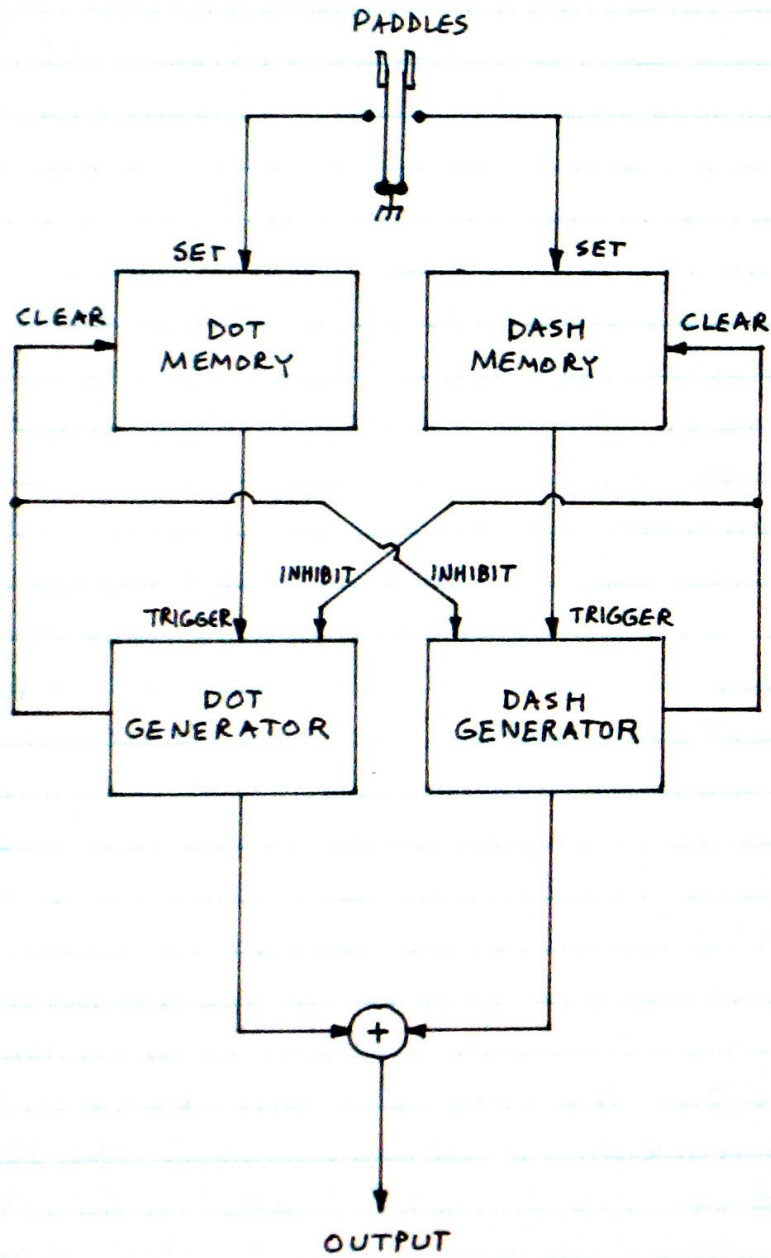


IAMBIC KEYS

FUNCTIONAL BLOCK DIAGRAM



IAMBIC KEYS - Description

1. 5 Volt Regulator

U1 (7805) provides a 5 Volt supply for the other integrated circuits.

2. Dot/Dash Memory Latches

U2A and U2B (NAND gates) form a dot memory latch. With C_1 low the output of U2B is normally high. When the dot paddle is grounded the output of U2B goes to a stable low state. It can be reset to high by letting C_1 go high. U2C and U2D perform the same function for dashes. U3A and U3D set appropriate logic levels.

3. Inhibit Gates

With I_1 low the output of U4A follows the output of U2B. If I_1 is high the output of U4A is always high. U3B and U3C set appropriate logic levels. U3E, U3F and U4B perform the same function for dashes.

4. Voltage Controlled Current Sources

$Q_1 - Q_4$ act as current sources to control the charging of the timing capacitors. The collector currents are in constant ratios determined by the emitter resistances. The magnitudes of all the collector currents are variable by adjusting R_1 while maintaining the ratios between them. R_1 acts as a speed control. R_2 controls the ratio of the length of "dot + space" to dot length. R_3 controls "dash + space" and R_4 controls dash length.

5. Dot and Dash Generators

U5 (556 dual timer) is the dot generator. One half generates a dot when \bar{X}_1 goes low. The output at pin 9 goes high for "key-down". The other half, triggered simultaneously, generates a longer time period, corresponding to a dot and the following space, during which the output at pin 5 is high. With I_2 high the dash generator (U6) is prevented from triggering until the dot and space are completed. With C_1 high the dot memory latch is reset and prevented from being set by the paddle until the dot and space are completed. The RC network at pin 5 ensures (a) during a sequence of dots U5 can not be re-triggered until the timing capacitor has had time to discharge, and (b) when both paddles are grounded the dash will start as soon as the "dot+space" is complete and before the clear (C_1) goes low, yielding proper iambic keying. U6 operates in the same way, providing timing for the dash and "dash+space".

6. Output Switch

Q5 will key a positive voltage to ground (max. 30V) when the base is driven by a high output from U5 or U6. D1 and D2 prevent U5 and U6 from shorting each other out.

7. Power Supply

The +12V supply should be stable as the keyer speed is dependent on this voltage. Current drain is about 50mA.

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