

PRODUCT REPORT

MIN-X PULSEMITE

THE AGE OF PROPORTIONAL

. . . FLYING ON A BUDGET

One of the newest offerings from the Min-X Radio Corporation is the Min-X Pulsmite 1200S, Model TCPT-1 transmitter and its companion unit, the Min-X Superhet 1200, Model SHS-1 receiver. Designed for single channel proportional operation, this matching transmitter and receiver should gain wide acceptance among pulse proportional fans.

For our test purposes, and as illustrated in the accompanying photographs, a S.E.P. Go-Ac galloping ghost actuator was employed as the servomechanism. Six alkaline energizers and a quadruple pole, single throw switch completed the airborne system. For

proportional rudder-only operation, any of the available magnetic actuators or popular Mighty Midget motor can be used. For galloping ghost, it is recommended that an actuator employing the Mighty Midget motor, such as the Go-Ac be employed.

The first general impression of the Min-X 1200S transmitter and receiver is that the packaging of the units has reached an all-time high. Upon further examination, it was discovered that the consumer appeal generated by the packaging was exceeded only by the high level of mechanical engineering involved in both the transmitter and receiver. It is quite apparent that these

units are the result of no small amount of electronic and mechanical design consideration.

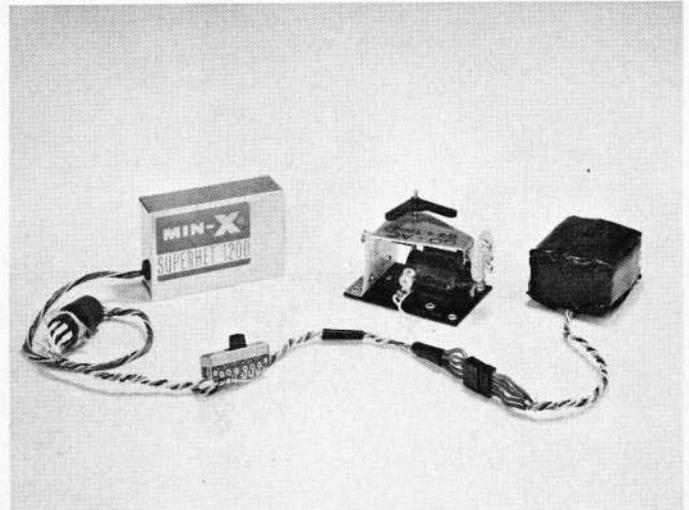
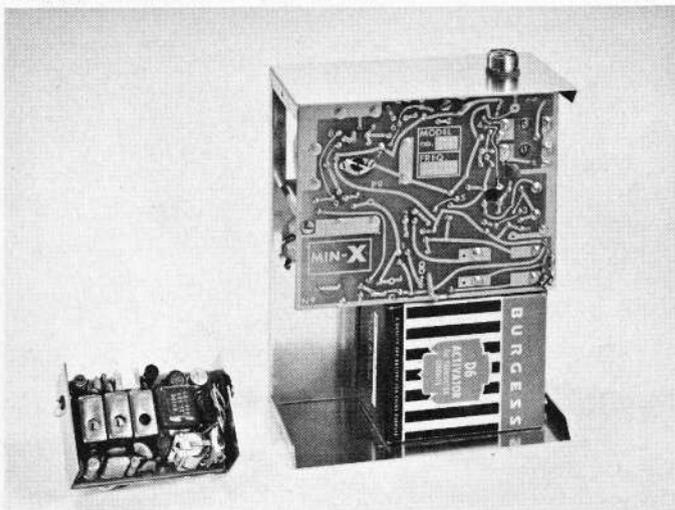
Transmitter

The Min-X Pulsmite 1200S all-transistor transmitter was designed to operate the Min-X 3-volt Superhet 1200 audio frequency selective receiver, and incorporates a frequency stable, 1200 cycles per second audio frequency tone generator to match the frequency stability requirements of the Superhet 1200. The electronic pulser was designed to provide the pulse rate and width variations necessary for galloping ghost operation using the Mighty Midget motor for the servomechanism. For rudder-only proportional fans, a magnetic actuator or Mighty-Midget motor may be used as a single function servo, or in conjunction with a pulse omission detector for motor control.

The Pulsmite 1200S incorporates six control devices. The first is an off-on power switch which connects the 9-volt transmitter battery power to the pulser, audio oscillator, and RF 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.

A very unique control stick is provided which controls two separate functions. Moving the stick right or left creates variations in the pulse width ratio. A forward movement (down elevator) causes an increase in pulse rate,

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while a rearward movement (up elevator) causes a decrease in pulse rate.

