The Du Mont Type 12ATP- is a 12 7/16-inch diameter, three beam, electrostatic focus and deflection cathode-ray tube. The use of post acceleration allows maximum deflection sensitivity with high overall accelerating voltages. The deflection plate connections are made through the neck of the tube to facilitate high frequency operation. The screen is aluminized for greater light output and to minimize screen charging effects.

**GENERAL CHARACTERISTICS**

**Electrical Data**

<table>
<thead>
<tr>
<th>Direct Interelectrode Capacitances, Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cathode to all other electrodes</td>
</tr>
<tr>
<td>Grid No. 1 to all other electrodes</td>
</tr>
<tr>
<td>D1 to D2</td>
</tr>
<tr>
<td>D3 to D4</td>
</tr>
<tr>
<td>D1 to all other electrodes</td>
</tr>
<tr>
<td>D2 to all other electrodes</td>
</tr>
<tr>
<td>D3 to all other electrodes</td>
</tr>
<tr>
<td>D4 to all other electrodes</td>
</tr>
</tbody>
</table>

**Optical Data**

- Phosphor Number: 28
- Fluorescence: Yellow-Green
- Phosphorescence: Yellow-Green
- Persistence: Long

**Mechanical Data**

- Overall Length: 25 5/8 ± 3/8 Inches
- Greatest Diameter of Bulb: 12 7/16 ± 1/16 Inches
- Minimum Useful Screen Diameter: 11.0 Inches
- Bulb Contact: J1-22
- Neck Contacts: J1-25
- Base: B25-139
- Basing: Special

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Clifton, N. J.

from JEDEC release #3570, Jan. 22, 1962
GENERAL CHARACTERISTICS (Mechanical Data) (Continued)

Base Alignment:

D1D2 trace aligns with Base Key ± 10 Degrees
Positive voltage on D1 deflects beam approximately toward Base Key
Positive voltage on D3 deflects beam approximately toward Base Pin No. 23

Bulb Contact Alignment:
J1-22 cap aligns with Base Key ± 10 Degrees
J1-22 cap aligns with D1D2 trace ± 5 Degrees
J1-22 cap on same side as Base Key

Trace Alignment:

Angle between D3D4 and D1D2 traces, Guns "A" and "B" 90 ± 1 Degrees
Angle between D3D4 and D1D2 traces, Gun "C" 90 ± 2 Degrees

RATINGS (Absolute Maximum Values)

Heater Voltage 6.3 Volts
Heater Current at 6.3 Volts 1.8 ± 10% Amperes

Post Accelerator Voltage 15,000 Max. Volts DC
Astigmatism Electrode Voltage 6000 Max. Volts DC
Accelerator Voltage 6000 Max. Volts DC

Accelerator Input
Ratio Post Accelerator Voltage to Accelerator Voltage² 2.0 Max. Volts DC
Focusing Electrode Voltage 2000 Max. Volts DC

Grid No. 1 Voltage
Negative Bias Value 200 Max. Volts DC
Positive Bias Value 0 Max. Volts DC
Positive Peak Value 0 Max. Volts

Peak Heater-Cathode Voltage
Heater negative with respect to cathode 180 Max. Volts
Heater positive with respect to cathode 180 Max. Volts

Peak Voltage between Accelerator and any Deflection Electrode 1250 Max. Volts

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DE-6317
TYPICAL OPERATING CONDITIONS

Post Accelerator Voltage\(^2\)  
10,000  Volts DC

Astigmatism Electrode Voltage\(^3\)  
4900 to 5500  Volts DC

Accelerator Voltage\(^2\)  
5000  Volts DC

Focusing Electrode Voltage  
1275 to 1725  Volts DC

Grid No. Voltage\(^4\)  
-64 to -86  Volts DC

Deflection Factors, Guns "A" and "B"

D1D2  
103 to 127  Volts DC/Inch

D3D4  
81 to 99  Volts DC/Inch

Deflection Factors, Gun "C"

D1D2  
103 to 127  Volts DC/Inch

D3D4  
67 to 83  Volts DC/Inch

Modulation\(^5\)  
30  Volts DC (Max.)

