HUNTRON®
SWITCHER

OPERATION / MAINTENANCE

MODEL HSR 210

HUNTRON INSTRUMENTS, INC. • 15720 Mill Creek Blvd. • Mill Creek, WA 98012

HUNTRON® SWITCHER
LIMITED WARRANTY

For a period of one year from the date of its purchase new and undamaged from Huntron Instruments, Inc. HUNTRON INSTRUMENTS, INC. will without charge, repair or replace, at its option, this product if found by it to be defective in materials or workmanship, and if returned to HUNTRON INSTRUMENTS, INC. at its factory, transportation prepaid. This limited warranty is expressly conditioned upon the product having been used only in normal usage and service in accordance with instructions of HUNTRON INSTRUMENTS, INC. and not having been altered in any way or subject to misuse, negligence or damage, and not having been repaired or attempted to be repaired by anyone other than HUNTRON INSTRUMENTS, INC. or its authorized agent. EXCEPT FOR THE FOREGOING EXPRESS WARRANTY OF REPAIR OR REPLACEMENT HUNTRON INSTRUMENTS, INC. MAKES NO WARRANTY OF ANY KIND, INCLUDING BUT NOT LIMITED TO, ANY EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE, AND HUNTRON INSTRUMENTS, INC. SHALL NOT BE LIABLE FOR ANY DAMAGES, WHETHER DIRECT OR INDIRECT, CONSEQUENTIAL OR INCIDENTAL, FORESEEABLE OR NOT, OR OTHERWISE, BEYOND REPAIR OR REPLACING THIS PRODUCT. THIS WARRANTY IS NOT APPLICABLE TO EXTERNAL CABLES, CLIPS, WIRING OR POWER SUPPLY.

TABLE OF CONTENTS

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INTRODUCTION

The HUNTRON SWITCHER has been designed as a compatable interface for the HUNTRON TRACKER, together these units create an effective test system for component troubleshooting. The Switcher allows faster comparison tests of components in or out of circuit, by the use of I.C. Clips or I.C. Sockets rather than point to point probing.

(See fig. 1)

1. Power Jack
2. Tracker Connection
3. Power On-Off / Test Instrument Select Switch (Tracker or External)
4. External Connection
5. Rate Control
6. Probe Jacks for Reference Device
7. Ref/Alt/Test Select Switch
8. Probe Jacks for Device Under Test

9A. 40 Pin Zero Insertion Force Socket for Cable Connection or Component Insertion

9B. (Same as 9A)

10A. Reference Section for Reference Device

10B. Test Section for Test Device

11A. Reference Pin Select Terminal

11B. (Same as 11A)

12A. 20 Pin Zero Insertion Force Socket for Cable Connection or Component Insertion

12B. (Same as 12A)

