

EC4A

This product has a one year guarantee from date of purchase

Products from electric-clocks

- ★ EC4A
Slave Clock Impulse Driver for clocks such as Gents and Synchronome. To replace a Master clock
- ★ EC5AP
Alternating Polarity Impulse Driver for clocks such as Favag, Westerstrand and the clocks used at BBC studios
- ★ FC110
50Hz to 60Hz @115vAC Frequency Converter for American clocks
- ★ FC9
60Hz to 50Hz @9vAC Frequency Converter to UK clocks to work in the USA
- ★ EC61
A pulse converter to allow an Alternating Polarity clock to work on a standard Master Clock circuit
- ★ CS150
Lubrication oil specifically for electric clock pivots
- ★ LED Bulbs
Very low consumption LED lamps to replace incandescent in USA clocks - work with FC110.

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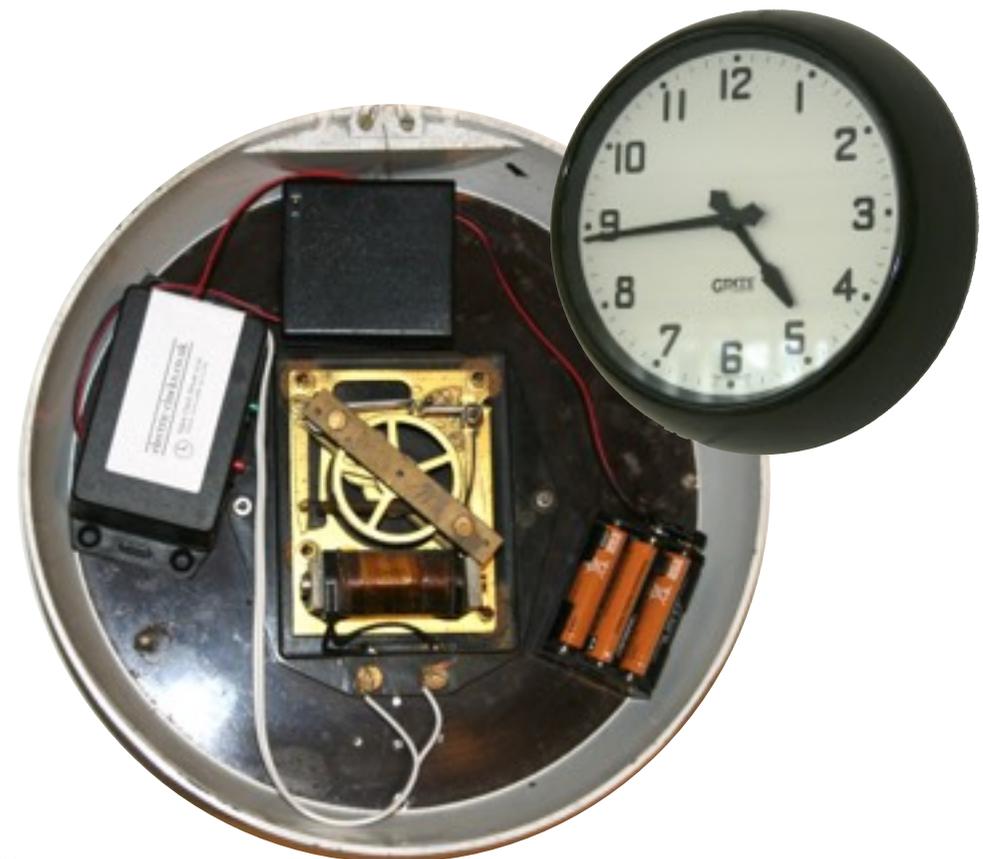
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EC4A Slave Clock Impulse Driver

Set-Up and Operation Manual



Set-up

Notes

Installing the Slave clock driver is straightforward. The batteries to drive the electronics are connected via a 2 pin plug and the battery box has a small switch to enable accurate starting of the driver's timing period. The battery pack(s) to drive the clock mechanism will need connecting to the one or two battery connectors - connection method is obvious.

