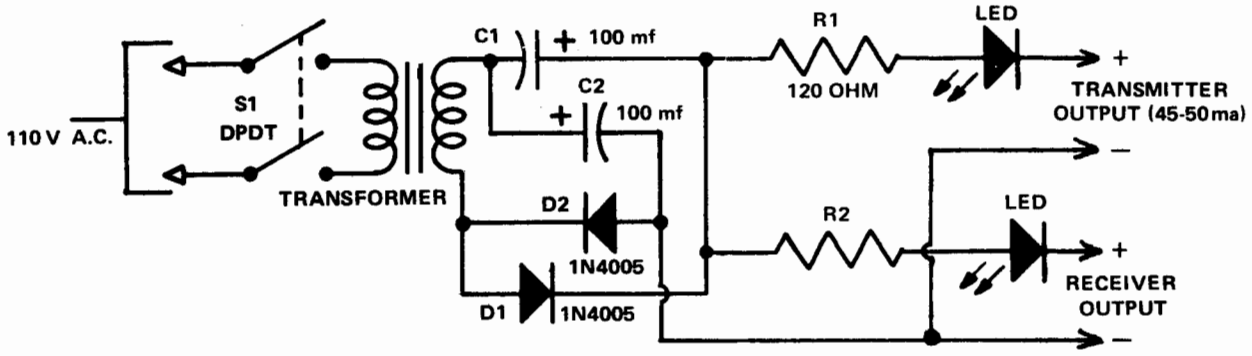
ACE R/C, Inc.
BOX 511 116 W. 19TH ST. HIGGINSVILLE, MO. 64037

dual CHARGER

ASSEMBLY INSTRUCTIONS

DUAL CHARGER CIRCUIT

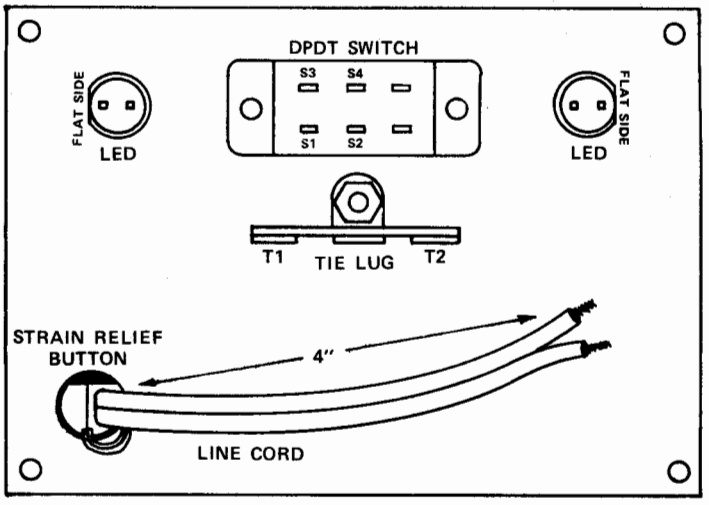


R2 VALUE CHART

R2 VALUE	RECEIVER CHARGE RATE	COMMENTS
220 ohm Rd Rd Br	45-50 ma	Overnight rate for 450-500 mah batteries
330 ohm Or Or Br	33 ma	4-6 hour rate for 100 mah batteries
470 ohm Ye Vi Br	22 ma	Overnight rate for 175-225 mah batteries

PARTS LIST

(✓)	1	Black Case
(✓)	1	Faceplate
(✓)	1	Transformer
(✓)	2	Large Red LED's
(✓)	1	DPDT Switch
(✓)	2	100 mf Electrolytic Caps
(✓)	2	1N4001/4005 Diodes
(✓)	1	120 ohm ½W (Brown, Red, Brown)
(✓)	1	220 ohm 1W (Red, Red, Brown)
(✓)	1	330 ohm 1W (Orange, Orange, Brown)
(✓)	1	470 ohm ½W (Yellow, Violet, Brown)
(✓)	1	Line Cord
(✓)	1	Strain Relief Button
(✓)	7	4-40 X 1/4 Bolts
(✓)	1	4-40 Nut
(✓)	1	Two or Three Point Tie Lug
(✓)	36"	Red and Black Hookup Wire
(✓)	12"	White Hookup Wire
(✓)	12"	Solder
(✓)	2"	1/8" Heat Shrink Tube
(✓)	1"	3/16" Heat Shrink Tube
(✓)	1"	Thin Double Sided Tape