A rate trim lever is provided to adjust the pulse width ratio for rudder trim function. A tone-off pushbutton permits transmission of an unmodulated carrier which will give full left rudder (and up elevator with galloping ghost) and/or low speed engine control. A tone-on pushbutton provides a solid tone signal to be transmitted which will give full right rudder (and up elevator with galloping ghost), and/or high speed engine control.

Pulsmite 1200S Model TCPT-1 Test Data

Voltage: 9 volts (Burgess D-6, Eveready #276, or RCA VS-306).

Currents: 65 Ma average.

Pulse Data: Pulse rate range including extremes of trim, 2 to 20 pps. Pulse width range, including extremes of trim, 20/80 to 80/20.

Tone Frequency: 1200 cycles per second.

Modulation Percentage: 85 to 90%.

RF Amplifier Input Power: 350 MW.

Operating Temperature Range: Temperature stabilized from 20 to 140 deg. F.

Pulsmite 1200S Model TCPT-1 Physical Data

Size: 6½" x 5" x 2½".

Weight: 32 ounces with battery.

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

Antenna: Centerloaded, 24" extended, 12" collapsed. Six section telescoping.

Case: Gold anodized aluminum with silk screened Min-X registered trademark.

Controls: Single stick and yoke assembly for rate and width control plus trim levers for each. Two pushbutton switches for full on and full off tone switching. Slide switch for battery supply switching.

Manufacturer: Min-X Radio, Inc., 8714 Grand River Avenue, Detroit, Michigan 48204.

Price and Availability: \$59.95 plus tax. Currently available.

Min-X Superhet 1200S Model SHS-1 Receiver

The Min-X Model SHS-1 receiver was designed to operate as a companion unit to the Pulsmite 1200S proportional transmitter, and incorporates an audio frequency selective filter coupled with a fixed threshold level to reduce CB and electrical noise interference. This filter requires a transmitted frequency stable audio tone of 1200 cycles per second. Voltage required is 3 to 3.75 volts. Compatible actuators include any good 3-volt escapement, magnetic actuator, or Mighty-Midget type galloping ghost servomechanism. Audio selectivity, shot noise, and electrical noise rejection was excellent.

Superhet 1200S Model SHS-1 Receiver Test Data

Voltage: 3 to 3.75 volts (2 alkaline energizer pencils or 3 nickel cadmium cells).

Currents:

Idle: 4 to 6 Ma.

Signal On: 30 to 35 Ma.

Tone Frequency: 1200 cycles per second, plus or minus 20 cps transmitter stability.

Modulation Percentage Required: 60 to 100%.

Operating Temperature Range: 20 to 140 degrees F.

Selectivity: 5 Kc.

Sensitivity: 15 microvolts.

Relay: SPDT Deans with arc suppressed output.

Interference: With carrier on, the receiver was immune to adjacent channel interference with the exception that some erratic modulation could be introduced when another transmitter was keyed within six feet of the Pulsmite 1200S.

Combined Range Check: Antenna removed, 22 feet range. Antenna in place and fully extended, consistently in excess of 5000 feet.

Superhet 1200S Model SHS-1 Receiver Physical Data

Size: 1" x 1⅞" x 2⅞".

Weight: 3½ ounces.

Case: Gold anodized aluminum with silk-screened Min-X registered trademark.

Antenna: 36" of #26 19-strand wire.

Complementary Equipment: Furnished with antenna specified, Deans SPDT relay, factory wired connector plug and matching socket.

Manufacturer: Min-X Radio, Inc., 8714 Grand River Ave., Detroit, Michigan 48204.

Price and Availability: \$49.95. Currently available.

Findings

In addition to the excellent merchandising, electronic, and mechanical design considerations of the Pulsmite 1200S transmitter and matching SHS-1 superhet receiver, the electronic pulser incorporated in the 1200S is the finest we have seen for single channel pulse proportional operation. In conjunction with the Go-Ac actuator, for galloping ghost operation, the pulser provided completely reliable operation at all control positions. There was some noticeable interaction at the full extremes of the left and down positions, causing the Go-Ac to "go-around" and subsequently trigger the motor control arm. This interaction, however, is far less than that presented by any other pulser we have tested, and such extreme control functions would not normally be used in galloping ghost or simple-simul operation.

The installation as photographed worked immediately upon connection, and as specified in the manufacturer's specification sheets. The use of the Go-Ac actuator plus the S.E.P. galloping ghost coupler kit for connecting tail yoke linkages would provide the pulse proportional fan with the highest degree of reliability obtainable to date with this form of radio control operation. This, in fact, takes most of the tinkering out of what was once known as a tinkerer's sport — galloping ghost.

Min-X engineers are to be congratulated on the design of both of these units. They are highly recommended to the consideration of all pulse proportional modelers.