

MUK REAR PANEL ASSEMBLY

2017-05-10

ASSEMBLY INSTRUCTIONS



The Midnight Ultimate Keyer (MUK) consists of two functional assemblies:

- **Rear Panel** containing the interface and power connectors.
- **Front Panel** containing the basic keyer electronics, the four-character 7-segment display, all manual controls, and the miniature speaker.

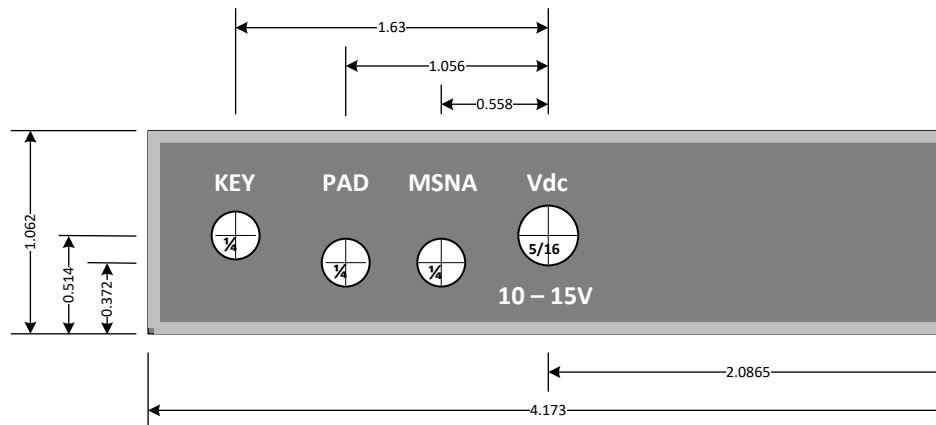
The rear panel assembly is used to supply power to the front panel during testing so it should be assembled before assembling the front panel. The front panel assembly instructions are covered elsewhere.

This document provides step-by-step instructions for assembling the MUK rear panel assembly. The rear panel assembly is made by drilling holes in the standard rear panel included with the MUK enclosure, mounting four connectors in it, and wiring a ribbon cable assembly to the connectors.

A bill of materials (BOM) and a schematic are included at the end of this document.

MUK REAR PANEL ASSEMBLY

1. DRILL THE REAR PANEL



Cut out or copy and cut out one of the patterns on the last page of this document. Cut along the long edges but leave about 1/2 of paper beyond the short edges. Fold the pattern along the short edges and center the pattern on the outside face of the rear panel. (The outside face has a raised surface with a rabbet milled along all four edges.) Keeping the pattern centered on the rear panel, fold the ends around the end panel and tape them to it. Tape the pattern to the panel along the long edges. Center punch the four holes at the centers of the crosses. Drill the 5/16" hole first then drill the three 1/4" holes. Drill through the paper, carefully lining the drill bit center with the indent made with the center punch. If available, use brad-point drill bits to minimize the chance of drill-bit wander. After all four holes have been drilled, remove the remains of the pattern and the tape.



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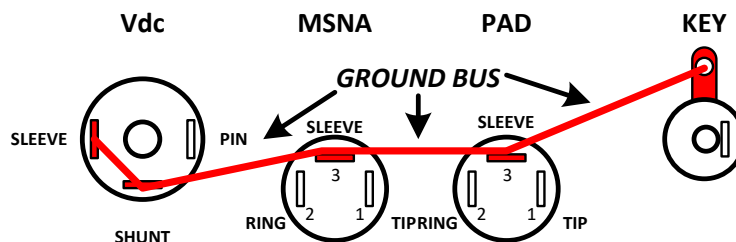
2. INSTALL THE CONNECTORS (BOM items 2, 3, and 4)

Install the connectors with the power jack (BOM item 1) in the 5/16" hole in the center of the panel. Mount the RCA jack (BOM item 3) in the 1/4" hole at the end of the panel. Orient the ground tab as shown in the following picture and bend it up away from the panel. Install the remaining two connectors (BOM item 2) in the remaining 1/4" holes. Orient all connectors roughly as shown here and tighten the retaining nuts



3. GROUND BUS

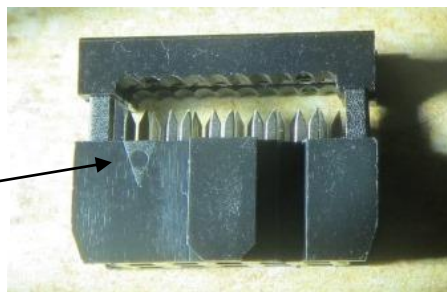
Since the panel is plastic and non-conductive, you must run a ground bus between the ground pins on all four connectors. Solder a length of bare hookup wire between the ground pins as shown below.



