

NOTES

- As the frit seal is visible through the faceplate, and not necessarily aligned with the internal graticule, application of an external passe-partout with open area of max. 124 mm x 100 mm is recommended. The internal graticule is aligned with the faceplate by using the faceplate reference points (see Fig. 4).
- The mean x-plate potential and the mean y-plate potential should be equal to $V_{g2,g4,g5(l)}$.
- The tube features internal magnetic correction for astigmatism, orthogonality and eccentricity calibration. Optimum spot is obtained if $V_{g2,g4,g5(l)}$ is equal to mean y-potential.
- An actual focus range of approx. 50 V should be provided on the front panel. V_{g3} decreases with increasing grid drive.
- Intensity control on the front panel should be limited to the maximum useful screen current dependent on $V_{g2,g4,g5(l)}$. It is to be adjusted either by the grid drive (up to 30 V) or for maximum acceptable line width. The corresponding cathode current or $I_{g2,g4,g5}$ (up to 500 μ A) depends on the cut-off voltage and cannot be used for control settings.
- The sensitivity at a deflection of less than 75% of the useful scan will not differ from the sensitivity at a deflection of 25% of the useful scan by more than the indicated value.
- A graticule consisting of concentric rectangles of 120 mm x 96 mm and 117 mm x 93 mm is aligned with the internal graticule. With optimum trace rotation correction the edges of a raster will fall between these rectangles.
- The tube has a trace rotation coil, fixed onto the lower cone part. The coil has a maximum resistance of 240 Ω at 80 °C. The maximum required voltage is approx. 12 V for tube tolerances ($\pm 5^\circ$) and earth magnetic field with reasonable shielding ($\pm 2^\circ$).
- Measured with the shrinking raster method within the useful scan under typical operating conditions, adjusted for optimum focus and dynamic correction applied.

As the construction of the tube does not permit a direct measurement of the beam current, this current should be determined as follows:

- Under typical operating conditions, apply a small raster display (no overscan), adjust V_{g1} for a beam current of approx. 10 μ A and adjust V_{g3} for smallest spot size at the centre of the screen. When measuring the beam current, grid 6 should be connected to g2-potential and the diodes should be disconnected from the x-plates.
- Under these conditions, but without raster, the deflection plate voltages should be changed to: $V_{y1} = V_{y2} = 2000$ V; $V_{x1} = 1300$ V; $V_{x2} = 1700$ V, thus directing the total beam current to x_2 . Measure the current on x_2 and adjust V_{g1} for $I_{x2} = 10$ μ A.
- Set again for the conditions under a), without touching the V_{g1} control. The screen current of the resulting raster display is now 10 μ A. Adjust V_{g3} for optimum focus in the centre of the screen and apply dynamic correction to grid 6 for optimum width of a vertical line.

DEVELOPMENT DATA

This data sheet contains advance information and specifications are subject to change without notice.

INSTRUMENT CATHODE-RAY TUBE

- mono accelerator
- 18 cm diagonal rectangular flat face
- dynamic deflection defocusing correction
- internal magnetic correction for astigmatism, vertical eccentricity and orthogonality
- low heater power consumption
- for oscilloscopes and general display up to 25 MHz bandwidth

QUICK REFERENCE DATA

Accelerator voltage	$V_{g2,g4,g5(l)}$	2000	2500	V
Minimum useful scan area		120 mm x 96 mm		
Deflection coefficient				
horizontal	M_x	21	26	V/cm
vertical	M_y	15	19	V/cm

OPTICAL DATA

Screen		
type	GY, colour green	
persistence	medium	
Useful screen area	≥ 124 mm x 100 mm; note 1	
Useful scan area	≥ 120 mm x 96 mm	
Internal graticule	type 127; see Fig. 4	

HEATING

Indirect by a.c. or d.c.*		
Heater voltage	V_f	6,3 V
Heater current	I_f	0,1 A
Heating time to attain 10% of the cathode current at equilibrium conditions		approx. 7 s

blue binder, tab 4

9397 147 50142

* Not to be connected in series with other tubes.

MECHANICAL DATA**Dimensions and connections** (see also outline drawing)

Overall length (socket included)	≤ 324 mm
Faceplate dimensions	142 ± 0,5 mm x 118 ± 0,5 mm
Net mass	approx. 1,3 kg
Base	12-pin, all glass, JEDEC B12-246

Mounting

The tube can be mounted in any position. It must not be supported by the socket and not by the base region alone. The reference points on adjoining edges of the faceplate (see Fig. 4) enable the tube to be mounted accurately in the front panel, thus providing optimum alignment of the internal graticule.

Accessories

Socket with solder tags	type 55594
Socket with printed-wiring pins	type 55595
Mu-metal shield	to be established
Pin protector (required for shipping)	supplied with tube

TYPICAL OPERATION (voltages with respect to cathode)**Conditions**

Accelerator voltage	$V_{g2,g4,g5,(l)}$	2000	2500 V	note 2
Astigmatism control voltage	$\Delta V_{g2,g4,g5,(l)}$	0	V	note 3
Focusing voltage	V_{g3}	220 to 350	275 to 440 V	note 4
Cut-off voltage for visual extinction of focused spot	$-V_{g1}$	22 to 65	27 to 81 V	note 5

Performance

Deflection coefficient horizontal	M_x	≤ 21	26 V/cm	
		≤ 23	28,5 V/cm	
vertical	M_y	≤ 15	19 V/cm	
		≤ 16	21 V/cm	
Deviation of deflection linearity		≤ 2 %		note 6
Geometry distortion		see note 7		
Eccentricity of undeflected spot with respect to internal graticule	horizontal	≤ 4 mm		note 3
		vertical	≤ 2 mm	note 3
Angle between x and y-traces		90°		note 3
Angle between x-trace and x-axis of the internal graticule		≤ 5°		note 8
Grid drive voltage for 10 μA screen current	V_d	≈ 10 V		note 5
Line width	l.w.	≈ 0,3 mm		note 9

DEVELOPMENT DATA**LIMITING VALUES** (Absolute maximum rating system)

Accelerator voltage	$V_{g2,g4,g5,(l)}$	max.	3000 V
Focusing voltage	V_{g3}	max.	3000 V
Voltage between accelerator electrode and grid 6	$V_{g2/g6}$	max.	± 500 V
Voltage between accelerator electrode and any deflection plate	$V_{g2/x/y}$	max.	± 500 V
Control grid voltage	$-V_{g1}$	max. min.	200 V 0 V
Cathode to heater voltage	positive negative	V_{kf}	max. 125 V
		$-V_{kf}$	max. 125 V
Heater voltage	V_f	max.	6,6 V
		min.	6,0 V
Grid drive voltage, averaged over 1 ms	V_d	max.	20 V
Screen dissipation	W_l	max.	3 mW/cm ²
Control grid circuit resistance	R_{g1}	max.	1 MΩ