VIEW FROM REAR OF FACEPLATE

FIGURE 2

I. INTRODUCTION

The Ace Dual Charger is designed to give two outputs for for charging both transmitter and receiver nickel cadmium batteries. Output to the transmitter is approximately 45 ma, the proper rate for an overnight charge (14-16 hrs.) to an eight cell (9.6V) 450-500 mah battery.

Receiver output can be programmed for various rates, depending on battery size. See the R2 Value Chart.

Both transmitter and receiver can be charged simultaneously or independently; it is best practice, though, to charge them both at the same time.

II. CONSTRUCTION

Perform the following step-by-step instructions following them in order and checking them off as you go.

All leads, such as from the transformer, resistors and diodes should be cut just long enough for good point to point connections. Tin with solder before soldering.

Remember when you are working with the connections between the line cord, switch, and transformer, you are dealing with potentially dangerous 120V AC. Make sure all joints are secure with no frayed wires that can short out and cause shocks or fire. Where instructed, cover the connections with heat shrink tube.

A. HARDWARE MOUNTING

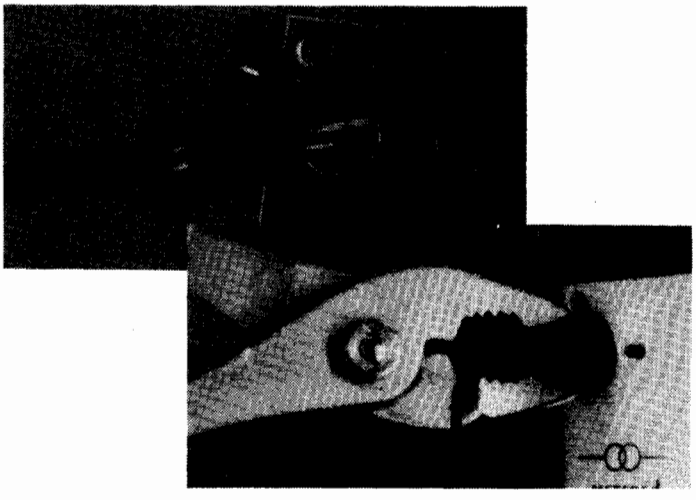
( ) Mount the transformer in the case by inserting the ears in the case and bending them over on the bottom to secure the transformer. Mount it so the wires coming out of the transformer go to the center of the case.

( ) Mount the DPDT slide switch on the charger front panel with two of the 4/40 x 1/4" bolts.

( ) Gently push the two LED's into the holes so the lamp portion is to the front and the flat sides are toward the outside. See Figure 2. If they do not fit securely by pushing them in, carefully Hot Stuff or epoxy them into place.

( ) Install the tie lug with a 4-40 x 1/4" bolt and nut.

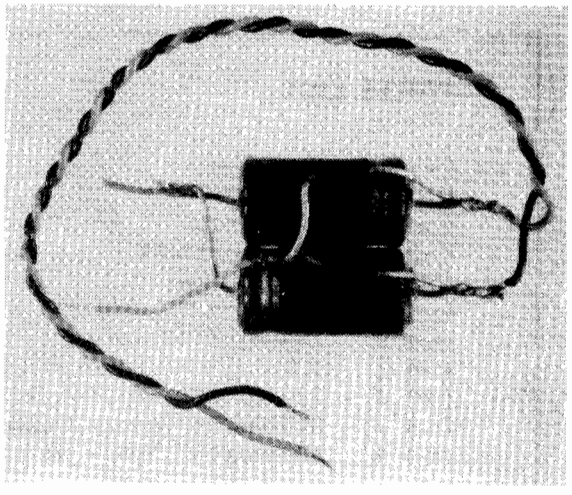
( ) Referring to the photos, install the line cord and strain relief button so there is 3½" - 4" of wire protruding from the rear. Use a pliers to squeeze the halves of the strain relief button together while inserting it in the face plate hole.



