

# WINK3Y Instructions

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## 1 Disclaimer

Although a full set of testing (as outlined in Section 2) has been completed on all supplied boards, it is your responsibility to ensure that your WINK3Y board will not cause damage to operator and/or equipment before connecting it to any other device.

## 2 Completed Testing before Delivery (if delivered assembled)

- DC resistance between the USB 5V rail and GND is high enough to not risk damage to a USB port
- WINK3Y is recognised by PC with no USB faults and identifies as 2 COM ports
- Data sent to the CAT port appears on the DB9 connector at the correct voltage levels and is decoded by external test equipment (RS232 decoder on Keysight MSOX2024A)
- When the RS232 TX and RX lines are connected together, any data sent from the PC is also correctly decoded by the PC on return (loopback test)
- The bicolour LED illuminates RED when data is sent to/from the PC to the DB9 connector
- The solid state relay (SSR) correctly shorts the KEY outputs when instructed by the Winkeyer IC
- Both dot and dash inputs being shorted to ground causes a repeated pattern of dots/dashes respectively to be sent.
- When connected to a PC, the Winkeyer IC is recognised by the WK3Tools script provided by K1EL and can have its parameters read.

Note that as you will have to solder wires to the WINK3Y to complete the assembly, this will invalidate the testing performed above as this will change the state of the hardware. However, any faults are most likely to be caused by your soldering as all units have passed the above testing.

## 3 Completing Assembly

### 3.1 Parts required

- USB cable of desired length

This is effectively the entire cable length between the PC and the K3 so find one of an appropriate length. One side must be USB A (shown in Figure 1), the other end does not matter as it will be removed. I recommend not to use USB 3 cables as these have more internal wires and have not been tested with this.



Figure 1: USB A connector

- Connector for Morse Paddle I don't really have any suggestions here, it depends on your Morse Key, mine used a stereo 3.5mm jack so I bought an inline 3.5mm female stereo socket.
- Male Mono 1/4" plug To plug into the "Key" socket on K3 (not the "Paddle" input as the electronic keying is handled by the WINK3Y)

Up to you whether to chop up a cable or manually wire the required plugs onto some wire. I had a USB cable and Mono 1/4" cable in my junk box so chopped the end off. I couldn't think how to nicely do an inline socket so bought a cable with the right connector from eBay and chopped the end off. Link [here](#)

## 3.2 Assembly

It is worth noting that there is very little room inside the DB9 connector so care should be taken to ensure that the internal wiring is short enough that it does not interfere with the molded strain relief and that the unit can be closed. If you run short of space troublesome, sinking a 6mm drill bit into each strain relief hole does quite a good job of removing a lot of the unnecessary material which should give you a bit more room.

### 3.2.1 USB Cable

Cut off the connector from the USB cable that is not for connecting to the PC. Remove the internal foil shield to expose the 4 internal wires. Connections prefixed with USB\_ are for the USB cable, the colours used for the USB connectors should match the wire colours but cheap cables may not always conform to standards! I would solder this so the wires from the USB cable come up from the bottom of the board as seen in Figure 2a. See Figure 2b to see an assembled board.

### 3.2.2 1/4" Mono plug

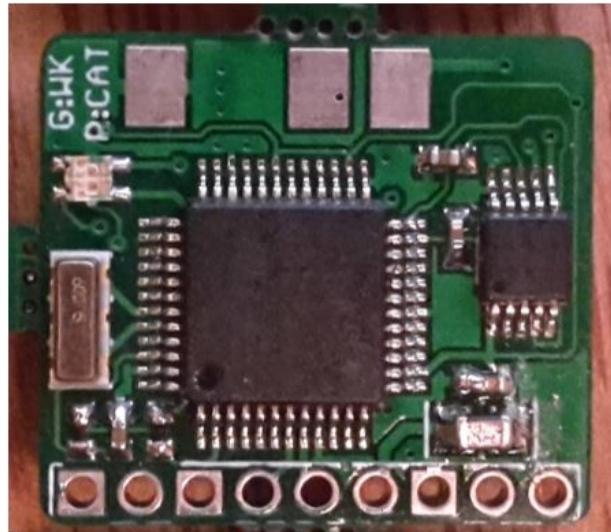
My 1/4" inch pigtails are about 9" or 23cm long from the tip of the plug. This gives enough room to comfortably bend around from the RS232 connector to the "KEY" input on the K3 without being excessive. RIG\_KEY goes to the tip and RIG\_GND goes to the ground connection. I would solder this with the wires going down from the top of the board as seen in Figure 2a.