13. I.C. Pin Select Switches

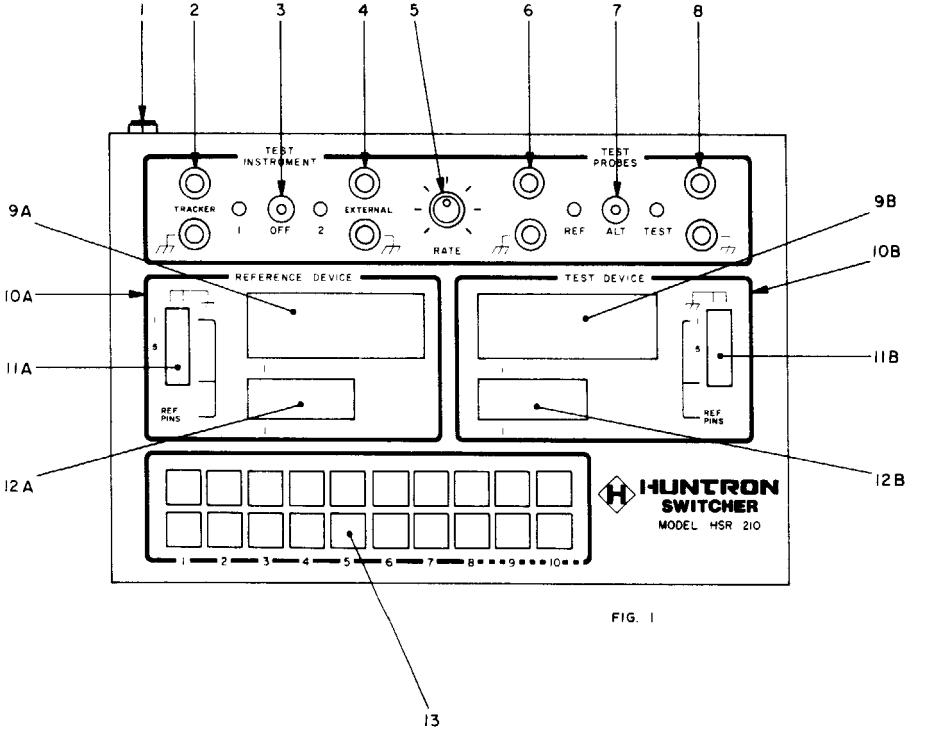
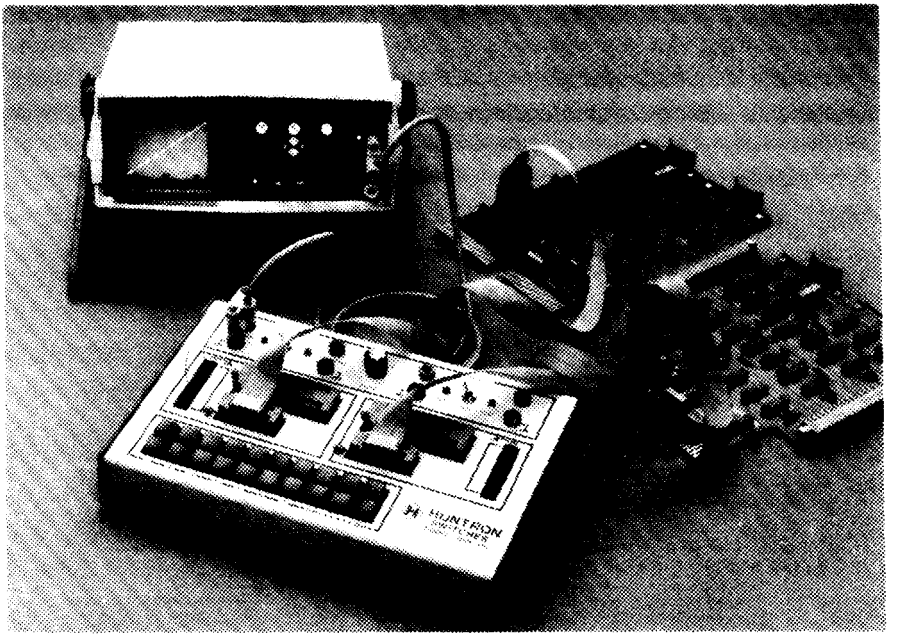

1
2
3
4
5
6
7
8
9A
9B
10A
10B
11A
11B
12A
12B
13
TEST INSTRUMENT
TEST PROBES
TRACKER
1
OFF
2
EXTERNAL
RATE
REF
ALT
TEST
REFERENCE DEVICE
TEST DEVICE
REF PINS
HUNTRON
SWITCHER
MODEL HSR 210

FIG. 1



II OPERATION

1. Connect power adapter (06-6041) to Switcher at power supply jack and plug in to 110 VAC, or connect power supply jack to 8 VDC output on Tracker® (if so equipped) using the power cable assembly (10-1073).
2. Connect the cable from the Huntron Tracker to the Huntron Switcher at jacks marked TRACKER. **Note:** (when using a Compar-a-trace Model HTR1005B-1S, use the top two jacks, with the channel select switch in the up position).
3. The jacks marked EXTERNAL can be connected to a multimeter or other test instrument.
4. Set the TEST INSTRUMENT SELECT SWITCH to TRACKER position #1 or EXTERNAL position #2.
5. Set the **REF/ALT/TEST** switch to **ALT**. This switch is used to stop at one point or the other when a longer viewing time is needed. Adjust the RATE CONTROL to desired switching rate.

