DENSON ELECTRONICS CORPORATION
Rockville, Connecticut

Instructions Only - $0.50 - Stock No. 779

1698 MONOSCOPE
TEST PATTERN MONOSCOPE TUBES
FOR CLOSED-CIRCUIT APPLICATIONS

A NEW VIEWING CONCEPT

5 6
6 0
G 0
0 O
D 1
1 9
9 7
7 0
0 8
8

A NEW VIEWING CONCEPT

NEED A STABLE TEST SIGNAL SOURCE FOR ONLY $0.95
AND A FEW PARTS FROM YOUR JUNK BOX???

Here is the easiest way to get your Camera, Transmitter or Monitor Set up and operating properly. Our Type 1698 Test Monotron tube with a few parts from an old TV set or the usual electronic experimenter's clutch pile used in the simple circuit supplied with the tube gets you started in Closed Circuit or Amateur Television Systems. Simpler than a flying spot scanner-LESS fuzzy than a camera, this pattern generator produces a series of figures and numbers from the self-contained pattern. Stock No. 700CA-2 ONLY

Stock No. 700CA-2 ONLY $9.95 plus postage - Ship.Wt. 3 lbs., #779 Inst. ONLY 50c

#710 6x8" mull-metal for shield $3.95 #713 14 Pin socket w/attached lead $1.50

711 Model MSN Power Trans. 18.95 718 400 MA 400 PIV Diodes for DI-D-8 450p2ea

CONSTRUCTION: Fig. 1 shows a schematic of a simple yet effective monoscope camera. All resistors are ½ watt and capacitors are in MFD unless otherwise stated. Component values are not shown as the schematic is given in the parts list at the end of the article. Layout is not critical if several things are kept in mind: the rest of the is quite likely you got out the video camera or the article. Layout is not critical if several things are kept in mind:

Have you ever sat at the workbench for hours on end running final checks on a newly constructed piece of AV gear and found yourself in dire need of a fixed video test signal? Probably so, and if your TV patrol you can see the picture on the article. Layout is not critical if several things are kept in mind: the rest of the is quite likely you got out the video camera or the article. Layout is not critical if several things are kept in mind:

1. Mount the monoscope such that the lead from the signal cap down to the video camera is no longer than 6 inches. Use low-impedance shielded cable as close as possible. (2) Keep all transformer and how much more practical this job could have been accomplished without the aid of a monoscope camera. Even though this type camera has toning, if possible use a mull-metal shielding over the tube. This will further protect against stray magnetic fields including the earth's field. (3) Use an electromagnetic shield over the signal path portion of the tube to prevent stray RF pickups such as those caused by nearby AM broadcast stations.

page 1
MONOSCOPE CAMERA
DENSON ELECTRONICS CORP
ROCKVILLE, CONNECTICUT

A couple changes which were recently made for improved pin quality. They are: Grounded pin 6 of the monoscope instead of connecting it to point B on the diagram. Results in improved astigmatism with little sacrifice in gain. Changes the .002 waveshaping condenser (this is the one shown connected from the junction point of the 1k resistor and the .0016 capacitor in the horizontal sec plate circuit) to a .001. Improved the horizontal pulse by changing to this lower value. Changed the 15k which connects the 3700 oim resistor from the plate circuitry of the vertical discharge tube to pin 7 of V-3B (sync tube) to 6800 ohms. Improved the vertical sync clipping. A little mu-metal shield is needed to prevent beam distortion.

Additional Components Available from DEC

<table>
<thead>
<tr>
<th>Stock No.</th>
<th>Type Description</th>
<th>Price</th>
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<tbody>
<tr>
<td>70CD</td>
<td>Socket for Vidicon</td>
<td>$8.50</td>
</tr>
<tr>
<td>712</td>
<td>New High Resolution Vidicon Direct Drive Deflection Yoke and Focus Coll</td>
<td></td>
</tr>
<tr>
<td>700F</td>
<td>Type 5597 Electrostatic Camera Tube New</td>
<td>$9.96</td>
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<tr>
<td>700FA-2</td>
<td>1986 - 3 Inch Electrostatic Test Monotron SPEC.</td>
<td>$9.96</td>
</tr>
<tr>
<td>700FA-3</td>
<td>Similar to 1986 except 3 Inch NEW (Odd Patterns)</td>
<td>$9.96</td>
</tr>
<tr>
<td>700H</td>
<td>Type 212 Vericon Camera Tube NEW</td>
<td>$100.00</td>
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<tr>
<td>700A</td>
<td>Type 212 Vericon Deflection Yoke and Focus Coll-U</td>
<td>$100.00</td>
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<tr>
<td>700B</td>
<td>Type 212 Vericon Camera Tube-U</td>
<td>$25.00</td>
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<tr>
<td>700J</td>
<td>Schematic for Type 212 Vericon Camera</td>
<td>$5.00</td>
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<tr>
<td>700L</td>
<td>Type 5820 Orthicon Camera Tube-U</td>
<td>$25.00</td>
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<tr>
<td>7001L</td>
<td>Type 5820 Orthicon Deflection Yoke Used</td>
<td>$25.00</td>
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<tr>
<td>7001N</td>
<td>Type 5820 Orthicon Deflection Yoke NEW 2004</td>
<td>$100.00</td>
</tr>
<tr>
<td>7001F</td>
<td>Type 5820 Orthicon Focus Coll NEW</td>
<td>$100.00</td>
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Printed on heavy cardboard
Postpaid - Small #564 50c
Large #596 $1.00

Stock #187 at $5.95-Excellent book on CCTV gives very comprehensive course in TV cameras and associated equipment.
Fig. 1 - Schematic of monoscope camera. C1 is a 4-6mmfd. compression trimmer. The values of the 47k and 3,3mfd (in the feedback loop) can be altered if elimination of smear cannot be obtained within the range of C1. Variations in individual wiring practices frequently result in such out of range situations. However, careful wiring using standard video amp practices should prevent this.