B. WIRING

( ) Prepare the diode/capacitor network as shown. Make sure the 6" red wire goes to the junction of the cathode end of D1 and the positive end of C1, and the 6" black wires goes to the junction of the anode end of D2 and the negative end of C2. For proper wire preparation, refer to the "Building Hints" section.

( ) Solder the diode capacitor network to the transformer leads. Secure the assembly in the bottom of the case with double sided tape.



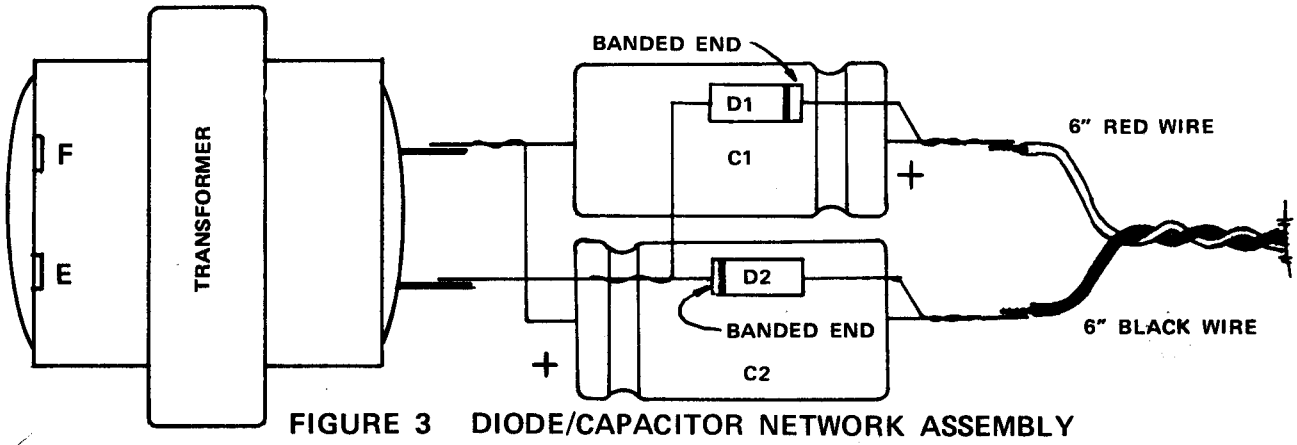


FIGURE 3 DIODE/CAPACITOR NETWORK ASSEMBLY

( ) Shorten the legs on the two LED's to about 3/8". Tin them with solder. Up about 3/16" from the plastic body of the LED, bend the leads over in the direction indicated in Figure 4 with a needle nosed pliers. Be careful not to damage the LED.
( ) Determine the value of R2 you need from the chart on the first page. Solder it between the inner leg on the right LED and terminal T2 on the tie lug. Shorten the resistor leads as required.
( ) Solder the 120 ohm 1W resistor (Brown, Red, Brown) between the inner leg of the left LED and terminal T2. Make sure neither resistor inadvertently shorts out to anything.
( ) Solder 18" of red wire to the outer leg of the right LED.
( ) Solder 12" of red wire to the outer leg of the left LED.
( ) Make sure both of these red wires are going to the leg of the LED which has the flat side on the plastic body (cathode).
( ) Solder 12" of black to terminal T1.
( ) Solder 18" of black to terminal T1.
( ) Twist the pair of 18" red and black wires together. These are the output to the receiver.
( ) Twist the pair of 12" red and black wires together. These are the output to the transmitter.
( ) Tie a knot in each pair of red and black wires about 3" from where they solder to the LED/Tie Lug. These knots will serve as strain relief when the wire pairs are threaded through the case later.
( ) Solder the black wire coming from the capacitor/diode network to terminal T1.
( ) Solder the red wire from the capacitor/diode network to T2.
( ) If necessary, separate the ends of the line cord for about 1" and strip and tin the ends.
( ) Cut off a piece of 1/8" Heat Shrink Tube 1/2" long and slip it over the end of one of the line cord leads. Securely solder the lead to terminal S1 on the switch.
( ) Repeat for the other line cord lead, soldering it to terminal S3 of the switch.
( ) Cut the 12" piece of white wire in half and solder one of the 6" wires to terminal S2 on the switch. Cover the connection with a 1/2" piece of Heat Shrink.
( ) Solder the other 6" white wire to terminal S4 on the switch. Cover connection with Heat Shrink.
( ) Making sure all four pieces of Heat Shrink are down as far as they will go on the switch terminals, shrink them down over the connections. A heat gun or hair dryer works well for this. Otherwise, carefully use a cigarette lighter, a match, or your soldering iron.
( ) Twist the pair of white wires together.
( ) Slip a 1/2" piece of the large heat shrink over the end of one of the white wires, and solder the white wire to lug E on the transformer.
( ) Repeat for the other white wire, soldering it to lug F on the transformer.

