

# ELECRAFT KXPD1 PLUG-IN KEYER PADDLE

## Assembly and Operating Instructions

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### Introduction

The KXPD1 is a unique plug-in keyer paddle that attaches directly to the Elecraft KX1 portable HF transceiver. It adds just 1 oz. to total station weight, so it's an ideal solution for backpacking. Use of the KXPD1 greatly simplifies field operation, whether the operator is sitting on the ground, in a beach chair, standing, or even reclining. But the paddle is also very effective for use at home or on a picnic table.

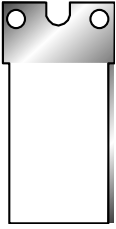

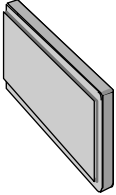

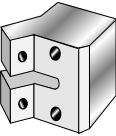

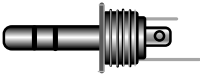
The iambic (dual-lever) paddles are angled at 45 degrees for ease of use. Both left- and right-handed operators can use the KXPD1, since it is physically reversible. The dot/dash lines can also be electrically reversed, or the paddle set up as a hand key, simply by changing the input device selection (**INP** menu entry).

A captive thumb screw holds the KXPD1 firmly in place during use. For transport, the paddle can be quickly removed. Solid silver contacts with protective rubber grips and a rugged, custom mounting bracket ensure excellent field reliability. After initial set-up, no adjustments are required.

### Specifications

Paddle type	Iambic (dual lever)
Contacts	Silver, protected by silicone rubber grips
Size	2.7" (L) x 0.8" (W) x 1" (H) (6.8 x 2 x 2.5 cm)
Weight	Approx. 1 oz. (30 g)

## Parts List

Drawing	Description	Qty	Part No.
	Lever, spring steel   <b>DO NOT FLATTEN OR BEND THE LEVER. IT IS FABRICATED WITH A PRECISE AMOUNT OF TENSION AND CURVATURE.</b>	2	E100182
	Grip, molded rubber   <b>Do not tear or puncture the grips. Also do not attempt to clean them. They will have slight variations in surface texture or color due to the molding process.</b>	2	E100181
	Bracket, aluminum	1	E100177
	Thumb screw, captive	1	E100186
	Plug, 1/8 <sup>th</sup> -inch (3.5 mm) stereo <b>Note:</b> The plug's handle will not be used.	1	E620070
	Silver wire, #24 solid, bare	2"	E760024
	PC Board, KXPDI	2	E100176
	Lock Washer, #4 (2 spares)	6	E700004
	Screw, 4-40 x 3/16" (4.8 mm) pan-head (2 spares)	6	E700015
	Hookup wire, #24 solid, insulated	1 ft.	E760008
	Hole Cover Label	1	E980096
	Washer, Flat, Stainless Steel, 0.010 Thick, #6	1	E700117
	Lock Washer, Internal Tooth, #6	1	E700095

## Assembly

- Break off the ground tab of the plug (longest of the 3 terminals) by flexing it a few times (Figure 1).

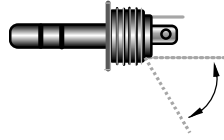


Figure 1

- Thread the plug into the flat end of the bracket until the plug's bushing is flush with the face (Figure 2). If the fit is too tight to thread the plug in by hand, grip the plug's shaft with long-nose pliers. (To protect the plug's finish, wrap it with a piece of cloth, ribbon, or tape.)



Figure 2

- Cut two 0.5" lengths of the bare silver wire. Form each wire into a U-shape with sharp bends as shown in Figure 3a. The legs should be spaced  $3/16$ " (4.8 mm) apart.

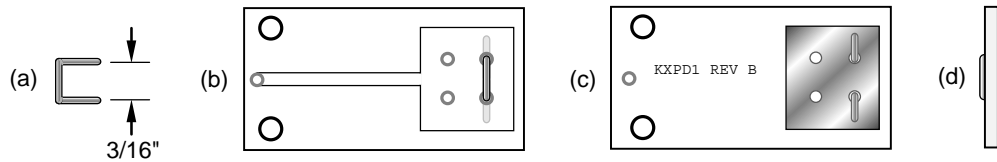
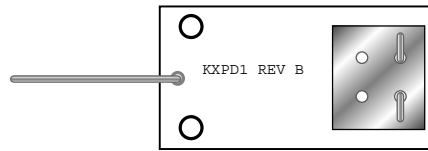


