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CW50A Morse Code Keyer

Owner's Manual



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Thank you for purchasing a Palstar CW50A CW Keyer. This keyer has been designed and manufactured to high quality standards, and will provide reliable operation for many years. Please carefully read the Owner's Manual in order to take advantage its many features.

General Description	3
Front Panel	4
Rear Panel	5
Preparing for Use	6
Rear Panel Controls & Connections	6
Schematic	8
Other Features	10
Mode A/Mode B Explanation	11
Jumper Layout	12
Service and Warranty	15

Limited Warranty

Palstar Inc. warrants products manufactured by it to be free from defects in material and workmanship under normal use and service **for a period of one (1) year from the date of delivery to the first buyer** (the "Warranty Period"). Palstar Inc's obligation under this warranty is limited to repair or replacement of the product; at its option at the Palstar factory in Piqua, OH.

Effective only when the product is returned to the factory with all transportation charges prepaid and examination of the product discloses in Palstar's judgment, to have been defective during the Warranty Period.

The Warranty Period shall not extend beyond its original term with respect to interim in-warranty repairs by Palstar. This Warranty Period shall not apply to any product which has been repaired or altered by anyone other than Palstar without prior written authorization. Warranty does not extend to any products which have been subject to damage from improper installation, application or maintenance in accordance with the operating specification. Palstar neither assumes nor authorizes any person to assume for it any obligation or liability other than herein stated.

Repair Policy

When sending in a product for service, please "double" box it carefully and ship it insured for your protection. Please include a note clearly describing the problem, how you wish the item returned and how you wish to pay for the service. Package your radio properly. Palstar, Inc. is not responsible for merchandise damaged in shipment. Our service rate is \$30 per hour (1/2 hr. minimum).

Return Policy

All returns must receive prior authorization from Palstar. Returned items must be received in original—AS SHIPPED—condition including the original box, manuals, accessories, and copy of sales receipt. Returns must be within 14 days of purchase. Returned items are subject to a 25% restocking fee. Shipping is not refundable.



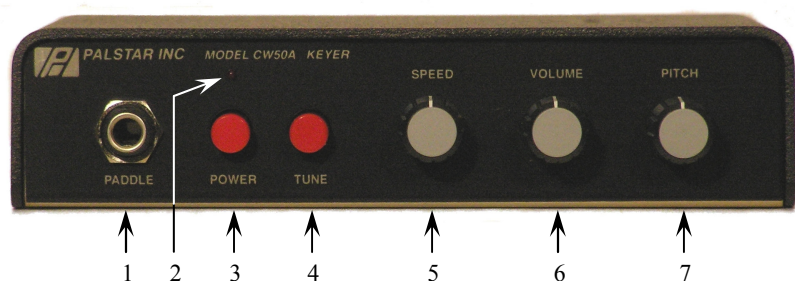
The microprocessor-based CW50A is designed to be a keyer that can be used with any kind of rig, vacuum tube or solid state. It has sidetone and a built-in speaker, and so can be used as a practice keyer for training purposes.

It may be used with straight keys, semi-automatic (bug) keys, and single lever or dual lever (squeeze) paddles.

Speed range is continuously adjustable over the range of 10 to 40 WPM and is crystal controlled for high accuracy over the full voltage and temperature range, with adjustable spacing and weight.

When used with a separate transmitter/receiver pair, the CW50A can be configured for full or semi break-in keying control.

Three outputs are available to provide grid block keying, cathode keying or a high-speed reed relay contact closure. The reed relay can be used to key a transmitter, or to mute a separate receiver, such as the Palstar R30A.



1. Paddle Jack: Standard 1/4" Stereo Phone jack for single or double lever paddles. Normally the tip is wired to the dash contact, the ring to the dot contact, and the sleeve to ground. If you operate left-handed, mirror image, the tip and ring contacts should be wired the other way around.