6. Jacks are provided for the Huntron Microprobes at the REF/TEST positions. This will allow point to point testing without having to disconnect the Switcher from the Tracker.
7. **NOTE:** All points with the common point symbol ⏚ designates the reference point. **(THIS IS NOT GROUND)** This allows the user to establish a reference for testing. (VCC, GND, BUSS, etc).
8. Reference pin select terminals allow selection of reference points for I.C. testing.
9. I.C. sockets are provided for test cable connection or component insertion. These sockets are a zero insertion force type socket for easy insertion and release.
10. I.C. pin select switches determine which pin is being tested.

    Example: pin 5 of the I.C. to reference pin 7.

III SPECIFICATIONS

1. Switching Rate: Adjustable from .5Hz to 10Hz.
2. Dimensions: Width - 10 inches, Depth - 6.8 inches, Height - 1.5 inches
3. Weight: 1 lb. 14 oz.
4. Operating Temperature: 0° to 55°C
5. Storage Temperature: −50° to 60°C
6. Power Consumption: 300ma @ 8 to 12 V
7. Adapter Input Voltage: 117V, 50/60Hz (European 220/240 Vac)
8. Maximum voltages to be measured ± 24V (AC or DC)
9. Maximum current 300 ma.

IV GENERAL USE

A. To perform comparison testing, two identical printed circuit boards are needed, one as a reference board and the other as the board under test.

1. Connect desired cable to proper socket for both the reference device and the device under test. Observe the same polarity on both cables.
2. Attach the I.C. clips to components to be tested.
3. Select reference point. Jumper the common point to the desired pin of the reference pin select terminals. Use the short jumper wires to connect these points. *(see fig. 2)*

