

Iambic Practice Oscillator

Background

The practice oscillator is a self-contained unit that when set up as described in this document, will allow practice sending of Morse code by means of an iambic paddle set. The Keyer module uses the character insertion iambic technique, which is fully explained in this guide. Dot to Dash ratio is 3:1, which is the commonest ratio/weighting employed by iambic keyers. No weight adjustment control is incorporated.

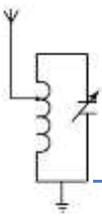
The following are required to get started with the module:

1. Speaker (4-8 Ohm), can be amplified or straight.
2. DC power supply at 12 – 20 VDC, 250 mA.
3. Iambic Paddle and connecting cable.

Initial set up

While reading this section, also refer to the photos as they will assist with full understanding. To start refer to the photo below which highlights the key controls.



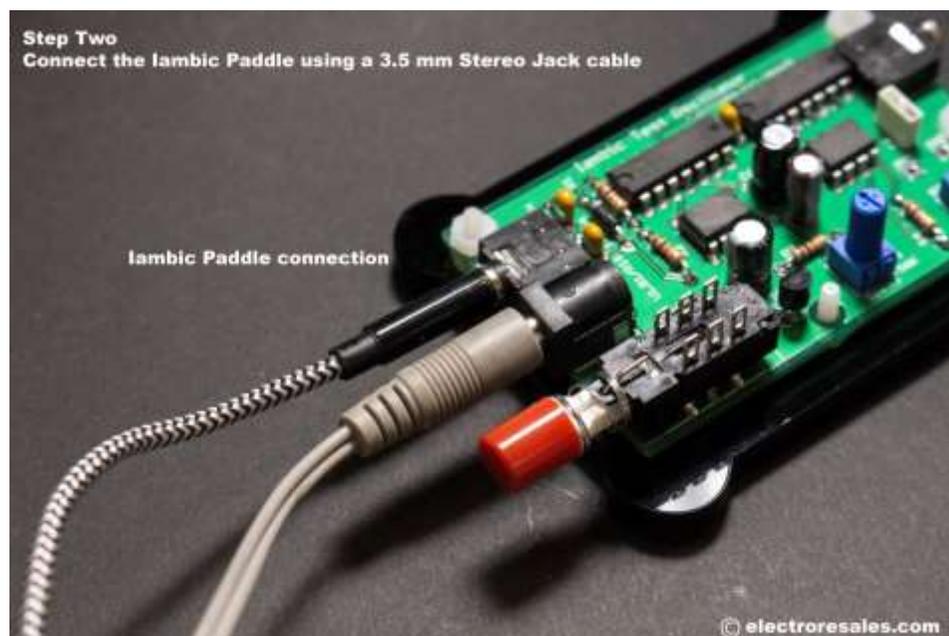


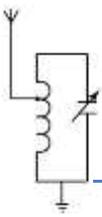
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Ensuring that the power on/off switch is fully extended and in the off position, insert the power jack, this is a center positive 2.1mm jack and the module requires a DC voltage of 12 – 20 VDC to operate.



Next attach the Iambic paddle, if your paddle connects using a jack plug using a standard stereo 3.5mm to 3.5mm jack cable the paddle will be operating in what is referred to as Normal Iambic, where the dot is generated by the left hand paddle. If your paddle has screw terminals then a cable may need to be constructed, see the appendix for help on this.





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Next attach the speaker; this can be a regular speaker of nominal impedance 8Ω or an amplified speaker such as those used with a computer.



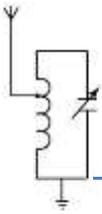
The module is now set up and depressing the on/off button until it clicks, will turn on the keyer and operating the paddles will start sending Morse dits and dahs.

Adjustment of character speed and tonal pitch

The keyer module has two user controls that can be operated to change the speed of characters being generated and also the output tonal pitch.

Speed – The character speed can be altered from under 5 WPM to above 40 WPM by means of the variable preset potentiometer located just to the right of the rear of the on/off push switch (see the layout photo on page 1). With this control set fully anticlockwise the character speed is just below 5 WPM rotating the control clockwise increases the speed.

Tone – A second variable preset is located to the right of the speed control and this allows the tone or pitch of the audio to be altered over a range from just below 600 Hz to 1050 Hz. We recommend starting with the pointer on this control set to the 9 o'clock position, send a few characters and if required rotate the control to a new position (anti)clockwise. Do this slowly and send a few characters at the new setting before changing the control. Doing this allows your ear/brain to properly assimilate the new tone and decide if you wish to change it.



