INSTRUCTIONS FOR OPERATION OF

M I N-X "P U L S M I T E 1200S"

(Model TCPT-1)

ALL TRANSISTOR TRANSMITTER

PREFACE

You have purchased the most advanced single channel proportional transmitter ever produced. The results of ten years of pulse proportional flying experience, plus 3 years of testing and flying with fully electronic, single channel, pulse type transmitters, have been incorporated in this equipment. Operated according to this instruction manual, you will find this to be the most reliable equipment ever offered to the R/C enthusiast.

APPLICATION

This transmitter was designed to operate the MIN-X 3Volt "SUPERHET 1200" audio frequency selective receiver. It incorporates a frequency stable, 1200cps, audio frequency tone generator to match the frequency stability requirements of the "SUPERHET 1200". Its use is not limited to this particular receiver since it will operate any receiver that will function properly with a 1200cps tone.

The fully electronic pulser was designed to provide the pulse rate and width variations needed to fly the "SIMPL-SIMUL" system (sometimes referred to as the "GALLOPING GHOST" system) using the Mighty-Midget motor (with 2.4V or 3V power), for the decoder-actuator in the airplane.

The "PULSMITE 1200S" may also be used to fly single channel pulse proportional control employing the Mighty-Midget motor or a magnetic actuator for "rudder only" flying.

CONTROLS

This transmitter incorporates 6 control devices.

(1) An off-on power switch is provided. This connects the 9volt battery power to the pulser, audio oscillator, and RF (radio frequency) sections of the transmitter. When this switch is "on" the transmitter is emitting an RF carrier with audio frequency modulation periods generated by the pulser and tone generator.

(2) A control stick is provided which controls two separate functions. Fore and aft movements of the control stick cause variations in the pulse repetition rate. Forward movement causes an increase in pulse rate (down elevator command) while rearward movement causes a decrease in pulse rate (up elevator command). Left and right movements of the control stick cause variations of the pulse width ratio. Movement of the control stick to the left causes a decrease in the "tone on/tone off" ratio (left rudder command) while stick movement to the right causes an increase in the "tone on/tone off" ratio (right rudder command).

(3) A "rate" trim lever is provided to adjust the pulse repetition rate (for elevator trim). Fore and aft movements of this lever cause a small increase and decrease, respectively, in the pulse rate.

(4) A "width" trim lever is provided to adjust the pulse width ratio (for rudder trim). Left and right movements of this lever cause a decrease and increase, respectively, in the "tone on/tone off" ratio.

(5) A tone "off" pushbutton is provided to permit the flyer to transmit an unmodulated carrier (solid tone off condition) which will give full left rudder (and up elevator with SIMPL-SIMUL) and/or low speed engine control depending on what system the R/C'er has employed in the airplane (see REFERENCE MATERIAL section).

(6) A tone "on" pushbutton is provided to permit the flyer to transmit a solid tone signal which will give full right rudder (and up elevator with SIMPL-SIMUL) and/or high speed engine control depending on what system the R/C'er has employed in the airplane (see REFERENCE MATERIAL section).

BATTERY AND ANTENNA INSTALLATION

Carefully slide the rear cover of the transmitter off. Remove the 4 sheet metal screws taped to the inside of the case. Place the transmitter on a table with the rear side facing you. Place the battery (a Burgess D-6, Eveready 276 or an RCA VS-306) on its side with the battery terminals on your right and with the positive terminal closest to the table. With the switch in the "off" position, slide the battery into the transmitter case and press the battery connector snaps securely into place (with the mating snaps properly aligned). Center the battery in the case to provide clearance on both sides for the sheet metal screws that hold the rear cover in place. Carefully install the rear cover, using the 4 sheet metal screws provided, aligning the foam pad against the battery as this holds the battery firmly in place.

Mount the antenna to the mating connector at the top of the case. Hand tighten only.

GENERAL OPERATING PROCEDURES

The transmitter may easily be checked for proper operation by observing its action upon the receiver and actuator (see the "SUPERHET 1200" instructions). Additional technical data will be found on page 5 of these instructions.

For convenience sake it is permissible to operate the transmitter with the antenna collapsed or without the antenna for abbreviated range checks. Most receivers will have from 5 to 20 feet of range with no antenna on the

transmitter, with the receiver antenna at least a foot above the ground and the broadside of the receiver antenna (this check should be made in an open field at least 200 feet from the nearest metallic object - do not expect the same performance in the house or near a steel reinforced runway or highway). With the transmitter antenna extended to its full length, most receivers will give from 1500' to 1 1/2 miles of ground operating range.

The 9V transmitter battery should be replaced when it reaches 7.5V measured with the transmitter turned "on".

TUNING

Under normal circumstances the RF section of this transmitter should never require retuning. If for some reason it becomes necessary, use the following procedure. Place the transmitter on a non-metallic table. With one hand firmly on the transmitter case, place a field strength meter at a point where approximately a 1/2 scale reading is achieved. Two trimmer capacitors are located on the upper right side of the transmitter circuit board (as viewed from the rear with the cover removed). These tune the PI net, RF amplifier circuit, in which the adjustment of one trimmer capacitor affects the other (typical for a PI net). Therefore it will be necessary to tune the trimmers alternately until the highest reading is achieved on the field strength meter. Under the FCC regulations the RF oscillator may only be tuned by duly licensed technicians.

