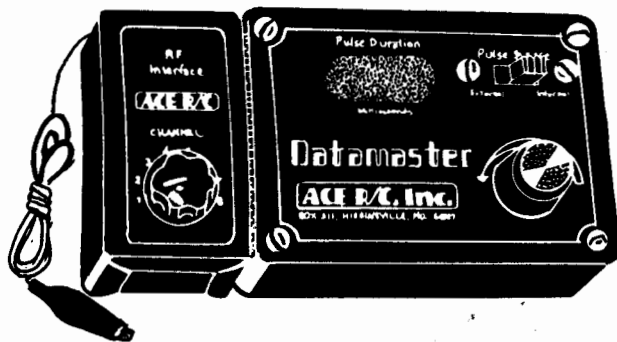


Assembly/ Operation Manual

RF Interface



I. INTRODUCTION

Since the introduction of programmable transmitters such as the Silver Seven, there has been a need to quickly, easily, and accurately measure the set-up of the transmitter so that all the adjustments made for a given airplane can be determined, recorded, and therefore, repeated.

For this reason, Ace released the Datamaster. Prior to the existence of the RF Interface, the Datamaster had to plug into the receiver outputs to measure the Transmitter pulse widths. Now with the RF Interface, the parameters can be read directly off the transmitter without the need to remove the plane's wing and unplugging and plugging in servos so you can make quick and easy work of transmitter setup at home or at the field, making the Datamaster a much more versatile and useful tool for fine tuning throws, dual rates, expo rates, mixing ratios, end point adjustments, direction of travel, etc. and make each of these adjustments completely, dependably, and easily repeatable!

II. OPERATION

If you have a kit, refer to the construction section of the instructions, assemble your unit, interface it with your Datamaster and return to this section.

If you have an assembled unit, refer to the interfacing section of the instructions to hook the RF Interface to your Datamaster and then return to this section.

If you have the assembled RF Interface/Datamaster combo, refer to the operation section of the Datamaster instructions as well as this section.

The unit requires a 4.8V to 6V DC power source for operation. You can connect an external 4.8V receiver pack to the male connector on the unit (see WIRING section of the Datamaster instructions to hook up a connector to properly mate with the power source you will be using) or a self contained power source can be installed. Instructions on how to do this are at the end of the Datamaster instructions.

Set the Pulse Source switch on the Datamaster to external and attach the alligator clip to the transmitter antenna. (It doesn't matter what frequency your transmitter is and the antenna can remain collapsed.) Turn the transmitter and the Datamaster on and set the channel selector switch to Ch. 1. The unit will now display the pulse width setting being put out on channel one of the transmitter; this is usually the elevator or aileron stick. As you move the stick or trim, you can watch the pulse width change. Now change the channel selector switch to a different channel and note the Datamaster will now display the setting for that channel. Of course, the RF Interface will let you display each channel up to eight.

Now it is an easy task to set up a transmitter and record the pulse width variation on each channel using a chart as suggested in the Datamaster instructions for a given airplane and then switch from plane to plane, being able to exactly reproduce your settings for each plane.

The Datamaster/RF Interface is a valuable and useful piece of test equipment on the bench or at the field. It is suggested that you make a fabric bag to protect the unit from dirt and dings.

III. PARTS LIST

RESISTORS (All 1/4W 5%)

- () 1 R4-102 1K (Brn,Blk,Red,Gld)
- () 1 R4-104 100K (Brn,Blk,Yel,Gld)
- () 1 R4-272 2.7K (Red,Vio,Red,Gld)
- () 1 R4-273 27K (Red,Vio,Org,Gld)
- () 2 R4-473 47K (Yel,Vio,Org,Gld)

CAPACITORS

- () 1 CD473 .047 mf Disc
- () 1 CD102 .001 mf Disc
- () 3 CO473 .047 mf Monolithic

SEMICONDUCTORS

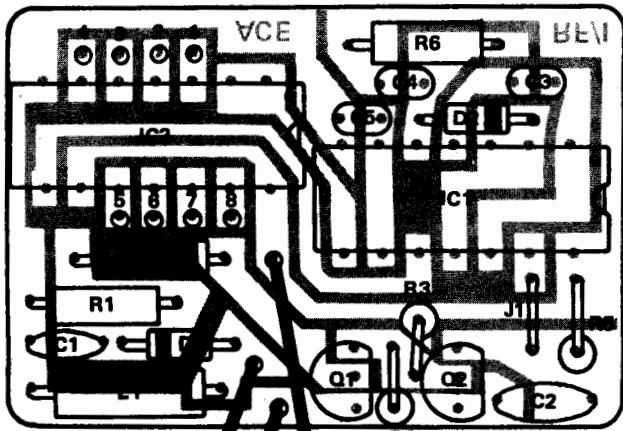
- () 2 SS029 2N4400 Transistor
- () 1 SS079 74C04, CD4069, or MC14069 IC
- () 1 SS081 74C164N IC
- () 2 SS121 1N4446 Diode