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Character insertion Iambic keying

As this keying unit is based on discrete logic rather than a microcontroller the method of iambic character generation differs slightly from other key units. Squeezing the paddles will not generate alternate dits and dahs, as is common with other iambic units. To generate this option we use character insertion, basically a dah character is inserted when a sending dits by tapping the dah paddle. This leads to the classical iambic generation of dit-dah-dit-dah. While this may take a little getting used to, once mastered it is fluid and natural in use.

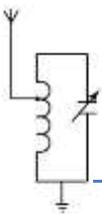
Using the practice Oscillator with a Transmitter

The practice oscillator is great for learning Morse with a paddle on your own, but nothing beats the raw excitement of actually going on air and calling CQ for the first time!

The practice oscillator can be used to key a transmitter and allow you to do just that, even if the first few times it's just with a friend or Elmer.

As supplied the keyer cannot directly drive a transmitter, and will require an extra transistor and resistor to be added so that a modern solid state transceiver can be keyed. The pcb as supplied has an Aux pad (shown as Out on the schematic in Appendix C) and a ground pad that allows the easy inclusion of the required circuitry that can be installed on the PCB or connected using flying leads.

For the circuit and more details please refer to Appendix E.



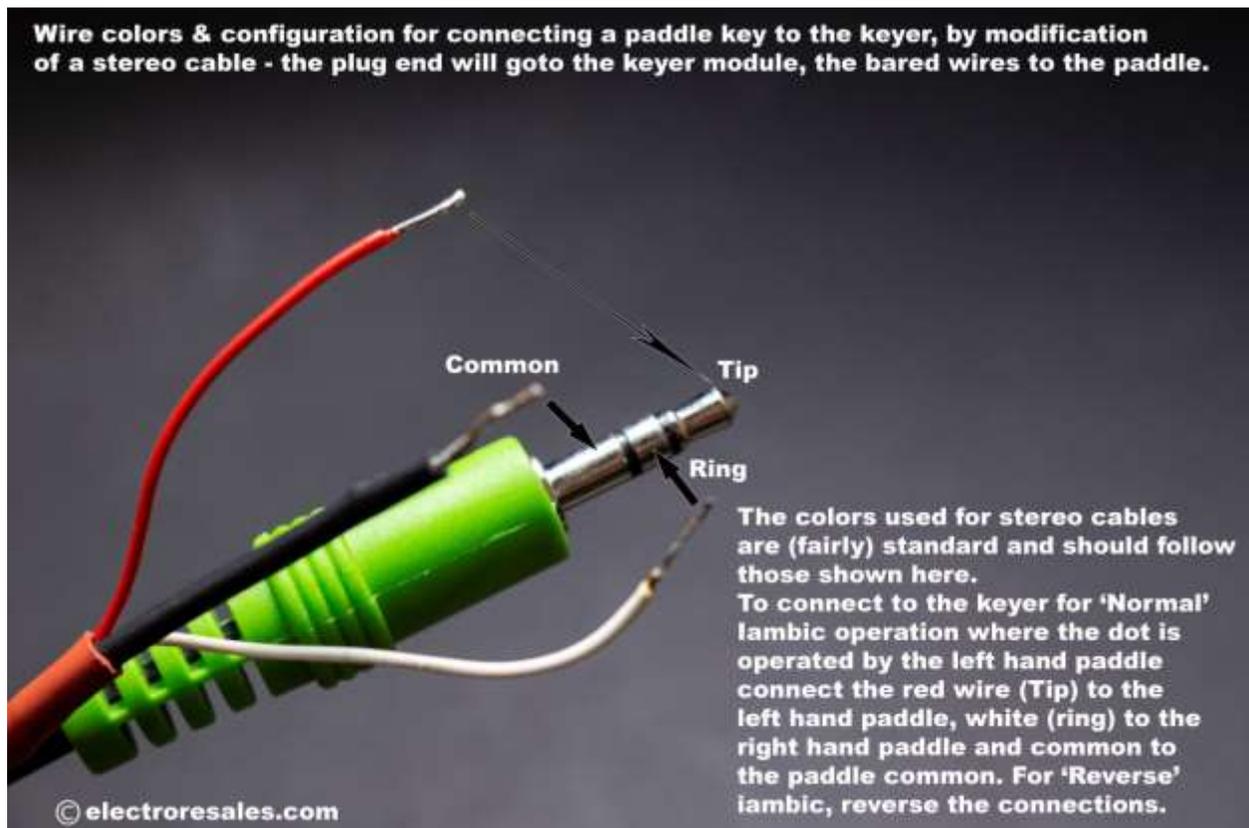
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Appendix A – Connecting a paddle to the practice oscillator.

