

EC5AP

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- ★ 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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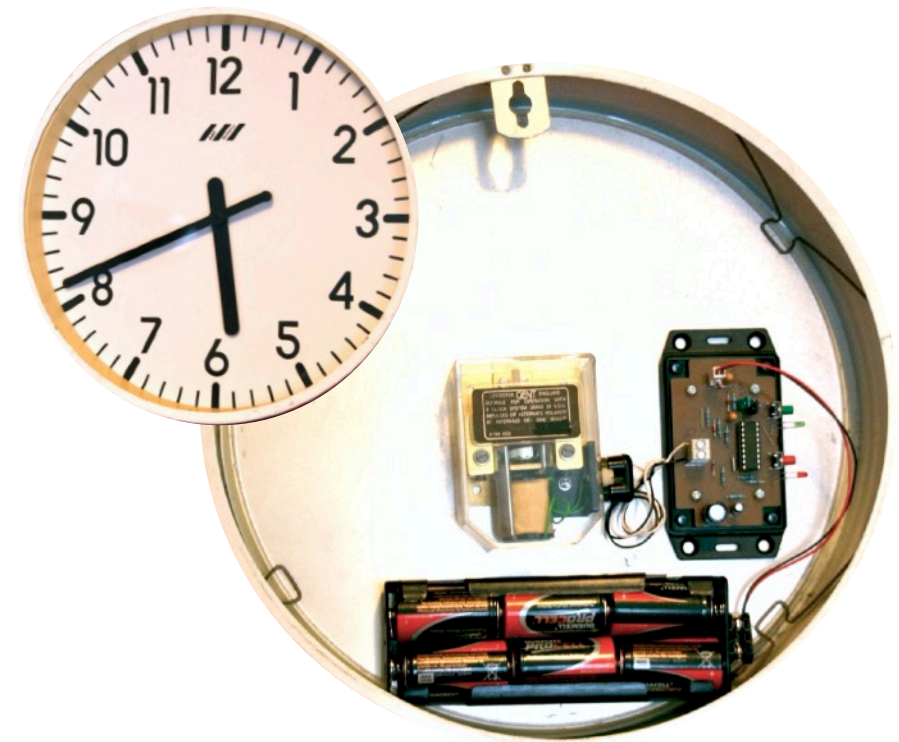


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EC5AP Slave Clock Impulse Driver

Alternating Polarity type

Set-Up and Operation Manual



Set-up

Notes

Installing the Slave clock driver is straightforward. The power to drive the electronics and the clock mechanism is connected via a 2 pin plug OR via a 2.1mm plug.

The 12v battery pack(s) to drive both the driver and the clock mechanism will need connecting to the one or two battery connectors - connection method is obvious.

If the mains powered 12VDC supply is used this is plugged into the 2.1mm socket and batteries are not required.

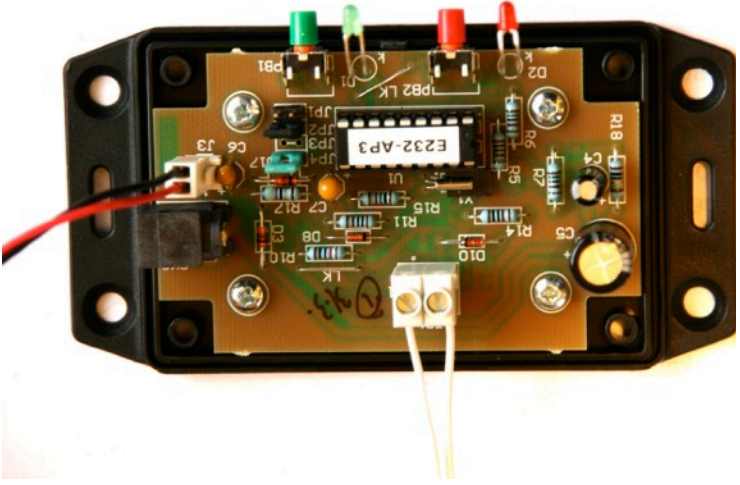
The driver board will come with a lead fitted to connect to the clock movement coil. There is also a low power connector plug available separately.

The driver will come preset to 1 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 - then you can change jumper settings if necessary - and tighten the screws after.