2. LED Power On Indicator

3. Power ON Switch

4. Tune Switch: Locks in a key down condition for transmitter tuning.

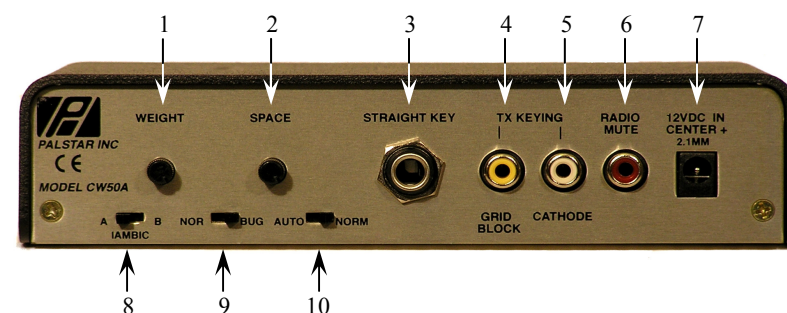
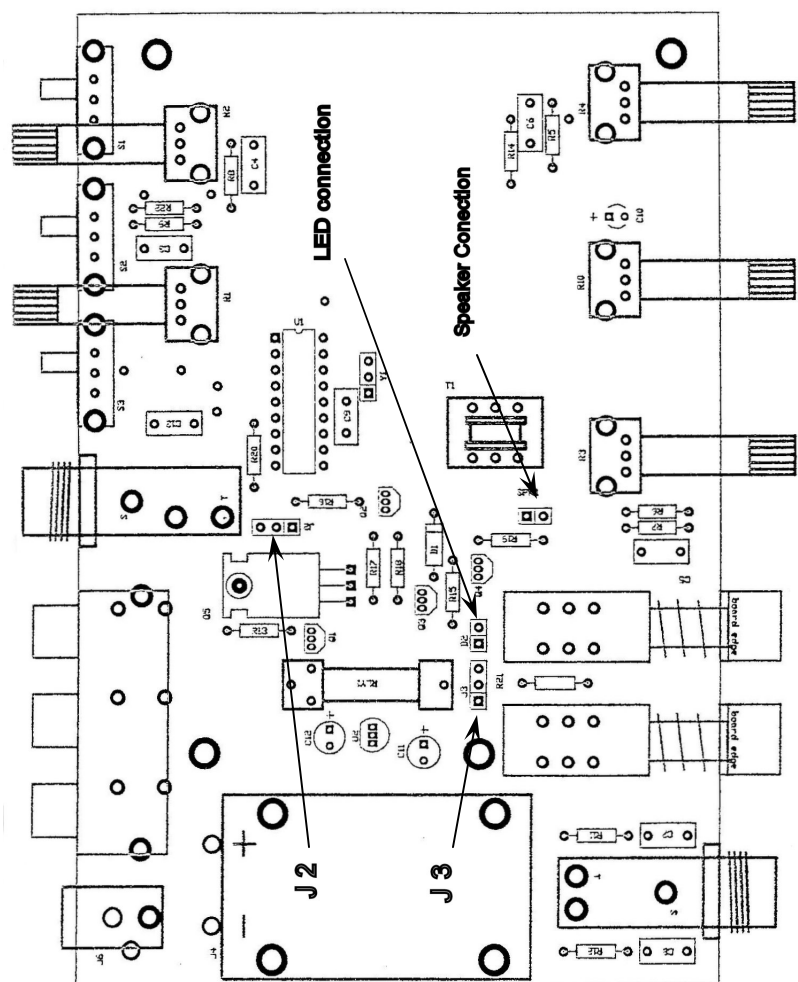
5. Speed Control: Continuously adjustable speed control over the range of 10 to 40 WPM.

6. Sidetone Volume: Controls the volume of the built-in Sidetone speaker.

7. Sidetone Pitch: Controls the pitch of the built-in Sidetone speaker.

Legend

	LED connection
	Radio/Mute port provides +V when keyer active via RLY1 contact
	Radio/Mute port provides ground when keyer active via RLY1 contact
	Radio/Mute port; Operates RLY1 relay contact in SEMI-QSK mode
	Radio/Mute port; Operates RLY1 relay contact in FULL-QSK mode
	Speaker connection



1. **Weight Control:** Adjusts Dash weight to compensate for transmitters that distort the keying waveshape.
2. **Space Control:** Adjusts space between character elements (Dots and Dashes) to compensate for transmitters that distort the keying waveshape.
3. **Straight Key Jack:** Standard 1/4" 2 conductor jack for plugging in a straight hand key or semi-automatic key (bug).
4. **Grid Block Keying Jack:** Standard Phono (RCA) jack for connecting to a grid block keyed transmitter.
5. **Cathode Keying Jack:** Standard Phono (RCA) jack for connecting to a cathode keyed transmitter.
6. **Radio Mute Jack:** Standard Phono (RCA) jack provides a high-speed reed relay contact closure for muting a separate receiver or keying a transmitter..
7. **Power Jack:** 2.1mm power jack for 12VDC. Disconnects internal battery when in use.
8. **Iambic A-B mode Switch:** Selects Iambic mode A or B for dual lever (squeeze) paddles. (See page 11)
9. **Normal-Bug Mode Switch:** Allows single or double lever paddles to function like a semi-automatic key.
10. **Autospace-Normal Space Mode Switch:** Turns on Autospace function. (Described on page 10.)

Further explanation of these control functions begins on page 6.

Preparing for Use

1. If you will be operating your CW50A by internal battery, remove the two screws on either side of the cover and insert a standard 9V (PP3) in the battery clip on the circuit board.