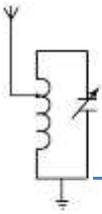
Some keys come with a jack socket to allow easy connection to transmitters by using a standard stereo jack cable. It is possible though that your paddle key has terminals for a bare wire connection, while the key module has a 3.5mm jack. The following information is designed to assist with making the correct connection.

A stereo cable commonly sold for smartphones with 3.5mm jacks on both ends can be modified easily, removing one of the jack plugs and exposing the bare wires will allow the cable to connect to the key via the remaining jack and the exposed wires connect to the key.

Most stereo cables use a (fairly) standardized color coding where the tip is connected to the red wire and the ring is connected to the white wire. The cables screen or braid would be the common. For normal iambic keying where the dit (dot) is on the left hand paddle the red wire or tip wire would make the connection and the ring or white wire goes to the dah (dash) paddle. Common would be the braid. The picture below illustrates this.



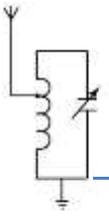
Exact connection of your paddle will be determined by the key in use, due to the large number of keys available, Electro-Resales cannot assist with specific connection details.



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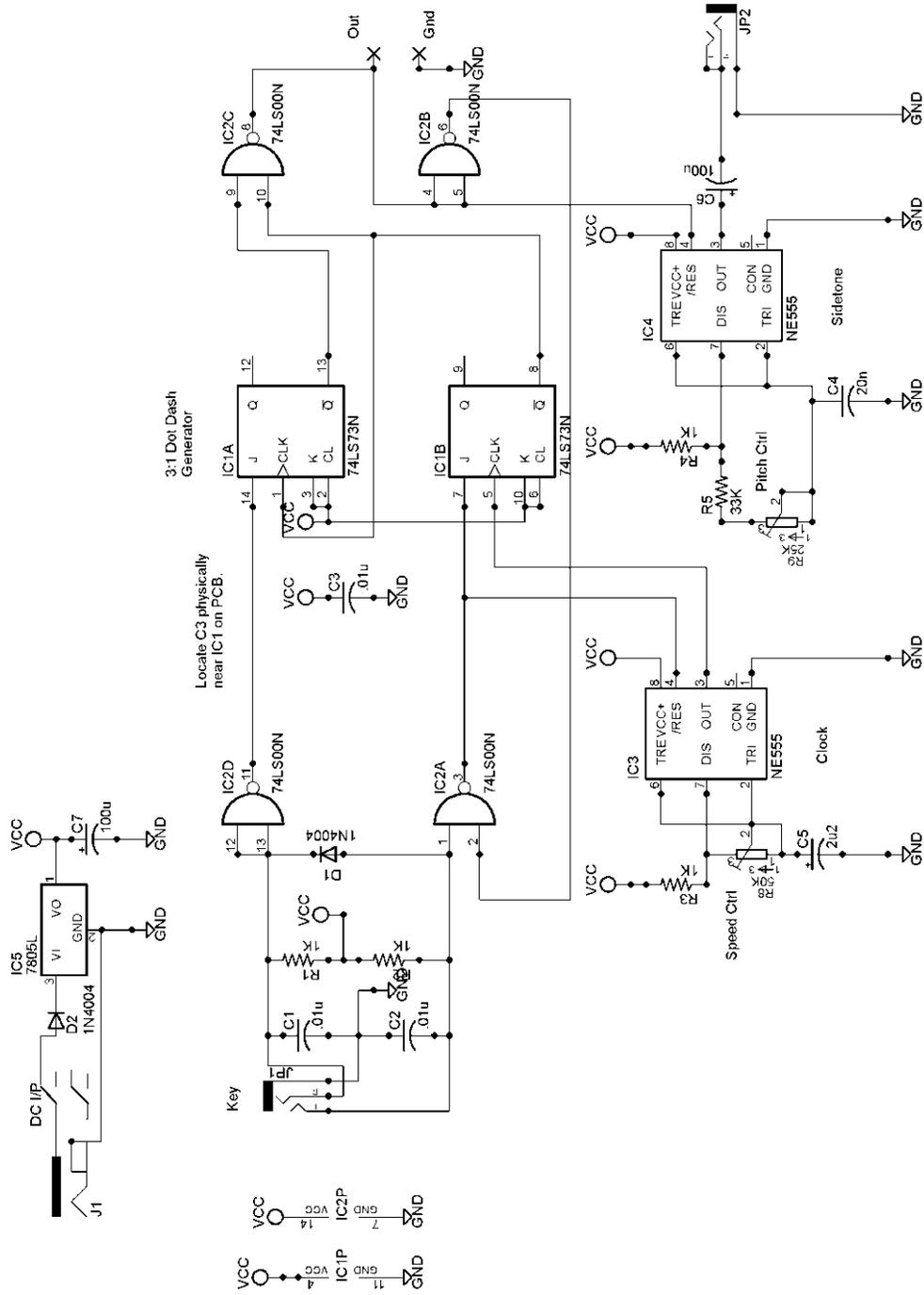
Appendix B – Specifications

