

## Introduction

The CK-200 Electronic CW Keyer is a microprocessor controlled keyer that provides iambic key operation and dot-and-dash memory to make sending perfect code easier. It has tunable code speed, code weight, and sidetone frequency; it supports both direct and grid-block keying outputs as well as relay contact output. You also get to choose between type A and type B iambic keying.

## Control Functions

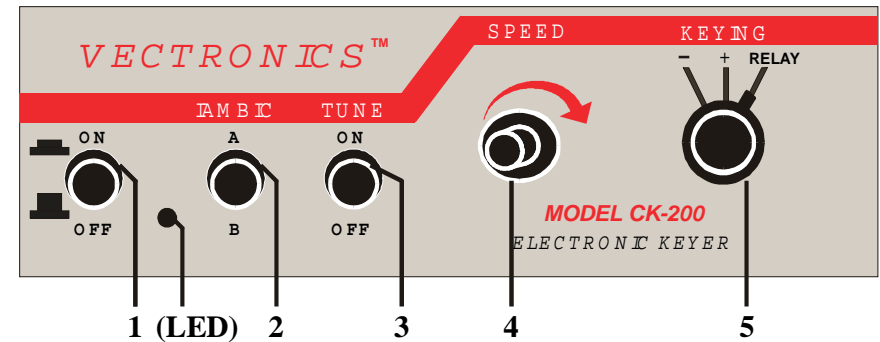


Figure 1. CK-200 Front Panel.

1. The **On/Off** button turns the unit ON and OFF. The LED lights when the unit is ON.
2. The **Iambic** button selects type A or type B iambic keying. When a squeeze is released during an element (dot or dash), type B adds the opposite element. Type A just finishes the element in progress and does *not* produce a following alternate element. For example, in type A iambic, a squeeze release during the "dah" in the letter A will produce "di- dah" (A). In type B iambic, a squeeze release during the "dah" in the letter A will produce "di-dah-dit" (R).
3. The **Tune** button continuously keys the transmitter for tuning.
4. The **Speed** control varies the code speed. The speed range is configured with an internal jumper (JMP1) for 5 to 65 WPM or 10 to 40 WPM. Turn the control clockwise to increase speed and counter-clockwise to decrease speed. The unit is factory set to 5 to 65 WPM with JMP1 at the "L" position. To make the speed adjustment less sensitive, change the speed range to the narrower range of 10 to 40 WPM. To change the speed range,

remove the cover by removing the two screws (one on each side) that secure it. Locate jumper JMP1 behind the microprocessor and set it to the "H" position.

5. The **Keying** rotary switch selects output for negative (grid-block), positive (direct), or relay contact output.
6. The **Weight** control varies the code weight from approximately 25% to 75%, with the standard dot defined as 50% weight. The standard dot-dash-space ratio is 1:3:1 (trimpot at mid-range). The unit is factory set to standard weight of 50%. To change the code weight, remove the cover by removing the two screws (one on each side) that secure it. Locate trimpot R27 next to jumper JMP1; turn it clockwise to increase dot and dash lengths and counter-clockwise to decrease dot and dash lengths.

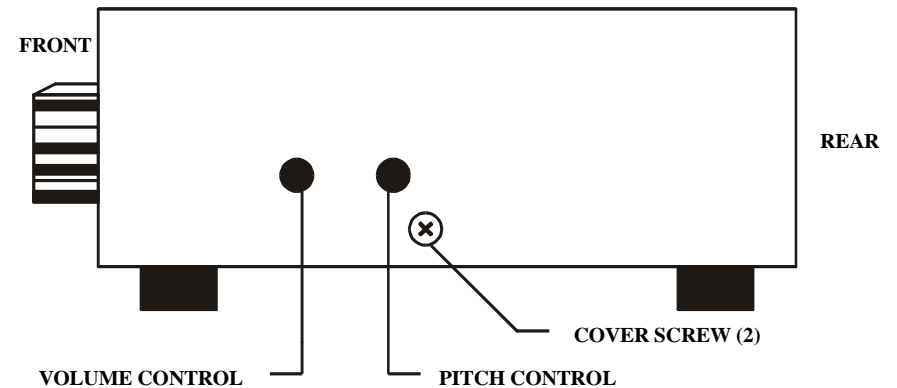


Figure 2. CK-200 Right Side.