If operating from an external 12VDC power source, wire the provided plug with the Positive (+) wire to the center pin, or use a suitable AC to 12VDC wall adapter (provided - U.S. only).

Rear Panel Control and Connection Descriptions

1. **Weight Control:** Dash weight is adjustable to provide compensation for equipment that distorts the Dash-to-space ratio. Standard 3 to 1 weight is obtained with the Weight knob turned fully clockwise (CW).

2. **Space Control:** Spacing is adjustable to provide compensation for transmitters which distort the keying wave-shape. Standard 1 dot spacing is obtained with the Weight knob turned fully clockwise (CW). The Space Control is disabled, and standard 1 dot spacing is provided if the Normal-Bug Mode Switch (see item 9) is in Bug position.

3. **Straight Key Jack:** A standard 1/4" Mono Phone jack for plugging in a straight hand key or semi-automatic (bug) key. At this input, when the key contacts are closed the transmitter is keyed. If the Autospace Switch (see item 10 below) is set to the Auto position, spaces are inserted after each key opening. The length of these spaces is determined by the speed setting control (front panel). If the Autospace Switch is in Normal position, spaces are not inserted after each key opening. In all cases, the key closure and key opening is debounced. This is especially useful when using a bug with modern, high transfer speed, full break-in rigs.

4. **Grid Block Keying Jack:** The center pin (normally Negative) is pulled up to ground when keyed. Used with vac-

What is Mode A and Mode B?

Mode A and B refer to the way that a Morse code keyer handles iambic keying with a dual paddle (squeeze) keyer. An iambic keyer sends an alternating sequence of dots and dashes as long as both the dot and dash switches are depressed or squeezed.

Iambic operation is useful for sending characters that have alternating patterns such as a period or the letter C. To get true iambic operation a dual lever paddle, having two separately actuated switches, must be used. A single lever paddle can be used with an iambic keyer, but true iambic will not be possible, because only one paddle switch can be closed at a time.

The difference between mode A and B in what happens when both paddles of a dual lever paddle are released. The mode A keyer completes the element being sent when the paddles are released. The mode B keyer sends an additional element, opposite to the one being sent when the paddles are released.

You can tell the basic difference between the modes with the letter C. In mode A you could squeeze both paddles (dash before dot) and you would let go of both after hearing the last dot. With mode B, you start the same BUT let go of both paddles after hearing the second *dash*. This only affects letters and characters like C, PERIOD, or AR.

sition, spaces are inserted after each key opening. The length of these spaces is determined by the speed setting control (front panel). If the Autospace Switch is in Normal position, spaces are only inserted after each dot. Also, when this switch is in the Bug position, it disables the Adjustable Space control (see item 2 above).

10. Autospace-Normal Switch: If the Autospace Switch is set to the Auto position, spaces are inserted after each key opening. The length of these spaces is determined by the speed setting control (front panel). If the Autospace switch is in Normal position, spaces are only inserted after each dot.

Other Features

1. Adjustable Sidetone: The sidetone frequency and volume are adjustable from front panel controls. The sidetone frequency is variable from approximately 500 Hz to 1 KHz.

2. J2 Jumper: J2 on the circuit board (accessible by removing the cover), controls the semi-QSK (break-in) function at the Radio Mute rear panel jack. With the jumper in the Semi-QSK position, when any key input is closed after 3/4 of a second or more of no activity, the reed relay contacts close and stay closed until approximately 3/4 of a second after the last element is sent. With the jumper in the Full QSK position, there is no delay in opening and closing the relay with key input. See pages 12 and 13 for settings.

3. J3 Jumper: J3 on the circuit board (accessible by removing the cover), controls whether the relay contact closure available at the Radio Mute rear panel jack provides a short to ground or +12VDC. See pages 12 and 13 for settings.

uum tube transmitters to pull the negatively-biased grid up to chassis potential when keyed.