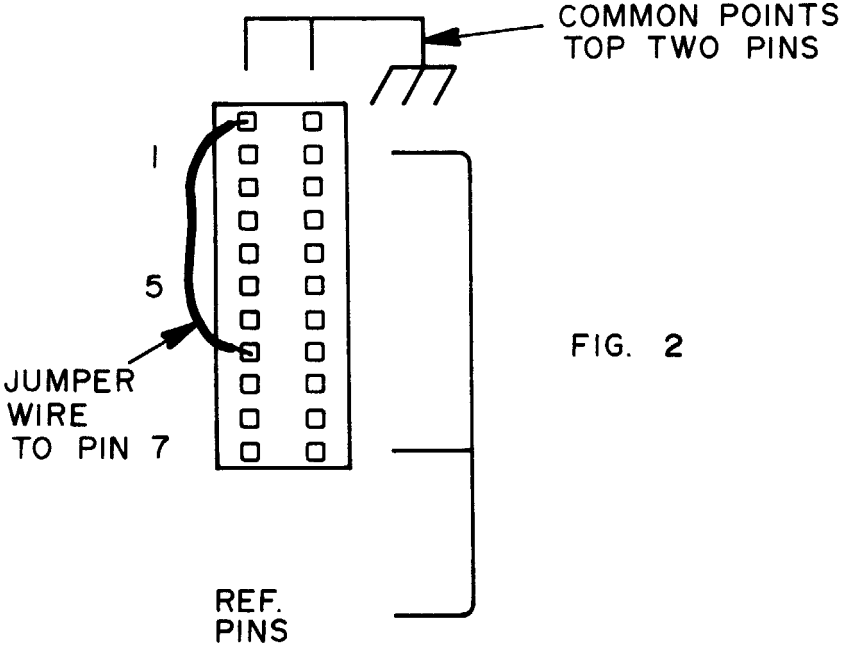


FIG. 2

IV **GENERAL USE** - continued

4. Each pin may be compared by depressing and holding the appropriate I.C. pin select switch. Note that a maximum of 20 pins may be examined. If chips with more than 20 pins are to be tested, it will be necessary to reverse the I.C. clips on the I.C.'s being tested. The cable connection at the Switcher does not need to be reversed. Switch 1 will correspond to pin 1 of the I.C. When switch 1 is depressed, pin 1 will be tested with respect to the reference point. *Example:* Set the reference to pin #7 on the reference pin select terminals. Everything tested will be referenced to pin #7. Switch 1 to 7, 2 to 7, 3 to 7, etc. The Switcher has two rows of I.C. pin select switches. The bottom row is marked 1 through 10. When testing a 14 pin I.C., test to pin 7 then move up to row 2, pin 8 will be directly above pin 7 *(see fig. 3)* When testing a 16 pin I.C., use switches 1 through 8 on the bottom row and 9 through 16 on the top. *(see fig. 4)* When testing a 20 pin I.C., use switches 1 through 10 on the bottom row and 11 through 20 on the top. *(see fig. 5)*

FIG. 3

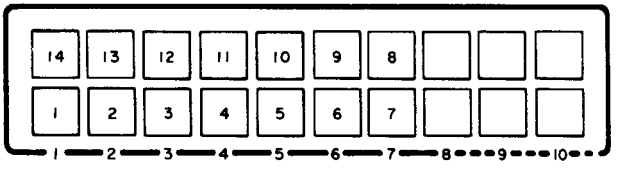


FIG. 4

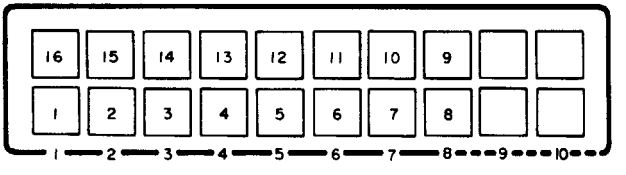
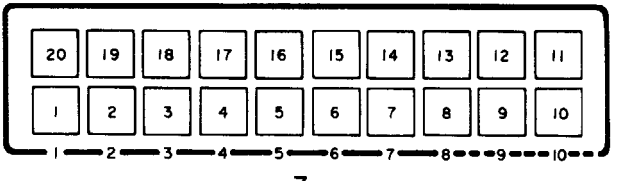


FIG. 5



IV **GENERAL USES** - continued

The Switcher will alternate between the reference device and the device under test and the waveform will be displayed on the Tracker CRT.

The Microprobes can be used at any time for point to point testing.

B. Non-comparison testing – Set REF/ALT/TEST switch to desired channel (REF or TEST). Follow procedures in section A.

C. Out of Circuit Testing – Remove test cables from I.C. sockets on Switcher unit, insert I.C.'s into proper sockets, select desired reference and proceed as in section A.

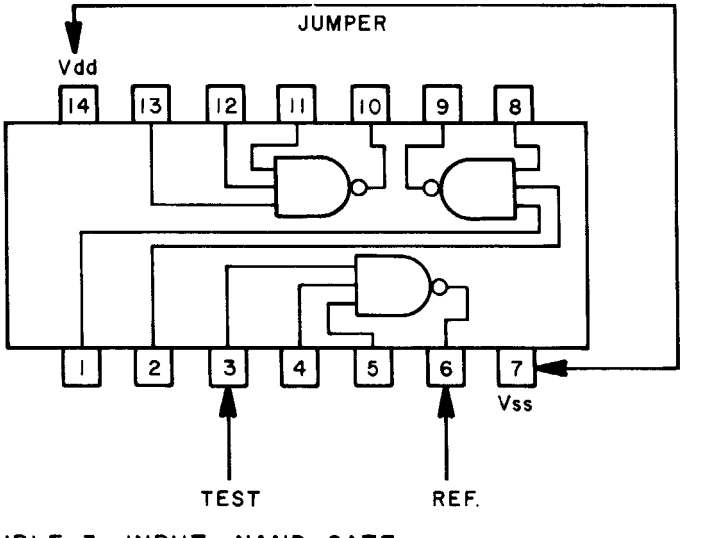
D. Testing in Powered Circuits – Care should be taken when power is on the circuit under test to be sure that the test instrument select switch is in the **EXTERNAL** position. By following the procedures outlined in section A, I.C. pins may be examined or compared as to voltage, signal level, state, etc. depending on the test instrument used.