7. The **Volume** control adjusts the sidetone level of the internal speaker. This control is located internally. When looking at the unit's front panel, it is accessible through a small hole on the right side, closest to the front and may be adjusted by inserting a small flat-headed screwdriver. This control is turned clockwise to increase the volume and counter-clockwise to decrease the volume.
8. The **Pitch** control sets the desired sidetone pitch from approximately 300 to 1200 Hz. This control is also located internally. When looking at the unit's front panel, it is accessible through a small hole on the right side, closest to the rear and may be adjusted by inserting a small flat-headed screwdriver. This control is turned clockwise to raise the pitch and counter-clockwise to lower the pitch.

## Rear Panel

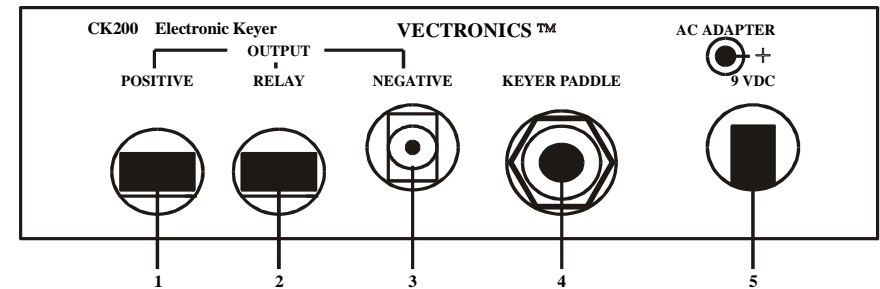


Figure 3. CK-200 Rear Panel.

1. **Positive Keying Output** jack is a 3.5 mm stereo jack that accepts a stereo or mono plug where the keying output is available *only* at the tip of the plug (the ring of the plug is not connected).
2. **Relay Keying Output** jack is a 3.5 mm stereo jack that accepts a stereo plug where the tip and ring of the plug form output contact.
3. **Negative Keying Output** jack is a RCA phono jack where the keying output is available at the center pin of the plug.
4. **Keyer Paddle** jack is a 1/4 inch stereo jack where the tip is connected to the dot level and the ring is connected to the dash level.
5. **Power** jack is a 2.1 mm coaxial jack with positive center and negative sleeve that accepts 9 to 16 volts DC power supply. Use of this jack disconnects the internal 9-volt battery.

## Installation

1. A 9-volt battery (not included) may be installed. Remove the cover by removing the two screws (one on each side) that secure it. A battery holder, located inside the enclosure, is provided for installing a 9-volt battery.
2. A 12 Vdc power supply may also be used to power the CK-200. A 2.1 mm coaxial plug with a positive center and a negative sleeve should be used to power this unit. The MFJ-1312B, an optional 12 volts adapter, is available from MFJ Enterprises, Inc. The battery is automatically disconnected when external power is used.

3. If weight control adjustment is required, access the trimpot located next to jumper JMP1 and adjust as desired.
4. A squeeze key with ¼-inch stereo phono plug and a two-conductor shielded cable should be used. If separate shielded cables are used, the two shields should be tied together and connected to ground. The dot wire should be connected to the tip of the plug and the dash wire to the ring (reverse this for left-handed operator).