4. INTERFACE CABLE ASSEMBLY (BOM items 4 and 5)

Locate pin one on the IDCs ribbon cable connector (pin 1 is normally marked with a triangle molded in the housing). Insert the ribbon cable in the housing with the number one conductor over pin 1 of the connector. Squeeze the connector in a vice to push the top piece down on the cable and force it into the IDC pins. Fold the cable over the top of the connector and press the strain-relief clip down over the cable until the two ends snap into the holes at ends of the connector housing.

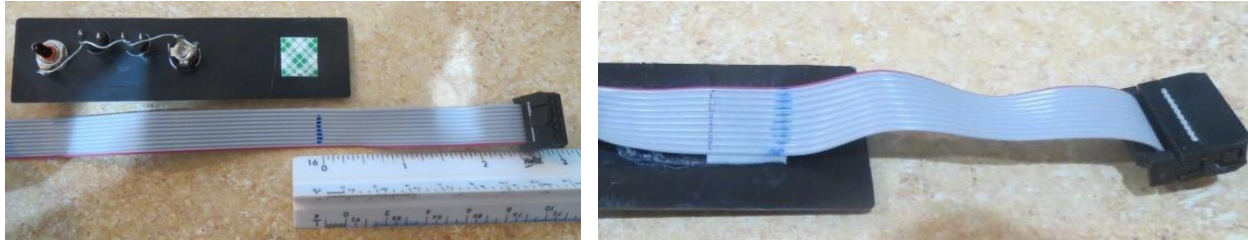
PIN ONE
INDICATOR



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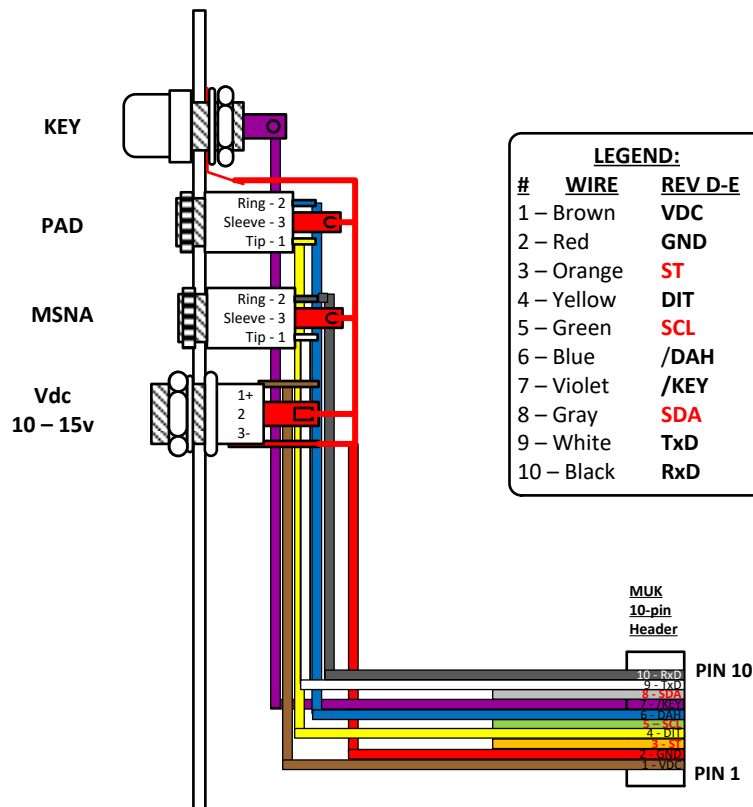
5. ATTACH INTERFACE CABLE TO REAR PANEL

Mark the cable 2-1/2 inches from the connector. Remove the backing and attach the piece of foam mounting tape (BOM item 6) to the rear panel about 1/2 inch from the end of the panel, centered vertically. Peel the cover from the tape and attach the cable assembly so that the 2-1/2 inch mark lines up with the right edge of the mounting tape. Press the tape firmly and hold for about 30 seconds.



6. CONNECT CABLE TO REAR PANEL JACKS

Starting with conductor number one, solder each lead according to the following diagram and wire list. As you progress, use a side cutter to separate the end of each conductor from its neighbor. Zip each conductor back as far as necessary, cut the conductor to length, strip the end, and solder it to the tab on the jack. Solder conductor number two to the ground bus. Cut the three unused conductors about even with the DC power jack.