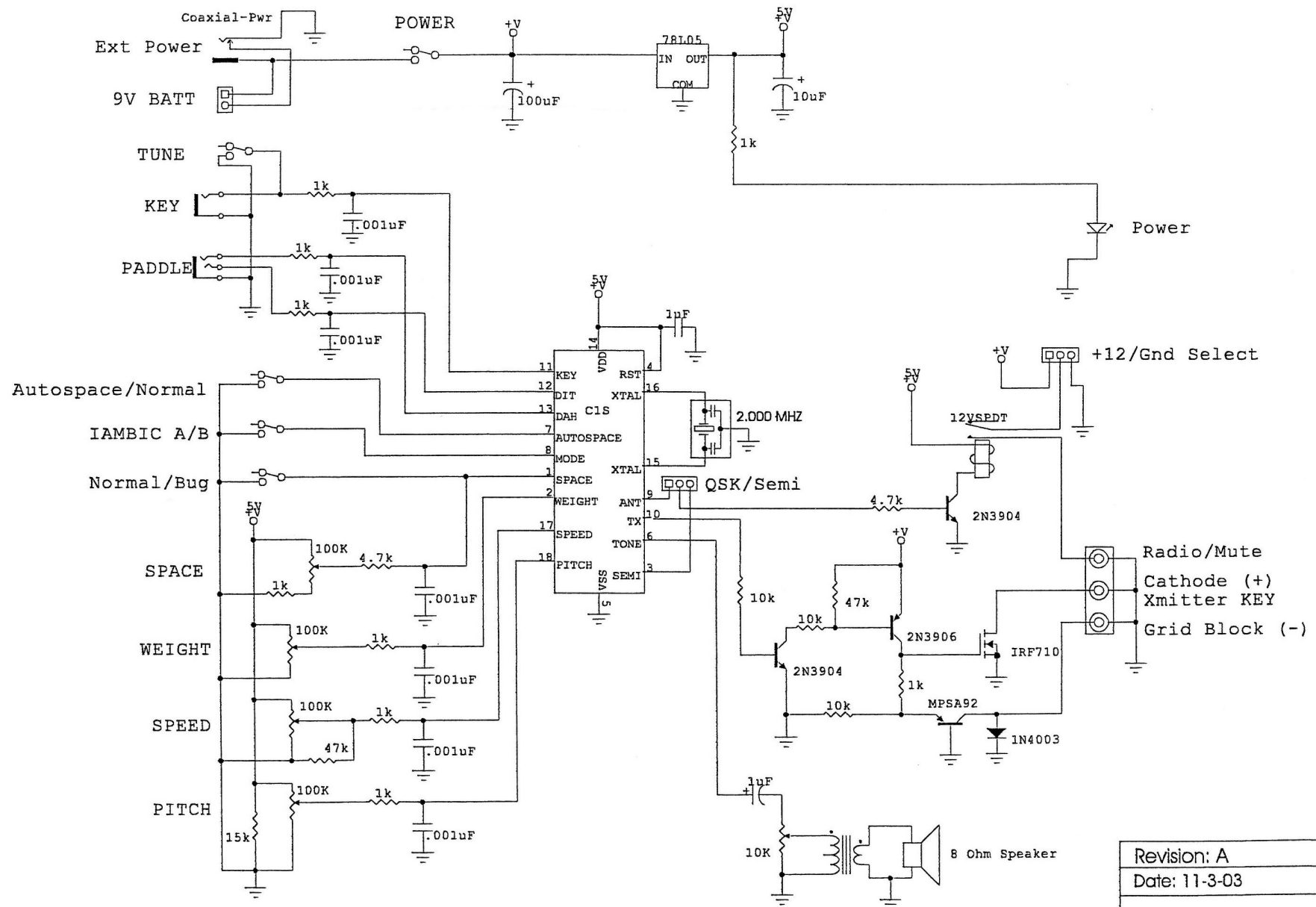
5. Cathode Keying Jack: Pulls the center pin to ground when keyed. Use this jack for solid state transmitters.

6. Radio Mute Jack: The Radio Mute jack can provide either a short to ground or a +12VDC output, depending on the setting of jumper J3 on the circuit board, for the purpose of muting a separate receiver while transmitting. (*See page 12 to locate the jumpers.*) If you are not using the Radio Mute jack to mute a receiver, the Radio Mute high speed reed relay can be used for Cathode keying. Make sure that J3 on the circuit board is set to short to ground. Also, when using the relay to key a transmitter, the Break-in option must be set to Full QSK on jumper J2 on the circuit board. (The Semi-QSK option has a delay that will prevent proper keying.)

7. Power Jack: A 2.1mm power jack (center pin positive (+)) for 12VDC. The internal battery is disconnected when external power is plugged in.

8. Iambic A-B Mode Switch: Selects between Iambic mode A and mode B. The difference between the modes is in the way the keyer acts when using a dual lever (squeeze) paddle. Mode A completes the element (dot or dash) being sent when the paddles are released. When the paddles are released in mode B, the keyer sends one more element, the opposite of the one being sent upon release. (If sending a dot, a dash is added; if sending a dash, a dot is added.)

9. Normal-Bug Mode Switch: Bug Mode allows the use of single or double lever paddles to simulate the action of a semi-automatic key (bug). When the dot contact is closed, dots are generated automatically at the speed selected by the speed control. When the dash contact is closed, the transmitter remains keyed until the dash contact is opened. If the Autospace Switch (see item 10 below) is set to the Auto po-



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