REFERENCE MATERIAL

Since many beginners will not understand terminology such as, "rudder only", "pulse proportional", "SIMPL-SIMUL", etc., we suggest that they obtain some background by reading back (and current) issues of the following magazines: THE AMERICAN MODELER, AEROMODELER, FLYING MODELS, GRID LEAKS, MODEL AIRPLANE NEWS, RADIO CONTROL AND MODEL ELECTRONICS, and THE RADIO CONTROL MODELER. We also recommend the following books distributed by WORLD WIDE RADIO CONTROL, 9810 WYOMING, DETROIT, MICHIGAN 48204 Dept. MX. THE R/C PRIMER and PROPORTIONAL CONTROL FOR RUDDER ONLY ($2.00 per copy). Together these two books cover "rudder only" and "SIMPL-SIMUL" control systems quite well.

WARRANTY AND REPAIR

All MIN-X equipment is completely checked and tuned before leaving the factory. Rigid quality control requirements are met by each unit before final packaging. However, it is possible that a defective component may not appear until after the unit is in use. To cover such possibilities all receivers are fully warranted against defective materials and workmanship for a period of 90 days from date of purchase. Malfunction as a result of reversed voltage, physical damage, altering or tampering automatically excludes this unit from the protection of the warranty. Transistors and crystals, due to their delicate nature, cannot be covered by this warranty.

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The warranty slip, included with this receiver, must be on file at the factory before any requests for warranty service will be recognized.

If service is required, both transmitter and receiver should be returned directly to the factory. Extra care should be taken when packaging to insure safe transit. A sturdy box (corrugated paper or wood) with at least 3" of clearance on all sides of the transmitter (and antenna ends) should be used. Use cotton batting or wadded newspaper for shock absorbing material on all sides of the units. Enclose the receiver in the battery compartment of the transmitter with shock absorbing material completely surrounding it to prevent damage to the inside of the transmitter. Include the antenna (sometimes a faulty antenna section is the only problem) but do not include the batteries. Clearly label the package, include a letter stating the nature of the problem, and include your own name and address. It is usually best to send it Parcel Post insured. A money order for $5.00 should be enclosed to cover inspection, handling, return postage, and insurance. (For warranty repairs enclose $3.00.) All units not under warranty will be returned C.O.D. for parts and labor charges.

LICENSING

Before this transmitter can be operated, it must be licensed as a Class C Station by the F.C.C.

F.C.C. application Form #505 for a Citizens Radio License is enclosed with this transmitter. Instructions on the front page of the License Application are to be carefully followed in filling out the application to avoid time consuming repeat filing.

In general, the only requirements for a Citizens Radio Station License for your MIN-X Transmitter are that the applicant be 12 years of age or older and a citizen of the United States. If some one under 12 wishes to purchase and use the Transmitter, he may have a parent or another adult file application for the license. After the Citizens Radio Station License has been obtained, anyone may operate the transmitter as long as the licensee assumes the responsibility for the proper operation of the Station.

Do not operate your transmitter until you have received your Citizens Radio Station license.

MIN-X RADIO, INCORPORATED
8714 Grand River Avenue
Detroit, Michigan. 48204

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INSTRUCTIONS FOR OPERATION OF

M I N-X "P U L S M I T E 1200S"

1. Model: TCPT-1

2. Description: Tone stabilized single channel all transistor transmitter with built in fully electronic pulser and dual function joystick control for "SIMPL-SIMUL" (Galloping Ghost) or rudder only operation.

3. Controls: Single stick for rate and width control including trim for each. Two push button switches for full "on"and full "off" tone switching. A high quality slide switch is provided for battery supply switching.

4. Pulse Data:
   - 4.1 Pulse rate range (including trim extremes) approx: 2 to 20 PPS.
   - 4.2 Pulse width range (including trim extremes) approx: 20/80 to 80/20.

5. Tone Frequency: 1200 CPS.

6. Modulation Percentage: 90 - 95%.

7. Power Supply: 9 Volt Burgess D-6, Eveready #276 or RCA VS-306. (Not furnished.)

8. Current Drain: 66 MA.

9. RF Amplifier Input Power: 350 MW.

10. Size: $6\frac{1}{2}$" x 5" x $2\frac{1}{2}$".

11. Weight: 2 lbs. with battery.

12. Operating Temperature Range: 20° to 140° F.

13. Frequencies: 26.995, 27.045, 27.095, 27.145 and 27.195 Mc.

14. Printed Circuit Board: 1/16" glass epoxy with 2 oz. tin plated copper.

15. Case: Gold anodized aluminum with silk screened MIN-X registered trademark and descriptive information.

16. Antenna: Centerloaded, 24" extended - 12" collapsed, does not collapse through the loading coil, 6 sections.

17. Complimentary Equipment: Furnished with antenna.

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18. Compatible Actuators:

18.1 For single channel pulse operation: Southwestern, Pou Voir, Septallette magnetic actuators and the Mighty Midget Motor.

18.2 For "SIMPL-SIMUL" (Galloping Ghost): The Mighty Midget Motor (an actuator employing any other electric motor is not recommended).

These actuators are available from your hobby shop or World Wide Radio Control, 9810 Wyoming, Detroit, Michigan 48204.

19. Compatible Receiver: MIN-X "Superhet 1200" or any other receiver that will operate properly with a 1200 CPS tone. (We suggest the "Pulsmite 800S" for use with most other receivers.)

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