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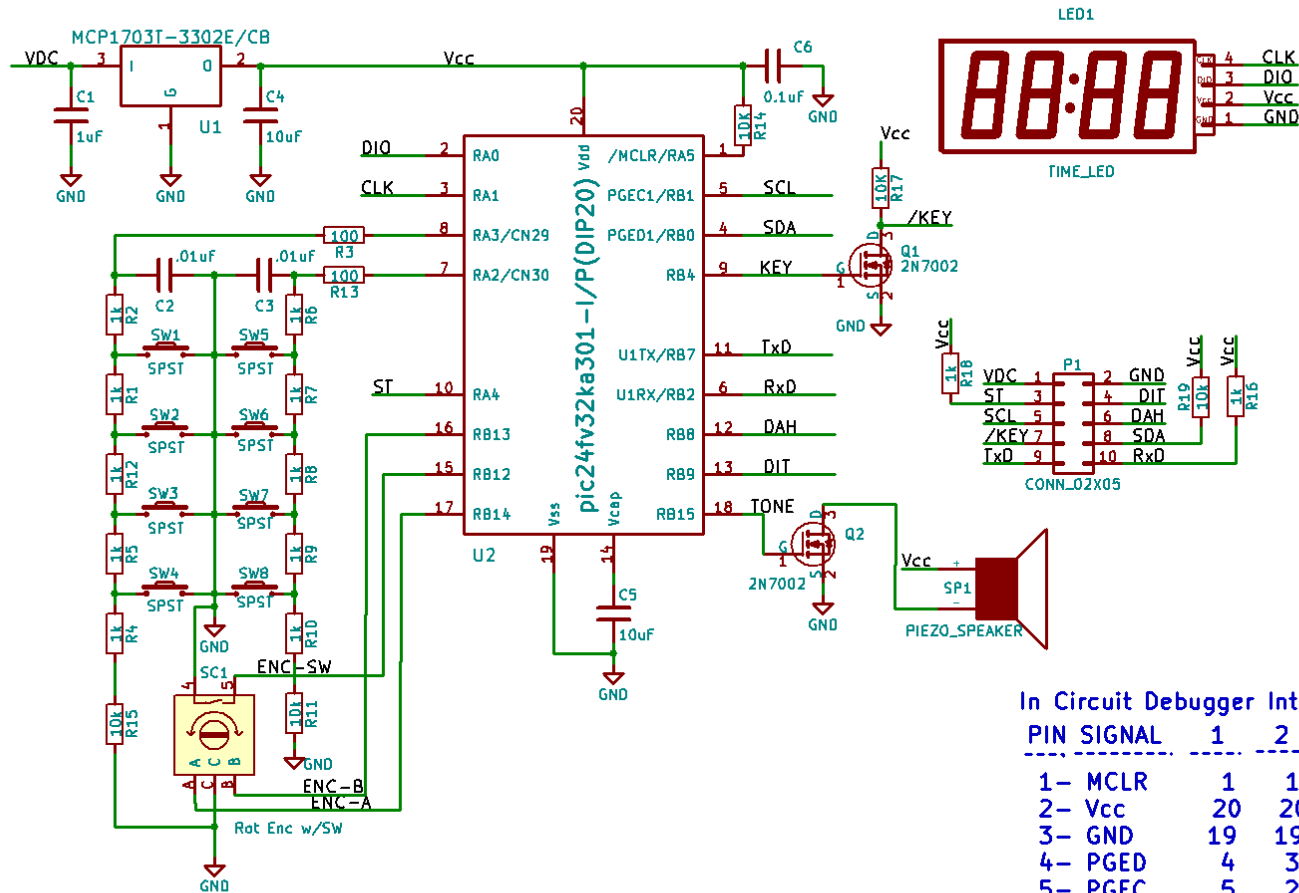
BOM 2. MIDNIGHT ULTIMATE KEYER -REAR PANEL ASSEMBLY

Order	Reference	Qty	Value	Supplier	Part Number	Footprint
		1	Rear Panel (part of enclosure)			1.062"x 4.173"(W)
1	J2	1	2.1mm coaxial DC power jack	Mouser	502-PC722A	5/16" panel mount
2	J3, J4	2	3.5mm stereo audio jack	Mouser	161-MJ352-EX	1/4" panel mount
3	J5	1	RCA Jack, Panel Mount	Mouser	490-RCJ-034	1/4" panel mount
4		1	IDC 2.54mm, header 2x5, F	Mouser	710-61201023021	
5		1	10-conductor ribbon cable	Mouser	517-3365/10FT	8"
6		1	Foam Mounting Tape	3M		1/2" x 1/2"

NOTE: The part suppliers and numbers listed here may differ from the parts in your kit due to parts availability at the time your MUK is kitted.

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MUK SCHEMATIC (V3Rd)



In Circuit Debugger Interfaces

PIN	SIGNAL	1	2	3
1	MCLR	1	1	1
2	Vcc	20	20	20
3	GND	19	19	19
4	PGED	4	3	9
5	PGEC	5	2	10
6	N.C.	-	-	-

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REAR PANEL DRILL PATTERN