Figure 3

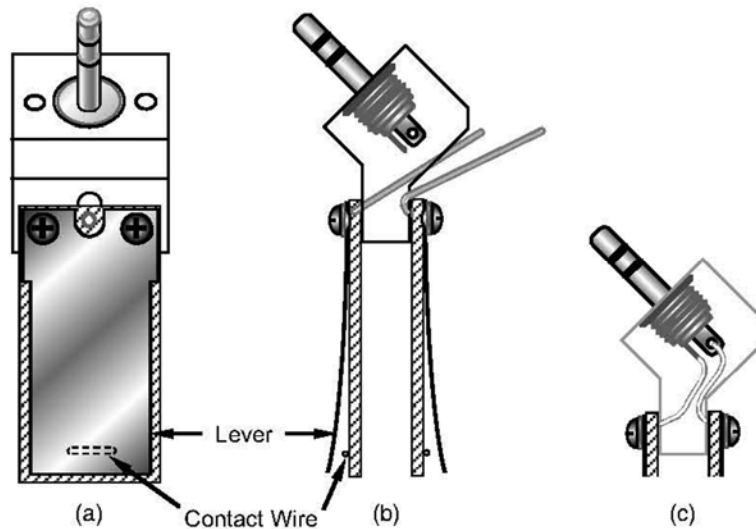
- Insert the U-shaped wires into the two small holes at the end of each PC board as shown above. The wire is inserted from the side identified in (b), then folded flat on the side shown in (c). **The wire must be pressed flat against the board on both sides (d).**
- Solder the wire *only* on the side identified in Figure 3c. **Do not apply any solder to the side shown in (b). Do not attempt to fill the plated-through hole with solder, as it may flow onto the contact point on the other side.**

- Remove the insulation from 2" (5 cm) of the insulated wire. Cut it into two 1" (2.5 cm) lengths.
- Attach one wire to each PC board at the pad shown in Figure 4. Solder on the opposite side.



**Figure 4**

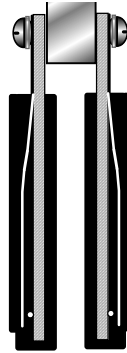
- Attach the levers and PC boards to the bracket as shown in Figure 5. For now, position the wires as shown in Figure 5b, within the channel provided in the bracket. Use four 4-40 x 3/16" (4.8 mm) pan-head screws and four split lock washers. **Do not over tighten the hardware.**



**Figure 5**

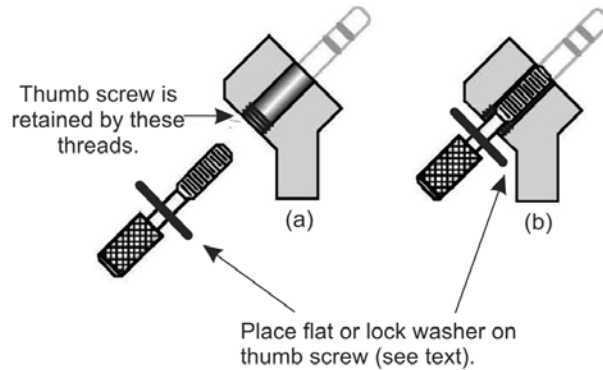
- If the levers are not aligned with the PC boards, loosen the screws and re-position them.
- Route the wires toward the plug's terminals and attach them as shown in Figure 5c.
- Adjust the positions of the wires carefully so they are not contacting the bracket, the PC boards, or each other. Then solder the two wires. **Note: The wire originating from the PC board on the right in (c) above should be soldered to the center terminal.**

- Locate the two molded rubber grips. Note that the grips have a raised surface detail on one side only. This surface must be pointing outward when they are installed in the next step.
- Slide the grips onto the lever assemblies as far as they'll go (Figure 6). You'll need to compress the levers in order to slide them into the grips. The grips pre-tension the levers, placing them a small distance from the silver-wire contacts (the levers and contacts are shown in Figure 6 for reference). The contact spacing can be adjusted, if necessary, in a later step.



**Figure 6**

- The two remaining holes in the bracket are provided for the captive thumb screw. One of the holes is shown below in a cutaway view (Figure 7a). Only a small portion of the hole is threaded. This retains the thumb screw so it cannot be lost, but still allows it to freely move in and out. Figure 7b shows the thumb screw threaded in past these threads. Place a #6 washer on the thumb screw before threading it into the bracket. Use only *one* washer. The lock washer should provide better resistance to vibration in rough use such as pedestrian mobile operation, but may mark the surface of the bracket around the thumb screw hole.