HARDWARE & MISCELLANEOUS

- () 1 LL106 10 uhy Choke
- () 1 PC156 RF Interface PC Board
- () 1 SM194 RF Interface Case
- () 1 LB101 RF Interface Label
- () 1 SW040 Rotary Switch
- () 1 PLA007 Knob
- () 1 CC070 Mini Alligator Clip
- () 1 CC071 Mini Clip Boot
- () 1 RP003 #0 Grommet
- () 2 HW011 9mm Rotary Switch Nuts
- () 1 HW012C Lock Washer
- () 1 HW018F 9mm Flat Washers
- () 68" Hookup wire
- () 8" Double Sided Tape
- () 18" Solder

ACE R/C, Inc.

BOX 511 116 W. 19TH ST. HIGGINSVILLE, MO. 64037



36" WHITE WIRE (RF INPUT)
6" RED WIRE (POS. INPUT)
6" BLACK WIRE (NEG. INPUT)

FIGURE 1 OVERLAY

PARTS ID LEGEND

- () C1 - .001 mf Disc
- () C2 - .047 mf Disc
- () C3 - .047 mf Monolithic
- () C4 - .047 mf Monolithic
- () C5 - .047 mf Monolithic
- () D1 - 1N4446 Diode (Banded end as shown)
- () D2 - 1N4446 Diode (Banded end as shown)
- () IC1 - 74C04, CD4069, or MC 14069 (Notch as shown)
- () IC2 - 74C164 (Notch as shown)
- () J1 - Jumper (Use a scrap resistor lead)
- () L1 - 10 uhy Choke
- () Q1 - 2N4400 (Note position of flat side)
- () Q2 - 2N4400 (Note position of flat side)
- () R1 - 47K Resistor (Yel,Vio,Org,Gld)
- () R2 - 47K Resistor (Yel,Vio,Org,Gld)
- () R3 - 1K Resistor (Brn,Blk,Red,Gld)
- () R4 - 27K Resistor (Red,Vio,Org,Gld)
- () R5 - 2.7K Resistor (Red,Vio,Red,Gld)
- () R6 - 100K Resistor (Brn,Blk,Yel,Gld)
- () S1 - Rotary Switch

IV. CONSTRUCTION

Read the "Kit Builder's Hints" before beginning.

- () Using the Overlay Drawing (Fig. 1), and the Parts ID Legend, assemble the PC board according to the following procedure. Always observe the special instructions in the Parts ID Legend concerning specific installation of parts.
- () Install and solder diodes D1 and D2 noting the orientation of the banded end. Except where indicated, keep all parts tight on the board and clip off the excess leads after soldering.
- () Install and solder all resistors (R1 thru R6).
- () Using a scrap resistor lead, install and solder J1.
- () Install and solder choke L1.
- () Install and solder transistors Q1 and Q2, keeping them 1/8" off the board. Note the orientation of the flat side.
- () Install and solder IC1 and IC2, noting the proper orientation of the notch and dot for pin 1.
- () Install and solder all capacitors. (C1 thru C5)
- () Strip and tin 1/8" insulation off both ends of the 36" white wire. Install and solder one end to the board where shown.
- () Repeat for the 6" red and black wires.
- () Strip and tin both ends of the 1 3/4" brown, red, orange, yellow, green, blue, violet, and grey wires.

() Referring to the Overlay Drawing (Fig. 1), install and solder the short wires in the board as follows: Brown in hole 1, Red in hole 2, Orange in hole 3, Yellow in hole 4, Green in hole 5, Blue in hole 6, Violet in hole 7, and Grey in hole 8.

() Using an old toothbrush, clean the solder side of the PC board with denatured alcohol to remove the excess resin. Carefully inspect the board for solder bridges or missed or cold solder joints.

() Gently file off any sharp points and smooth the bottom of the PC board with sandpaper to insure against shorting when the board is mounted in the case.