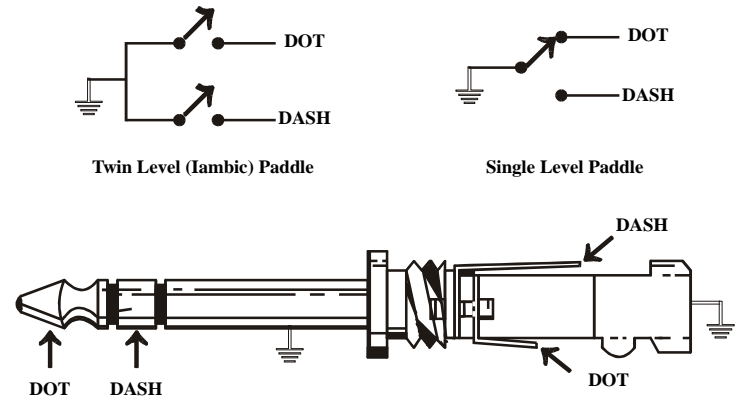


Figure 4. Paddle Plug.

5. Keying output circuit allows keying of grid-block and solid state transmitters. Negative output keying is provided on a RCA phono jack. Relay output keying is provided on a 3.5 mm stereo jack where the tip and ring of the plug form output contact. Positive output keying is provided on a 3.5 mm stereo jack where keying is available *only* from the tip of the plug; as a result, a mono plug can also be used here.

*Note: Consult the transmitter's instruction manual to determine which output to use. When in doubt, use the relay contact output.*



Figure 5. Relay Keying Output Plug.

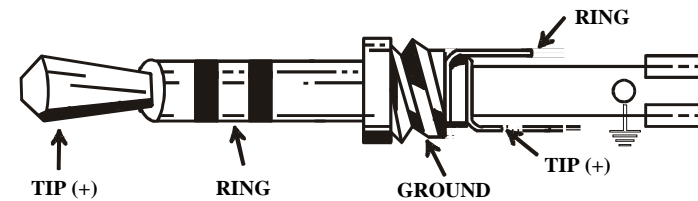


Figure 6. Positive Keying Output Plug.

### Keyer Operation

1. A 9-volt battery or an optional dc adapter may be used to supply power to the keyer.
2. The key paddle should be connected to the **Keyer Paddle** jack on the rear panel of the unit. A dual paddle squeeze key should be used.
3. Next, the keyer should be turned on with the **On/Off** switch. The LED should light up.
4. The user should now start sending with the paddle and adjust speed, pitch, and volume as desired. If you have sidetone on your transmitter/transceiver you may turn off the volume completely to eliminate hearing two sidetones at the same time and to reduce battery drain.

*Note: The higher the volume, the more drain there will be on the battery.*

5. The dot and dash memories make sending easier. The memories allow the user to key a dot before the completion of a dash and vice versa. This feature can be checked by setting the keyer to the lowest speed and tapping first the dash lever and then the dot lever before the completion of the dash. The keyer will provide both the dash and the dot. The dash memory can be checked in a similar manner. The dot insertion feature allows the user to insert a dot by tapping the dot lever while holding the dash lever in. The dash insertion feature allows the user to insert a dash while holding the dot lever in. The Iambic operation allows sending of alternate dots and dashes when using squeeze key and with both paddles squeezed. The first paddle contacted will determine whether a dot or dash occurs first.
6. The user may select either iambic A or B according to his or her preference.

