteristic of a Tuning Fork Crystal