PCB Dimensions;	3" x 1.75"
Base plate dimensions;	3.5" x 2.5"
Input volts DC;	9 VDC Min. to 24 VDC Max.
Current draw;	25mA standby, 40mA operating
Dot clock speed;	5WPM to +40WPM, variable
Audio tonal range;	600 Hz to 1050 Hz +/- 50 Hz, variable
lambic notation;	Character insertion
lambic setup;	Normal

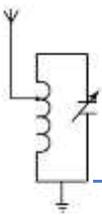


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Appendix C - Schematic



Spark Gaps Design	
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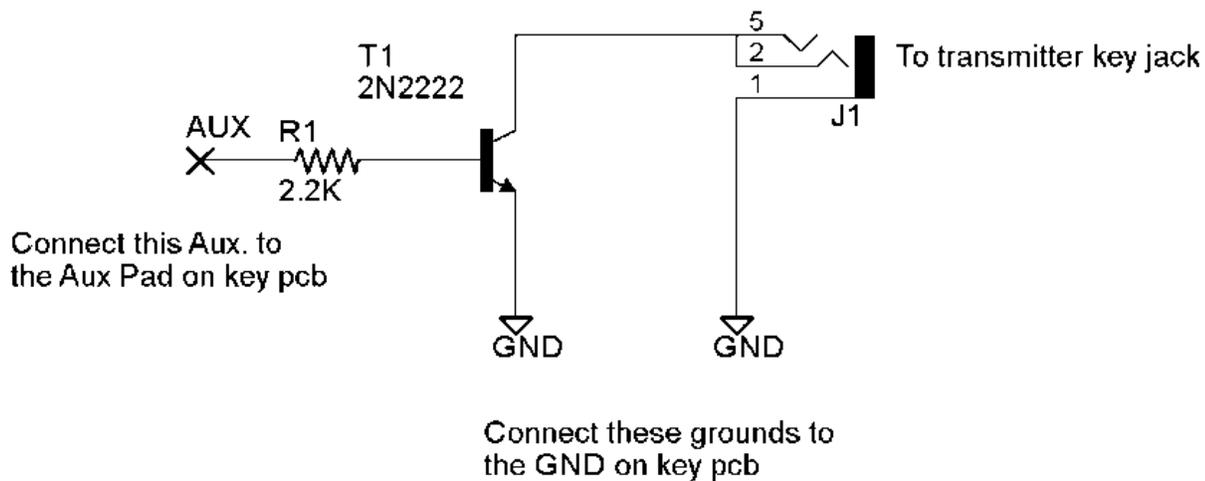
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Appendix E – How to add a keying transistor

As described in the text of this document the practice oscillator can also be used to key a modern solid state transmitter. For the extra components required, please refer to the diagram below.

We have successfully installed these extra parts on both sides of the existing pcb, just be careful not to short any existing components with the new components or create shorts with solder splashes etc.

Actual connections that you need to make to your transmitter and any setting changes that need to be made will be in your user manual. Electro-Resales cannot assist with this.



Please Note:

This simple keying arrangement will **not** work with tube transmitters, a reed relay or Mosfet based switch will be needed for tube based transmitters.