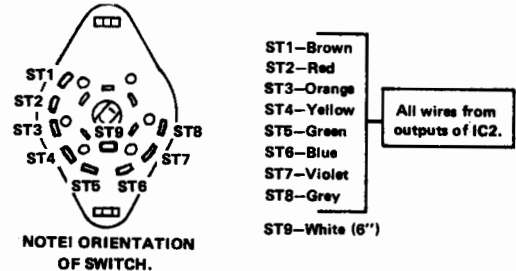


FIGURE 2 SWITCH WIRING

- () Referring to Fig. 2, tin all switch terminals (ST1-ST9).
- () Solder the short wires from the PC board to terminals ST1 thru ST8 making sure the colors correspond properly. A clothespin makes a good holding fixture for the switch.
- () Strip and tin both ends of the 6" white wire and solder one end to terminal ST9.

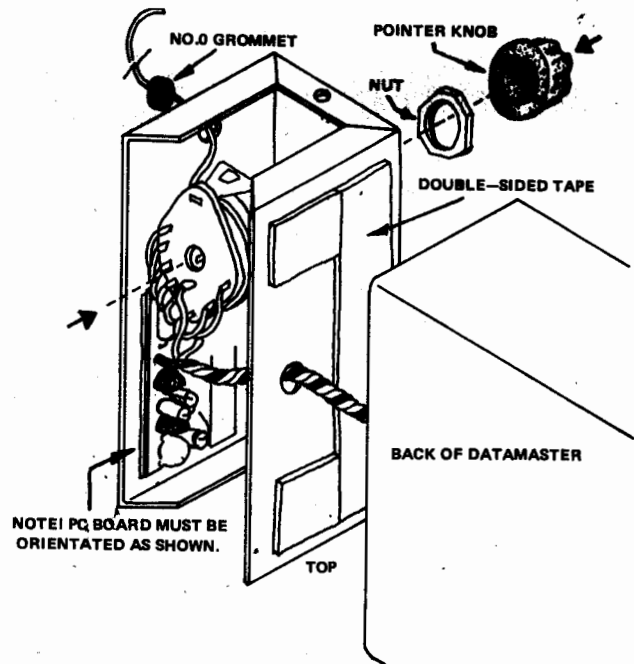


FIGURE 3 MECHANICAL ASSEMBLY

Refer to Fig.3 for the following steps.

- () Peel the backing off the pressure sensitive label and install it on the front of the case. Position it so the channel numbers go around the hole in the front of the case and the label is centered.
- () Use an Exacto knife to cut the label away from the hole in the case.
- () Install the Rotary Switch in the case as shown with the hardware in the following sequence: switch--nut--lock washer--case--washer--nut. Adjust the nuts so that only 1/8-3/16" of the threaded bushing extends past the face of the case. Tighten the outside nut securely.
- () Cut two 1 1/2" pieces of double sided tape and stick them to the back of the PC board.

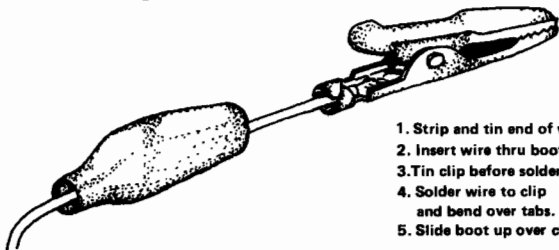
() Peel the backing off the tape and, leaving clearance for the case back, stick the board to the inside of the case as shown.

() Install the pointer knob on the switch by putting it on the switch shaft and tightening the set screw. Then rotate it all the way counter-clockwise. Loosen the set screw and align the pointer with the number "1" and retighten the set screw securely.

() Twist the 6" red, black and white wires into a cable and thread the cable through the hole in the side of the case as shown.

() Cut a 2 1/2" and two 3/4" pieces of double sided tape and stick them to the outside of the case as shown.

() Install the #0 grommet in the case and thread the long white wire through it.



1. Strip and tin end of wire.
2. Insert wire thru boot.
3. Tin clip before soldering.
4. Solder wire to clip and bend over tabs.
5. Slide boot up over clip.

FIGURE 4 ALLIGATOR CLIP WIRING

() Referring to Fig. 4, install the alligator clip and boot to the end of the long white wire as shown.

() Install the back of the case by snapping it into place.

V. INTERFACING WITH THE DATAMASTER

() If your Datamaster doesn't already have a hole in the left end, referring to Fig. 5, measure and mark the end of the case.