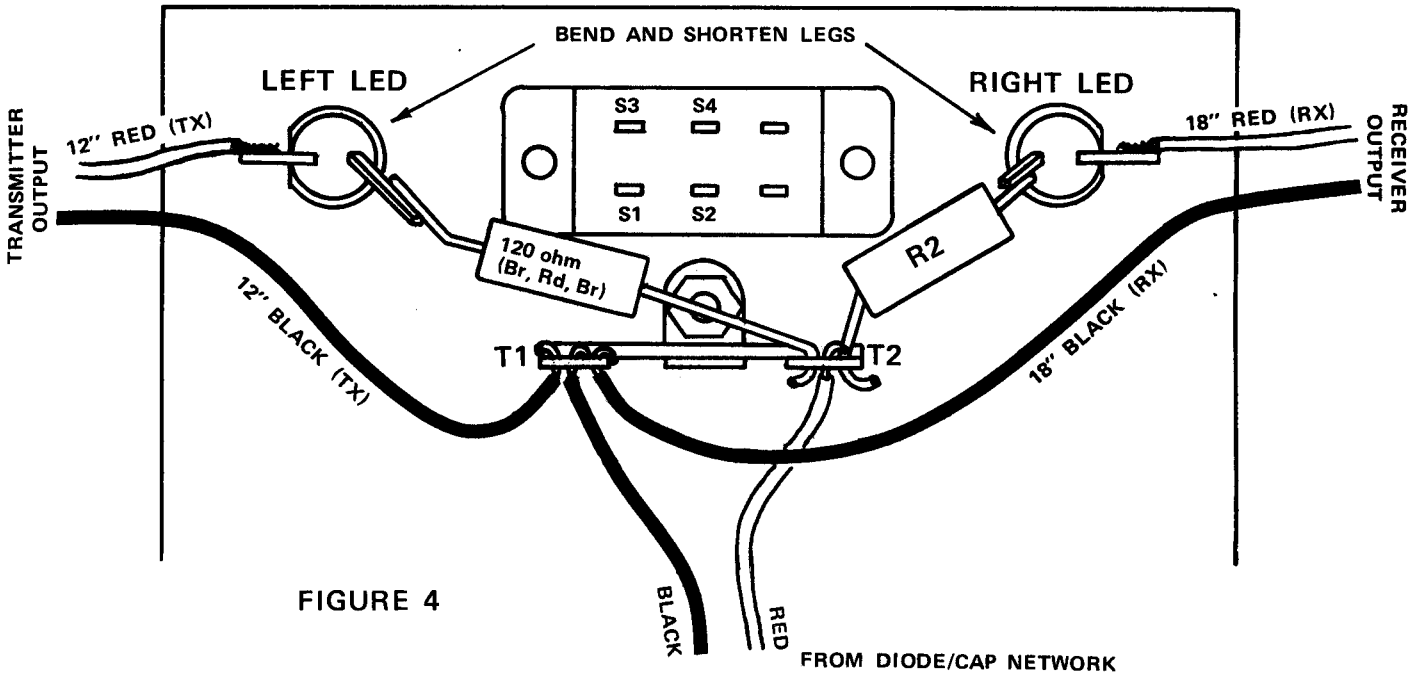
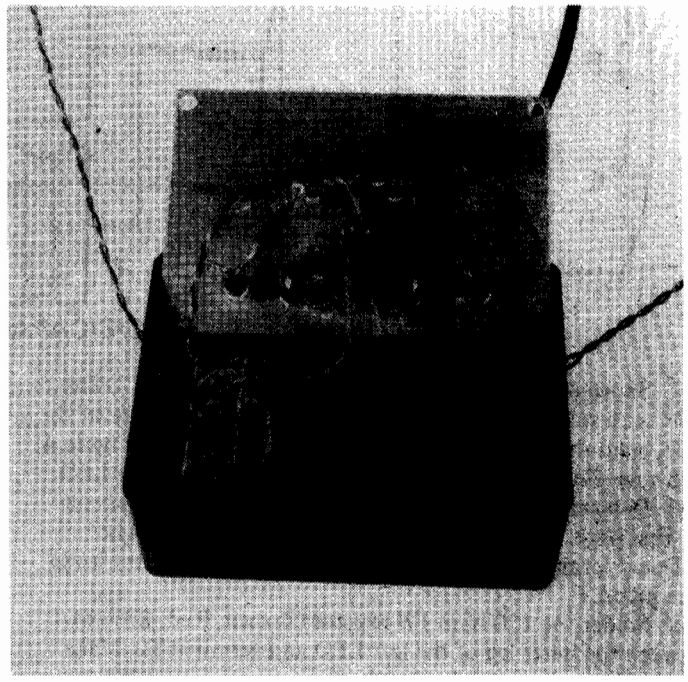
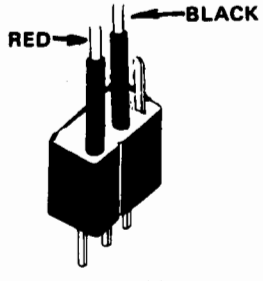