The driver comes with a lead connected to go to the coil connections of the

clock movement. The driver board has a 22Ω resistor fitted to connect in circuit with the clock movement coil. In most cases this will set the resistance to around 26Ω which is an optimum for power to drive the coil and longevity of batteries. Some movements have a higher resistance coil and in that case the 22Ω resistor can be bypassed by fitting the link on JP5.

The driver will come preset to 30 second pulses unless I am asked to change the timing. If you have purchased the fully enclosed version then the screws will be fitted but not tightened up - that way you can change jumper settings if necessary - and tighten the screws after.

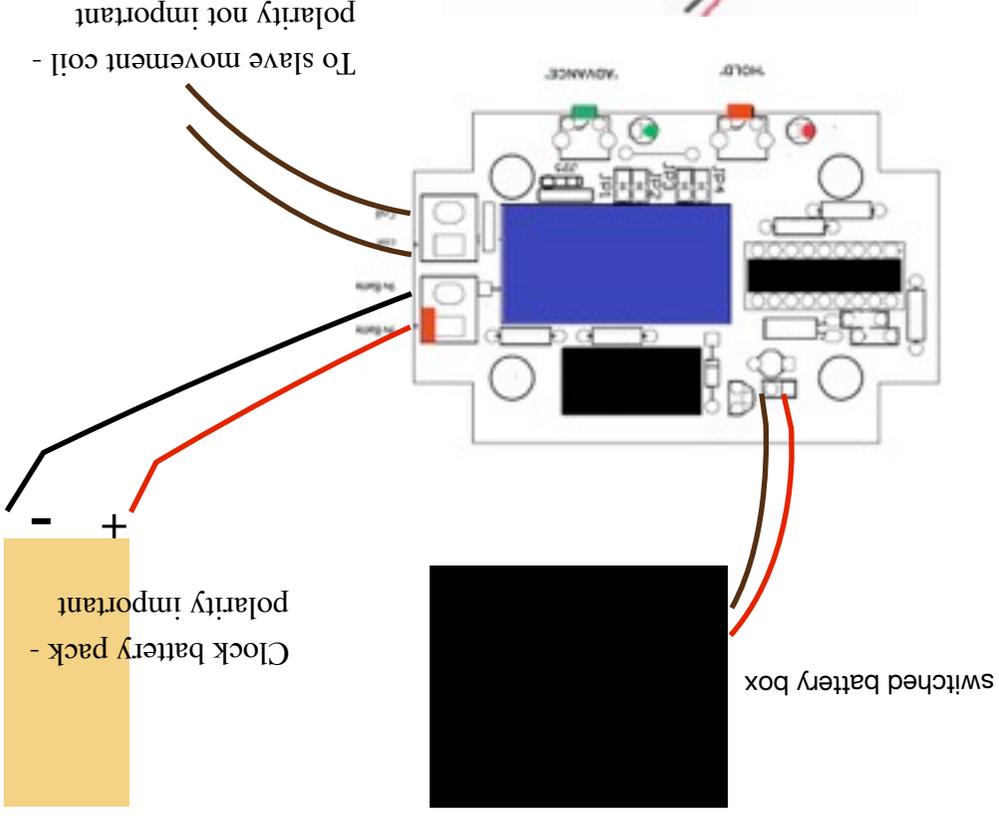
All parts have double sided tape to assist in fixing.

Regulator Option

The mains power supply system will come with the regulator connected to the driver board and all it will need is the PSU lead plugging into the regulator.

NON UK

If you are outside of the UK, I will need to send the AA cells, to drive the product, in their original packaging. These need to be inserted into the driver power supply box by undoing the small screw and inserting in the correct orientation.



Power

Expected Battery life for Impulse Driver

The battery life of the 4xAA switched box battery pack varies based on the length of the pulse and the pulse rate and is expected to be as below:-

Pulse Length	1min (60 pulses per hour)	30sec (120 pulses per hour)
62mS	14 months	28 months
125mS	7 months	9 months
250mS	6 months	6 months

This is the battery pack that drives the impulse driver electronics.

