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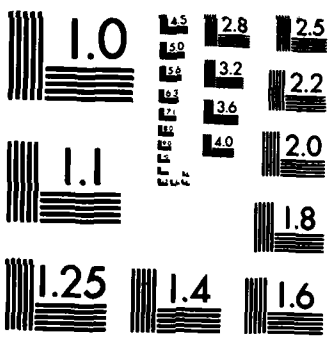


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# FOREIGN TECHNOLOGY DIVISION


INTRODUCTION TO THE ZFW-2/ZSW-2 CHARACTER FACSIMILE MACHINE




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# EDITED TRANSLATION

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INTRODUCTION TO THE ZFW-2/ZSW-2 CHARACTER FACSIMILE MACHINE

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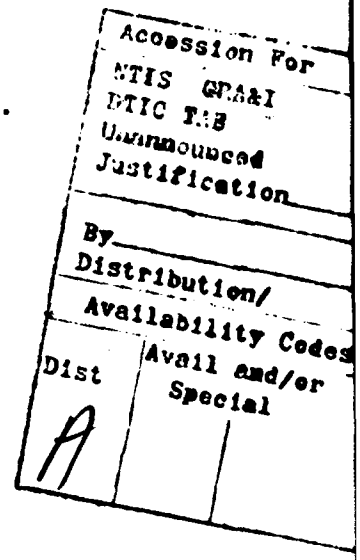




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INTRODUCTION TO THE ZFW-2/ZSW-2 CHARACTER FACSIMILE MACHINE
State-operated Changjiang Wire Communications Equipment Plant

This device sends and receives separately. It employs the flat scanning method and is used for transmitting single color written material, charts, or documents. It increases the speed of transmission of written information by means of an improved method of transmission. It requires only three minutes to transmit a 16 page message text over a 0.3 ~3.4kHz wire carrier channel or public communication network.

The ZFW-2 is a transmitter which employs optical fiber direct conversion in order to accomplish flat scanning. The transmission method increases transmission speed by means of 2/3 value conversion, amplitude modulation, phase modulation and vestigial sideband transmission in order to compress the frequency band. Except for the carrier frequency it basically conforms to CCITT-$T_3$ recommendations.

The ZSW-2 is a receiver which employs multi-pin electrode direct conversion in order to accomplish flat scanning. The recording method is electrostatic and the circuit employs the phase-locked, synchronous demodulation method.

I. This device has the following functions and characteristics:

1. It is a flat-scanning, type I, character facsimile machine. The receiver employs electrostatic recording. It sends 4-code characters over a standard voice channel. It has the advantages that its

message text length is not restricted, it can transmit continuously, its recording clarity is high and it keeps a long time without fading.

2. The circuits in this device are composed of a combination of discrete components and integrated circuits. The structure is compact.

3. The device employs hand switches, the degree of automation is relatively high, operation is convenient and reliable, and its configuration is attractive and tasteful.

4. The device has a monitoring circuit and return control call signal, connection is convenient and reliable.

5. The interfacing method of the device is a balanced, two-wire system which has a jack connected to a scrambler and baseband signals are sent through this jack for direct printing.

6. The operating conditions of this device are:

| | |
|---|---|
| (1) Ambient temperature: | $-10 \sim +45^{\circ}C$ |
| (2) Relative humidity: | $30 \sim 90\%$ ($30^{\circ} \pm 2^{\circ}C$) |
| (3) Power supply: | 50Hz, $220V^{+10}_{-15}\%$, transmitter power consumption $< 85VA$, receiver mean power consumption $< 120VA$ |

II. The devices principal specifications are as follows:

1. Size of original: Maximum width 190mm, length unlimited
2. Index of cooperation: 829
3. Scanning-line density: 4 1/3 lines per mm
4. Main scanning speed: 360 lines/min
5. Scanning direction: From left to right, from top to bottom
6. Transmission system: AM - FM - VSB, 100% positive modulation. Two-phase system with an odd-even signal phase difference of $180^{\circ}$
7. Carrier frequency: The receiver functions normally at 2250Hz with a frequency deviation of $\pm$16Hz
8. Transmission levels: (four) -15db, -10db, -5db, and 0db
9. Reception level: $0 \sim -40db/600\Omega$, manual adjustment not required. Receiver has an amplitude equalizing circuit which is

suitable for trunkline transmission of up to 20km.

10. Reception signal-to-noise ratio $\geq$ 13db.

11. Synchronization method: Uses crystal oscillator independent syncronization. Frequency stability is greater than $\pm 10^{-5}$.

12. Phase-locking method: Automatic phase locking. Phase-locking time $<$ 6 seconds. Phase-locking accuracy $\leq \pm$4mm.

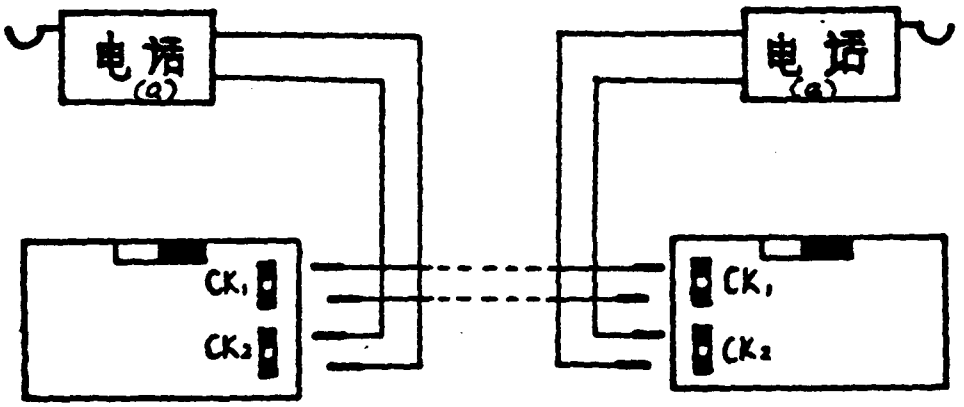
13. Input-output impedance: 600$\Omega \pm$10%

14. External dimensions: Transmitter 480 X 340 X 190
Receiver 520 X 400 X 210

15. Weight: Transmitter $<$ 21kg
Receiver $<$ 35kg

## III. Installation and Operation

1. Installation diagram:




KEY: (a) Telephone

2. Operating procedure:

(1) Select the established channel for communications contact.

(2) Press "$K_1$" to turn on power.

(3) Touch the "Message" key, the transmitting and receiving operation is automatically accomplished.

(4) After transmission of message text is complete the transmitter automatically sends shut-off signal which notifies receiver.

(5) Reception is completed, the message text is automatically sent out and the machine is stopped.

(6) If it is necessary for the receiver to call the transmitter, the person on duty presses the call button, emitting a call signal

and an alarm on the transmitter notifies the person on duty.

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