Line Width "A"\(^3\) \(,\) \(^5\)  
.013  Max. Inch

Line Width "B"\(^3\) \(,\) \(^5\) \(,\) \(^9\)  
.018  Max. Inch

Useful Scan:

Gun "A"  
6.75 x 4.31  Inches

Gun "B"  
6.75 x 4.31  Inches

Gun "C"  
6.75 x 2.15  Inches

Pattern Distortion\(^6\)  

Focusing Electrode Current (for any operating condition)  
-15 to +10  µA

Spot Position (Focused and Undeflected)\(^7\)  

Within a 7/16-inch radius circle

MAXIMUM CIRCUIT VALUES

Grid No. 1 Circuit Resistance  
1.5  Max. Megohms

Resistance in any Deflecting-Electrode Circuit\(^8\)  
1.0  Max. Megohms
CATHODE-RAY TUBE

TYPE 12ATP-

NOTES

1. Values are for each gun unless otherwise specified.

2. This tube is designed for optimum performance when operating at an Eb3/Eb2 ratio of 2.0. Operation at other ratios of Eb3/Eb2 may result in changes in deflection uniformity and pattern distortion.

3. With focus and astigmatism voltages adjusted for the best center line width, line widths "A" and "B" shall be as specified. The specified spot position for each gun shall be used to locate the points for line widths "A" and "B". At no point within the specified scan area of any gun shall the line width exceed 0.030 inch when compromise focus and astigmatism are used.

4. For the visual extinction of the undeflected, focused spot.

5. For an lb3 of 5 µADC, measured in accordance with MIL-E-1 specifications.

6. For Gun "A": All portions of a raster pattern, adjusted so its widest points just touch the sides of a 6.95 x 4.41-inch rectangle, will fall within the area bounded by the 6.95 x 4.41-inch rectangle and an inscribed 6.55 x 4.21-inch rectangle.

The horizontal trace of Gun "A", when passing through the tube face center, shall fall entirely within a rectangle of 6.95 x .063 inches, centered about the horizontal trace.

For Gun "B": All portions of a raster pattern, adjusted so its widest points just touch the sides of a 6.95 x 4.44-inch rectangle, will fall within the area bounded by the 6.95 x 4.44-inch rectangle and an inscribed 6.55 x 4.18-inch rectangle.

For Gun "C": All portions of a raster pattern, adjusted so its widest points just touch the sides of a 7.15 x 2.27-inch rectangle, will fall within the area bounded by the 7.15 x 2.27-inch rectangle and an inscribed 6.35 x 2.01-inch rectangle.

7. With the deflecting electrodes connected to the accelerator and with the tube shielded against external influences, each focused and undeflected spot will fall within a 7/16-inch radius circle centered about each respective spot position specified on the outline drawing.

8. It is recommended that the deflecting-electrode circuit resistances be approximately equal. Higher resistance values up to 5 megohms may be used for low beam current operation.

9. Line width "B" shall be measured at 1.6 inches from the undeflected spot positions for guns "A" and "B", and at 0.8 inch for gun "C".
NOTES:
1. JI-22 CAP ALIGNS WITH DI D2 TRACE ± 5°.
2. JI-25 CAPS 20° APART UN-LESS OTHERWISE SPEC.
3. BASE KEY ALIGNS WITH DI D2 TRACE ± 10°.

ALL ANGLES ± 8°
**DU MONT**

**CATHODE-RAY TUBE**

12 ATP

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**BOTTOM VIEW**

<table>
<thead>
<tr>
<th>ELEMENT</th>
<th>UNIT A</th>
<th>UNIT B</th>
<th>UNIT C</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEATER (COMMON)</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>HEATER (COMMON)</td>
<td>15</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>CATHODE</td>
<td>17</td>
<td>24</td>
<td>16</td>
</tr>
<tr>
<td>FOCUSING Electrode</td>
<td>22</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>ACCELERATOR (COMMON)</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>ASTIG. ADJUST. Electrode</td>
<td>6</td>
<td>20</td>
<td>19</td>
</tr>
<tr>
<td>GRID NO.1</td>
<td>2</td>
<td>14</td>
<td>25</td>
</tr>
</tbody>
</table>

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**NOTE:**

THE FOCUSED, UNDEFLECTED SPOTS CENTER ON POSITIONS INDICATED WITHIN A 7/16 R. CIRCLE.

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**REDUCED FACE VIEW**

SEE NOTE

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Allen B. Du Mont Laboratories, Inc.
Clifton, New Jersey Instrument Corp.

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