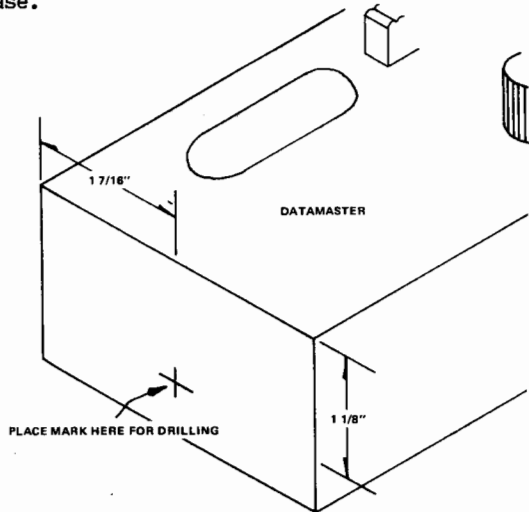


FIGURE 5 HOLE LOCATION

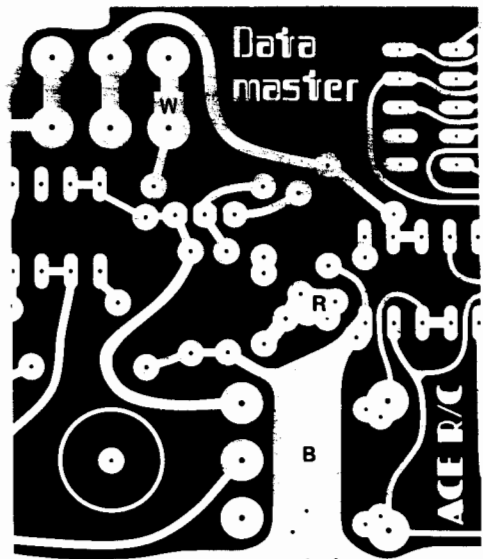
() Remove the Datamaster from its case by taking out the four screws that hold the faceplate in place.

() Starting with a 1/16" drill bit, slowly and carefully drill a hole where you have marked. Now drill it out to 1/8", then 3/16" and finish with a 1/4" hole. The case is very hard and brittle, so work very slowly to prevent cracking the case.

() Route the three wire cable from the RF Interface through the hole you just drilled and with both units sitting on a flat surface, check hole alignment.

() If required, enlarge one or both holes for proper alignment.

() Remove the backing from the double sided tape on the RF Interface unit and attach it to the Datamaster. Make sure both units are on a flat surface and the edges of both cases are aligned before pressing together.



NOTE! Solder side of PC board shown.

W=White wire
R=Red wire
B=Black wire } All wires from RF Interface

FIGURE 6 INTERFACE WIRING

() Referring to Fig. 6, solder the three wires from the RF Interface to the proper lands on the solder side of the Datamaster PC board. Make sure you have secure joints with no frayed wires that can short to adjacent lands.

() Double check your hookup and re-install the Datamaster in its case with the four screws. Interfacing is now complete and you are ready for operation.

VI. CIRCUIT DESCRIPTION

The RF Interface is simply a diode/choke/capacitor wide band demodulator feeding into a standard R/C, two IC, eight channel decoder whose output is delivered to the Datamaster by means of a rotary switch to select the particular channel being viewed by the pulse meter. The decoder is our time proven Digital Commander design and particulars on its operation can be obtained from its circuit description.

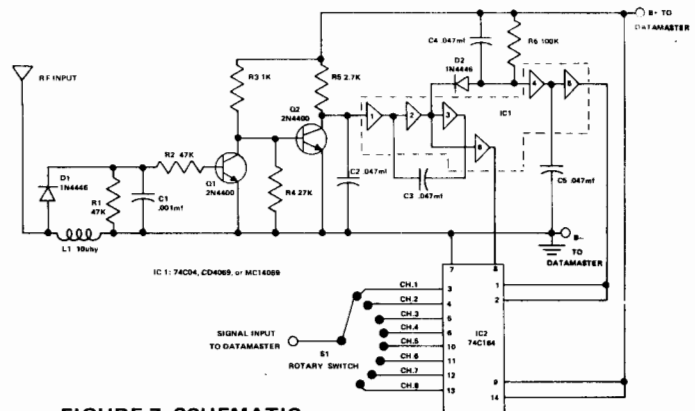


FIGURE 7 SCHEMATIC

ACE R/C, Inc.

BOX 511 116 W. 19TH ST. HIGGINSVILLE, MO. 64037