**Figure 7**

## Installation and Test

- Turn on the KX1 and plug in a pair of headphones or a speaker. If you're using headphones, put them on now.
- To safely test the paddle without transmitting, use keyer speed adjustment mode (hold the **SPEED** switch to enter this mode). The speed in WPM will be shown, and can be changed using the VFO knob. You can alternatively use CW test mode, which allows you to key the transmitter or play back message buffers without transmitting. First, locate the **PLY** menu entry, then tap the VFO knob to show **P=0**. Tapping it again returns you to normal mode, or **nor**.
- Plug the paddle into the transceiver's KEY/PADDLE jack and orient it for either left- or right-handed operation (Figure 8). The chassis has an integral nut that accepts the thumb screw. Thread the thumb screw through the uppermost hole in the bracket.

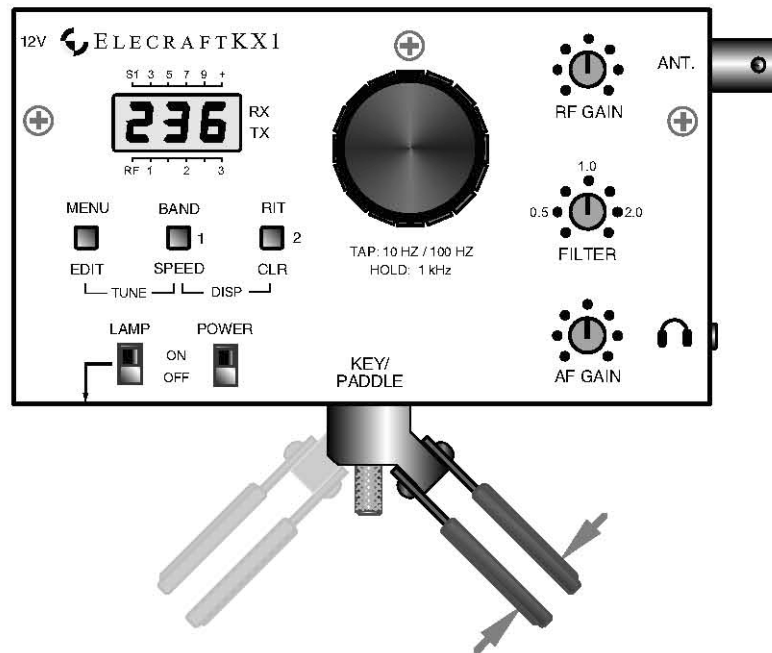
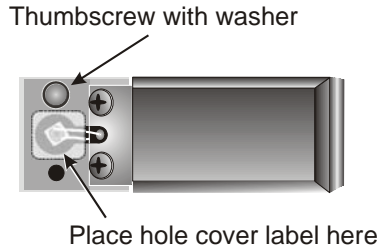


Figure 8



**If you hear a series of dots and/or dashes even when you're not touching the paddle, you could have a short between one of the plug wires and the bracket. Or, if removing the rubber grip stops the code elements, you may have a build-up of solder on the contact wire or have it out of position. In some cases it may be necessary to use a fine file to remove some of the contact material.**

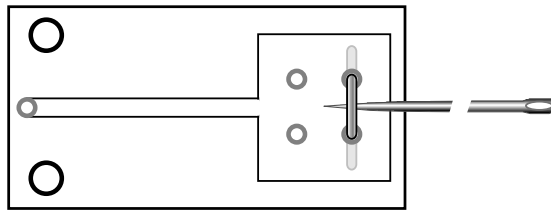
- Test the paddles, pressing them at approximately the points indicated by the arrows in Figure 8.
- After you have confirmed that both paddles work properly, remove the backing from the adhesive hole cover and position it to cover the exposed terminals as shown in Figure 9. Be careful not to cover either thumb screw hole.



**Figure 9**

### ***Contact Spacing Adjustment (Optional)***

- You can decrease the spacing between the lever and the silver contact wire, if desired, by lifting the center of the wire slightly using the tip of a very thin sewing needle (Figure 10). This will move the center of the wire upward by about 1/100" (0.25 mm). The ideal spacing must be determined experimentally. If the spacing is found to be too close, the wire can be squeezed back down slightly using long-nose pliers.



**Figure 10**

### **Using the KXPDP1**

**DOT/DASH Reversal:** In addition to being physical reversible, the paddle can be electrically reversed (dot/dash lines swapped) by setting the KX1's **INP** menu parameter to **PDn** or **PDr** (normal or reverse) as desired.

**Storage and Transport:** The paddle should be unplugged and stored in a padded pocket or bag for transport. However, the captive thumb screw should be left threaded into the bracket so it will not become lost.

**Switch CW Mode:** If the KXPDP1 is ever lost or damaged during field use, you can use the KX1's *Switch CW* mode as a backup. Press and hold **MENU** and the VFO knob together to toggle between **btn** (button, or Switch CW mode) and **pdl** (paddles).