### 3.2.3 Paddle Connection

I don't have much specific to say about this one as will probably be custom for your Morse Key. However, I keep this quite short (12cm / just under 5") as my Morse Key already has a long cable attached. The Winkey expects KEY\_DOT to be shorted to KEY\_GND to send dots and similarly KEY\_DASH shorted to KEY\_GND to send dashes. I would solder this with the wires going down from the top of the board as seen in Figure 2a.

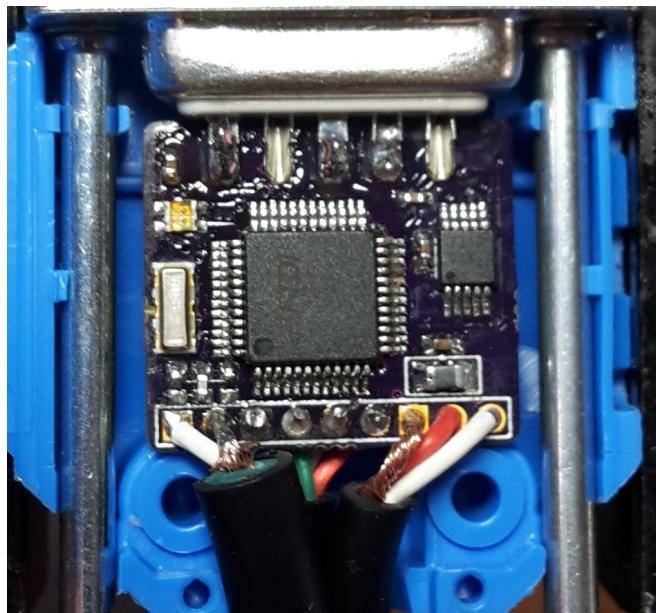
It may be worth putting a cable tie around all 3 cables as they exit the WINK3Y. It adds a surprising amount of strain relief to compensate for being unable to use the strain relief in the connector itself.

### 3.3 Completed Unit



RIG\_KEY  
RIG\_GND  
**USB\_D+**  
**USB\_D-**  
**USB\_5V**  
KEY\_GND  
KEY\_DASH  
KEY\_DOT

(a) Pinout



(b) Assembled Board

Figure 2: Assembly details



Figure 3: Fully assembled unit

## 4 Testing

Start with no cables connected. When each cable should be plugged in, the test plan will state. The LED should flash red when data is sent to RS232 connection and should flash green when data is sent to Winkey. These are not very bright as the LED will be sealed in the connector so is only useful during debugging.

1. Measure the DC resistance between the USB\_5V pin and USB\_GND  
On most of my units, it is about  $620\text{k}\Omega$ . Note that this measurement will increase over time as the decoupling capacitors charge. If it is lower than  $100\text{k}\Omega$ , it would appear something is wrong.
2. Connect the USB cable to PC  
Ensure that 2 COM ports appear in Device Manager, RS232 is most likely the lower number.
3. Ensure Winkey is seen by PC  
Connect using tool of choice. Wintest would work or WK3Tools which can be downloaded from [here](#). One of the things that WINK3Y has given up in order to achieve small size is the speed control pot. If you wish to save a speed as default in WINK3Y, this can be done using WK3Tools by setting the CmdWpm setting. Note that both Wintest and DXLog overwrite this default setting on startup (with no way that I have found to stop this happening) so this may be of limited usefulness.
4. Ensure RS232 connections work  
Plug DB9 connector into K3. In logging software of choice, connect to (probably) the lower number COM port and ensure that the PC can communicate with your K3.
5. Ensure Winkey connections work  
In logging software of choice, connect to (probably) the higher number COM port and ensure that the PC can communicate with your Winkey.
6. Ensure Winkey connections to Morse Key work  
Connect the 1/4" mono plug to the "Key" input of K3 and connect Morse key to WINK3Y. Ensure that Morse Paddle behaves as expected and the K3 is being keyed through the WINK3Y.
7. Done!