V PRECAUTIONS & NOTES

A. When the Switcher is used with the Huntron Tracker, the devices under test **MUST NOT BE POWERED.** Remove all power from the circuit.

B. Devices and circuits being compared should be as nearly identical as possible, otherwise differences may be present which could give misleading signatures. Drastically modified circuits may also pose this problem. Components that are identical are usually close enough in tolerance that signatures will permit identification of opens, shorts or severe leakage.

C. When testing CMOS devices in or out of circuit with the Huntron Tracker, it may be advantageous to short Vss to Vdd using the shorting jumpers. Use one jumper between the appropriate pins on the reference pin select terminals. In this configuration do not use Vss or Vdd as the reference. *(see fig. 6)*



TRIPLE 3-INPUT NAND GATE

FIG. 6

HUNTRON INSTRUMENTS, INC.

Huntron Switcher

Model HSR210

PARTS LIST

All Resistors are ¼ Watt 5%

Reference Designation	Description	Huntron Part Number
R1	Resistor, 220 OHM	02-2158
R2	Resistor, 220 OHM	02-2158
R3	Resistor, 47 K	02-2143
R4	Pot, 1 Meg, Linear	02-2069
R5	Resistor, 3 K	02-2126
R6	Resistor, 220 OHM	02-2158
R7	Resistor, 3 K	02-2126
R8	Resistor, 220 OHM	02-2158
C1	Capacitor, 1000MF, 16V, Electrolytic	03-3047
C2	Capacitor, 0.1MF, 100V, Ceramic	03-3006
C3	Capacitor, 2.2MF, 50V, Electrolytic	03-3046
D1	Diode, 1 Amp	04-4006
D2	LED, Diffused Red, T-1 3/4	04-4013
D3	LED, Diffused Green, T-1 3/4	04-4014
D4	Diode, 1 Amp	04-4006
D5	Diode, 1 Amp	04-4006
D6	LED, Diffused Green, T-1 3/4	04-4014
D7	LED, Diffused Red, T-1 3/4	04-4013
Q1	Transistor	05-5016
Q2	Transistor	05-5016
IC1	Regulator, + 5V	05-5017
IC2	IC, (74C14)	05-5018
K1	Relay, DPDT, 5V	07-7903
K2	Relay, SPST, 5V	07-7904
J1	Jack, Power	01-1070
J2	Jack, Red Banana	01-1030
J3	Jack, Black Banana	01-1031
J4	Jack, Red Banana	01-1030
J5	Jack, Black Banana	01-1031
J6	Jack, Red Banana	01-1030
J7	Jack, Black Banana	01-1031
J8	Jack, Red Banana	01-1030
J9	Jack, Black Banana	01-1031

Reference Designation	Description	Huntron Part Number
S1, S2,	22 Pin Reference Terminal	07-7203
S3, S4,	ZIP Assembly, 40 Pin	07-7205
S5, S6	ZIP Assembly, 20 Pin	07-7204
SWI thru SW20	Switch, DPDT, Momentary	07-7159
SW21	Switch, SPDT, On-Off-On	07-7165
SW22	Switch, DPDT, On-Off-On	07-7166
MP1	Front Panel	01-3000
MP2	Case, Bottom	01-3001
MP3	Rubber Feet	01-1071
MP4	Button, Switch	07-7077
MP5	Knob, Rate adjust	01-1060
MP6	Dual Banana Plug	10-1074
MP7	Shaft Extender	07-7164
MP8	IC Clip Assembly, 16 Pin	10-1070
MP12	Power Cable Assembly	10-1073
MP10	Jumper Wires, AWG 24, 3 inch	07-7167
MP11	Power Plug	10-1020

Accessories:

MP9	Power Adapter (8V @ 300 MA)	06-6041
MP13	IC Clip Assembly, 40 Pin	10-1071
MP14	Edge Connector Assembly	10-1072
MP15	IC Clip Assembly, 20 Pin	10-1077
MP16	IC Clip Assembly, 24 Pin	10-1078