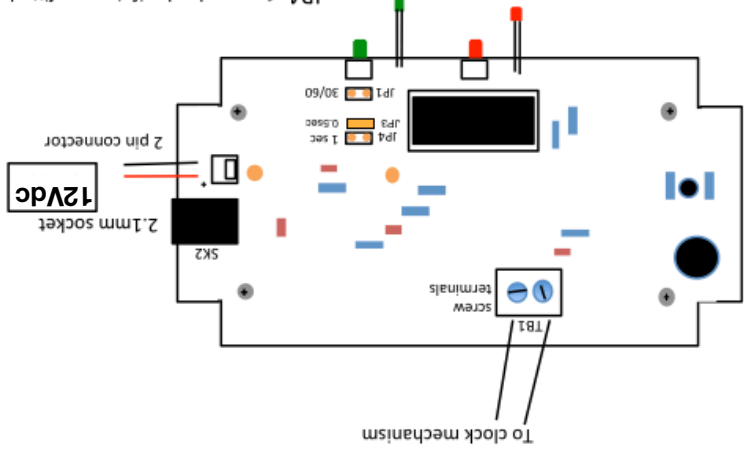
The driver board will also be mounted on a protective plate that can be screwed down.

All parts have double sided tape to assist in fixing.

Be very careful to not short the output of this device
- this will damage the driver



JP4 - 1 second pulse if Jumper fitted
JP3 - 0.5 second pulse if Jumper fitted
JP1 - 60 second pulse if Jumper fitted
30 second pulse if not fitted



Power

Expected Battery life for Impulse Driver

The battery life varies based on the pulse rate and is expected to be as below

Batteries	‘C’ cells	‘D’ cells
0.5 second pulsing	N/A	1.5 months
1 second pulsing	N/A	2.5 months
30 second pulsing	13 months	33 months
60 second pulsing	17 months	45 months

The mains power supply unit is recommended for 0.5 and 1 second pulsing clocks.

Power for driving clock mechanism coil

The EC5AP driver offers a boosted Capacitor discharge system to power the clock mechanism coil. This is currently configured to produce an output pulse of double the input voltage. This is enough to drive all the clocks that I have tested.

But it will be too much power for some clocks, such as Brille clocks, and so the power would need to be dropped by a resistor or a similar power reduction method.

It is **ESSENTIAL** that the power is connected the correct way around to the driver board and does not exceed 12v.

Operation

Configuration

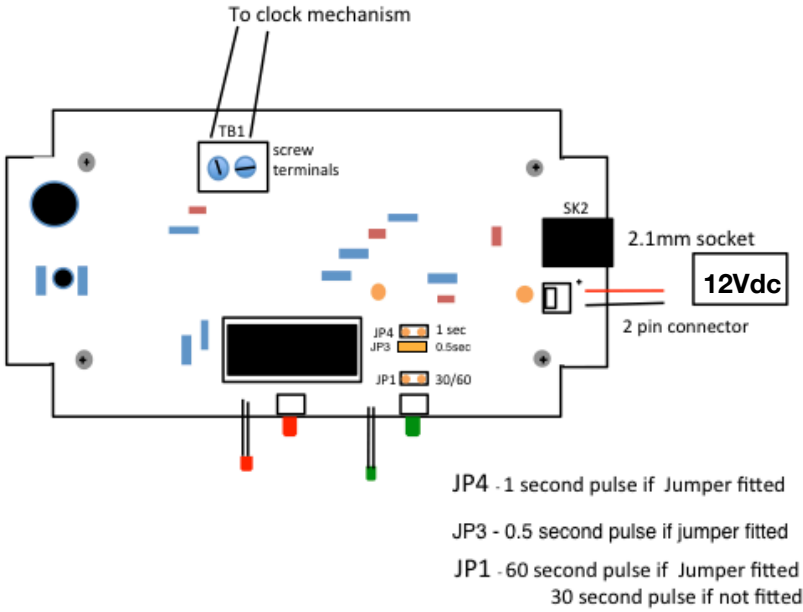
Jumper1 (JP1) is used to set **30/60** second pulse interval.

Jumper3 (JP3) is used to set 0.5 second pulse interval

Jumper4 (JP4) is used to set 1 second pulse interval

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

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



You must set the jumpers before connecting the power.

Connect the power, and that will start the counter and the driver will pulse at the selected time (0.5, 1, 30 or 60 seconds)

Accuracy

Accuracy.

The driver is crystal controlled, and uses a 5ppm crystal which will give and accuracy of approximately 0.4 second per day.

Accuracy of the impulse driver is only affected by extreme temperature change and is initially checked 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 power at exactly '0' seconds on a known accurate clock. The driver will now pulse at 0 seconds and 30 seconds or every second depending on your jumper pin 1 & 4 setting.

Thereafter any advances are best made just after (a couple of seconds) the clock has impulsed at 0 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 pulse the clock forward 1 hour.
This can be used to fast forward the time when the clocks 'go forward'.
** If the driver is set to 0.5 or 1 second pulsing the clock will need to be adjusted manually.

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'.
It is best to perform this just after the minute, i.e. 4 seconds past.