Attached Power for driving clock mechanism coil

The EC4 driver offers a Capacitor discharge system to power the clock mechanism coil. This is currently configured to accept a maximum power source of 24V.

The optimum power source of 9V can be from batteries or from a 9v power supply unit.

See separate ‘Power Source for Impulse Clocks’ information.

It is **ESSENTIAL** that the power is connected the correct way around to the driver board and does not exceed 24v.

Operation

Configuration

Jumper 1 (JP1) is used to set **30/60** second pulse interval.

Jumper 2 (JP2) is not used.

Jumper 5 (JP5) is used to include or exclude a 22Ω resistor

Push Button 1 (Green) is used to set the ‘**Advance**’ mode.

Push Button 2 (Red) is used to set the ‘**Hold**’ mode.

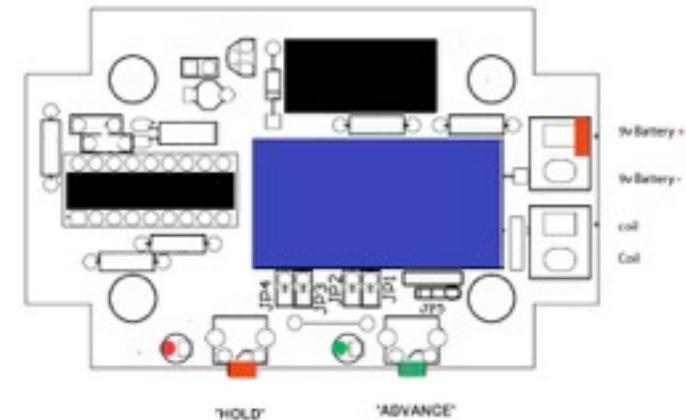
Pulse length jumpers

There are 3 pulse length selections.

With no jumpers fitted the pulse length is approx 60mS

Jumper4 (JP4) is approx 120mS

Jumper3 (JP3) is approx 240mS



It is best to set these before switching on the power at the battery box.

Accuracy

Accuracy

The driver is crystal controlled, and it is adjusted to be accurate to approximately 0.4 second per day and will be set slightly fast rather than slow. A small trimming capacitor is fitted that can be used in subsequent years to adjust the crystal speed as it ages. This needs to be turned by only very small amounts. If you are not able to measure the frequency, the driver can be sent back to electric-clocks to be adjusted.

Accuracy of the impulse driver is only affected by extreme temperature change and is initially adjusted to be accurate at normal room temperature; approx 21°. It keeps accurate time between the temperatures -40° and +85°

You can start the timing cycle by switching on the battery pack at exactly '0' seconds on a known accurate clock. The driver will now pulse at 0 seconds and 30 seconds depending on your jumper pin 1 setting.

Thereafter any advances are best made just after (a couple of seconds) the clock has impulsed at 0 seconds.

The switch on the battery box can be used to accurately start the clock on the second, and that will start the counter and the relay will pulse at the selected time (30 or 60 seconds)

Advance - Retard and Daylight Saving Time changes

To advance the clock press the 'Advance' button - with Green cap
This function is 'latching' ... i.e. the first press will latch it on and the second press will turn it off. While it is in the 'Advance' mode the Green LED will blink once per second and the unit will output pulses.
If the unit is left in the 'Advance' mode it will eventually time out and revert back to normal operation after outputting the correct number of pulses to forward the clock 1 hour.
This can be used to fast forward the time when the clocks 'go forward'.

To temporarily stop the output of pulses press the 'Hold' button - with Red cap.
This function is 'latching' ... i.e. the first press will latch it on and the second press will turn it off. While it is in the 'Hold' mode the Red LED will blink once per second.
If the unit is left in the 'Hold' mode it will eventually time out and revert back to normal operation after one hour.
This can be used to set the clock back one hour when the clocks 'go back'.