The entire unit can easily be constructed on an 11 x 17 inch chassis. A photo showing the parts layout in our original unit is shown on the front cover. This structure proved to be quite adequate except that we would recommend anyone duplicating it to place the low voltage power transformer more to the left rear, since in the location shown its magnetic field effects the monoscope beam with the mullard shield removed.

OPERATION: The minute current variations developed across the signal load resistor (47k grid resistor in first amp) are sufficiently amplified by a four stage video amplifier: the first three stages of which incorporate negative feedback to offer the capacity times from the signal plate and signal lead to ground. The amplified signal is coupled to the 75 ohm line through the cathode follower, V5a. Sync-blanking pulses are mixed with the video in the cathode circuit of V5a. Note that the cathode of the 1938 is operated about 100 V above ground. Therefore the filaments must also be operated above ground from a separate winding. Vertical sweep is obtained through a discharge stage, V4e blocked to the AC line through a waveshaping and clipping network.

Horizontal sweep is obtained from a blocking oscillator, V4b. The combination sync-blanking pulse developed across the resistor in the discharge network of each deflection amp is clipped, clipped and inserted into the fourth video amp by the sync-blanking inverter, V5b. Focusing, beam current adjustment and centering controls are all conventional similar to those used in most scope circuits. The two power supplies are also quite straightforward and should require no explanation... just one thing: it will be noticed that we have +500 and a -minus 175 instead of a single +475. The reason behind, +500 volts was selected for the video amp and sync inverter but the additional voltage was advantageous for improved sweep linearity. Voltage dropping resistors could have been used but we liked the fact that this allowed us to use readily available lower voltage capacitors both in the power supply and also in the coupling and discharge networks. The method you choose will depend on your own personal preference.

TUNING: Assuming no wiring errors or defective components, check out procedure is relatively simple compared to a flying spot or vidicon. Being an electrostatic type tube it's merely a matter of correctly setting the adjustment pots. Proceed in the following manner:

(1) Set all knobs except the beam (which should be set for minimum bias) to mid-range.
(2) Check to make sure monitor is properly adjusted on a local station prior to feeding video to it. (Be sure it's properly terminated.)
(3) Now apply power and allow about 2 minutes for stabilization. The monitor should now be locked vertically since the vertical sweep is derived from the 60 CPS line. The horizontal one is free running and unless you were lucky will probably not be on frequency. If this is the case, adjust the frequency pot in the camera till the monitor is properly locked.
(4) You are now ready to see if you can get a picture. Start advancing the beam control (lowering the grid bias). An image should immediately become visible. If we, continue bringing up the beam until a normal contrast picture is obtained. Now the centering, focus and size controls can be adjusted for best picture.
GENERAL.
Heater, for unipotential cathode voltage current
All electrode capacitances (approx)
Grid no. 1 to all other electrodes.
Signal electrode to all others
Focusing method
Deflection "
Target size
Overall Length
Maximum diameter
Mounting position
Cap
Base
Emulsion:
Pin. 1 and 14 Heater
Pin 2 cathode
Pin 3 grid no. 1 (beam)
Pin 4 internal connection, not used
Pin 5 grid no. 3 (focus)
Pin 6 grid no. 4
Pin 7 Har. defl. dj3
Pin 8 " dj4
Maximum Ratings,
Signal electrode, grids 1, 3, & 4
Grid no. 2 negative bias value
Positive bias value
Heater to cathode (peak)
Heater neg. with respect to cathode
Heater pos. with respect to cathode
Ambient temperature
Typical operation
Signal electrode
Grid no. 4 voltage
Grid no. 3 " for focus @ 0.2ua
Grid no. 4 current
Grid no. 2 voltage
Grid no. 1 voltage for visual cutoff
Grid no. 2 current with 0.2ua current
Grid no. 4
Deflection factors
(at Max grid no. 4 voltage)
DJ1 and DJ2
DJ3 and DJ4
Min. p.p. blanking voltage
Signal electrode current
Resolution capability
Max. circuit values
Grid no. 1 circuit resistance
Resistance in any deflecting electrode circuit 5.5 mgs
It is recommended that the deflecting electrode circuit resistance be approx. equal.

Simpler than a flying spot scanner - less fussy than a Camera, this pattern generator produces a series of figures and numbers from the self-contained pattern.

Deflection Angle
For the Vert & Horiz Plates Is 20°

Signal Electrode
Target 20°

Pattern Generated

Stock No. 700FA-2 ONLY $7.95
Plus postage, ship., wt., 3 lbs.
Instructions Only - 50c - Stock No. 779