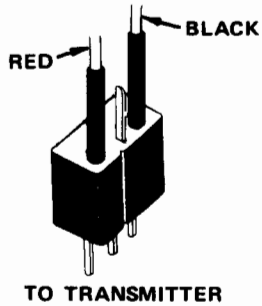
FIGURE 4

(✓) Slide the heat shrink over the transformer lugs and shrink down.
(✓) Make sure all joints are secure and there are no frayed wires to short out anywhere including on the faceplate.
(✓) Holding the box so the transformer is on the bottom left, thread the long pair of red and black wires (receiver output) through the hole in the upper left side of the case and the short pair (transmitter output) through the right hole.
(✓) Still with the transformer in the lower left, install the faceplate onto the box so the switch is up on top. Make sure nothing is shorting together.
(✓) Secure the faceplate with four 4-40 x 1/4" bolts.
(✓) Install the appropriate connectors on the wires from your Dual Charger. Make sure black goes to negative and red to positive!
(✓) When plugged in to the batteries and an AC outlet, and switched on, the LED's should glow, indicating current is flowing. A milliammeter can be used to check for proper polarity and current flow.
(✓) This completes the assembly of your Dual Charger.



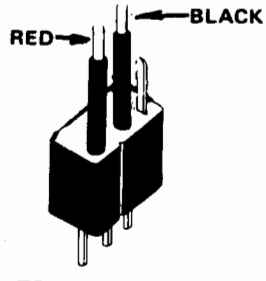


TO RECEIVER BATTERIES

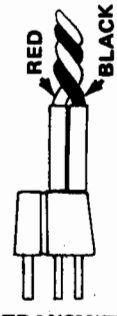


TO TRANSMITTER BATTERIES

DIGITAL COMMANDER CONNECTOR WIRING



TO RECEIVER BATTERIES



TO TRANSMITTER BATTERIES

SILVER SERIES CONNECTOR WIRING

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