**Morse Code Character Set<sup>1</sup>**

A	di-dah	•—	N	dah-dit	—•
B	dah-di-di-dit	—•••	O	dah-dah-dah	---
C	dah-di-dah-dit	—•—•	P	di-dah-dah-dit	•---•
D	dah-di-dit	—••	Q	dah-dah-di-dah	---•—
E	dit	•	R	di-dah-dit	••—
F	di-di-dah-dit	••—•	S	di-di-dit	•••
G	dah-dah-dit	---•	T	dah	—
H	di-di-di-dit	••••	U	di-di-dah	••—
I	di-dit	••	V	di-di-di-dah	•••—
J	di-dah-dah-dah	•----	W	di-dah-dah	•---
K	dah-di-dah	—•—	X	dah-di-di-dah	---•—
L	di-dah-di-dit	•—••	Y	dah-di-dah-dah	—•---
M	dah-dah	--	Z	dah-dah-di-dit	---••
1	di-dah-dah-dah-dah	•-----	6	dah-di-di-di-dit	—••••
2	di-di-dah-dah-dah	••-----	7	dah-dah-di-di-dit	---••••
3	di-di-di-dah-dah	•••-----	8	dah-dah-dah-di-dit	----•••
4	di-di-di-di-dah	••••---	9	dah-dah-dah-dah-dit	-----•
5	di-di-di-di-dit	•••••	0	dah-dah-dah-dah	-----
Period	[.]	di-dah-di-dah-di-dah	•••••—	<u>AAA</u>	
Comma	[,]	dah-dah-di-di-dah-dah	---•••---	<u>MIM</u>	
Question Mark or Request for Repetition	[?]	di-di-dah-dah-di-dit	••---•••	<u>IMI</u>	
Fraction Bar or Slash Bar	[/]	dah-di-di-dah-dit	—•••••	<u>DN</u>	
End of Message, Plus Sign, or Cross	[+]	di-dah-di-dah-dit	•—•••	<u>AR</u>	
End of Work		di-di-di-dah-di-dah	••••---	<u>SK</u>	
Double Dash, Equal Sign, Pause, or Break	[=]	dah-di-di-di-dah	—••••	<u>BT</u>	
Semicolon	[;]	dah-di-dah-di-dah-dit	—•••••	<u>KR</u>	
Colon	[:]	dah-dah-dah-di-di-dit	---••••	<u>OS</u>	
Apostrophe	[']	di-dah-dah-dah-dah-dit	•-----	<u>WG</u>	
Quotation Mark	["]	di-dah-di-di-dah-dit	••••••	<u>AF</u>	
Hyphen or Dash	[-]	dah-di-di-di-di-dah	—•••••	<u>DU</u>	
Underline	[_]	di-di-dah-dah-di-dah	••---•—	<u>IQ</u>	
Dollar Sign	[\$]	di-di-di-dah-di-di-dah	••••••—	<u>SX</u>	
Left Parenthesis or Go Only	[ ( ]	dah-di-dah-dah-dit	—••••	<u>KN</u>	
Right Parenthesis	[ ) ]	dah-di-dah-dah-di-dah	—•---•—	<u>KK</u>	
Wait or Stand By		di-dah-di-di-dit	•••••	<u>AS</u>	
Understood		di-di-di-dah-dit	•••••	<u>SN</u>	
Starting Signal		dah-di-dah-di-dah	—••••	<u>KA</u>	
Error		di-di-di-di-di-di-dit	••••••••	<u>HH</u>	
Paragraph	[¶]	di-dah-di-dah-di-dit	••••••	<u>AL</u>	
Invitation to Transmit or Go Ahead	[K]	dah-di-dah	—•—	<u>K</u>	

1. FCC test requirement consists the 26 letters, the 10 numerals, the period, the comma, the question mark, AR, SK, BT and fraction bar DN.

**Signals Used In Other Radio Services**

Interrogatory	di-di-dah-di-dah	••-•-	$\overline{\text{INT}}$
Emergency Silence	di-di-di-di-dah-dah	••••--	$\overline{\text{HM}}$
Executive Follows	di-di-dah-di-di-dah	••-••-	$\overline{\text{IX}}$
Break-in Signal	dah-dah-dah-dah-dah	-----	$\overline{\text{TTTTT}}$
Emergency Signal	di-di-di-dah-dah-dah-di-di-dit	•••-----•••	$\overline{\text{SOS}}$
Relay of Distress	dah-di-di-dah-di-di-dah-di-dit	-••-••-••	$\overline{\text{DDD}}$

**Technical Assistance**

If you have any problem with this unit first check the appropriate section of this manual. If the manual does not reference your problem or your problem is not solved by reading the manual you may call VECTRONICS at 662-323-5800. You will be best helped if you have your unit, manual and all information on your station handy so you can answer any questions the technicians may ask.

You can also send questions by mail to VECTRONICS, 300 Industrial Park Road, Starkville, MS 39759 or by Fax to 662-323-6551. Send a complete description of your problem, an explanation of exactly how you are using your unit, and a complete description of your station.

**Schematic**