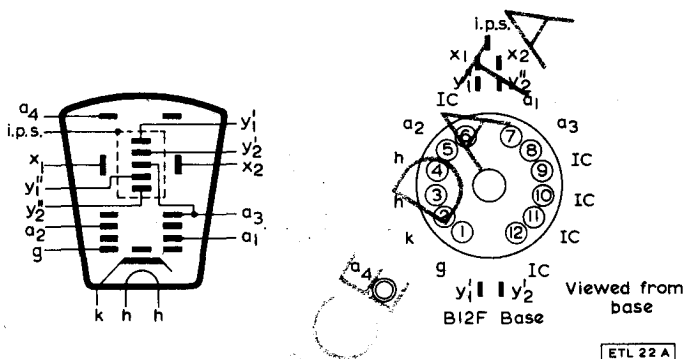




CRI57

DUAL TRACE OSCILLOSCOPE TUBE

Dual trace oscilloscope tube with 4-in. diameter flat screen and distributed p.d.a. system. This tube has two independent Y signal traces with common X plates, the deflection plates being brought out to side connections.



GENERAL DATA

Screen type	P31	
Fluorescent colour of screen	blue-green	
Persistence	medium	
Focus	electrostatic	
Deflection	electrostatic	
Post deflection acceleration	single stage distributed	
Max. overall diameter (excluding connectors)	102	mm
Max. overall length	400	mm
Minimum useful screen dimensions (at $V_{a4}=4V_{a1}$)		
y (each beam)	5	cm
x (each beam)	8	cm
overlap	4	cm
Mounting position	Any - see section on mounting (page 3)	



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CATHODE

Indirectly heated - suitable for parallel operation only

Heater voltage	Vh	6.3	V
Heater current	Ih	300 or 550	mA

CAPACITANCES

cg-all	7.0	pF
ck-all	5.0	pF
cx1-all (x2 earthed)	5.0	pF
cx2-all (x1 earthed)	5.0	pF
cy1"-all (y1' earthed)	6.0	pF
cy2'-all (y2" earthed)	6.0	pF
cy1'-all (y1" earthed)	4.0	pF
cy2"-all (y2' earthed)	4.0	pF
cx1-x2	3.0	pF
cy1'-y1"	1.0	pF
cy2'-y2"	1.0	pF
cy1'+y1"-y2'+y2" max.	0.2	pF

ABSOLUTE MAXIMUM RATINGS

Max. first anode voltage	Va1 max.	1.2	kV
Min. first anode voltage	Va1 min.	600	V
Max. second anode voltage	Va2 max.	1.5	kV
Max. third anode voltage	Va3 max.	3.0	kV
Min. third anode voltage	Va3 min.	800	V
Max. fourth anode voltage (p.d.a.)	Va4 max.	8.0	kV
Min. fourth anode voltage	Va4 min.	1.5	kV
Max. grid voltage	Vg max.	-200	V
Min. grid voltage	Vg min.	-1.0	V
Max. peak heater to cathode voltage	vh-k(pk) max.	150	V
Max. grid resistor	Rg-k max.	1.0	MΩ
Max. resistance from either x plate to a3	Rx-a3 max.	1.0	MΩ
Max. resistance from any y plate to a3	Ry-a3 max.	100	kΩ
Max. voltage between either x deflector plate and a3	Vx-a3 max.	500	V
Max. voltage between any y deflector plate and a3	Vy-a3 max.	250	V
Min. resistance between third and fourth anode	ra4-a3 min.	50	MΩ

TYPICAL OPERATING CONDITIONS

First anode voltage	Va1	1.0	kV
Second anode voltage	Va2	100 to 350	V
Third anode voltage	Va3	1.0	kV
Fourth anode voltage	Va4	4.0	kV
Grid voltage for visual cut-off	Vg	-45 to -90	V
x plate sensitivity	Sx	17	V/cm
y plate sensitivity (both beams)	Sy	13	V/cm



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DEFLECTION

The tube is designed for symmetrical operation on both x and y plates.

The x plates are those nearest the screen.

The arrangement of the plates is such that viewing the fluorescent screen with the x plate connection pins vertically downwards a positive voltage on the x1 plate deflects both spots to the left, a positive voltage on the y1' plate deflects one spot upwards and a positive voltage on the y1'' plate deflects the other spot upwards.

The linearity of the scan is $\pm 2\%$.

RASTER DISTORTION

With a raster of size 37.5mm by 60mm, the total raster distortion will be $\pm 2\%$ for each beam and $\pm 2.5\%$ for both beams when they are superimposed.

SPOT ECCENTRICITY

When all the deflector plates are connected to the third anode, both beams will coincide within a rectangle 9mm x 16mm symmetrically placed about the geometric centre of the tube face and there will be no displacement between the spots in the x direction when adjusted for optimum centre focus.

The useful screen area may be offset from the geometric screen centre by a maximum of 3mm.

ORIENTATION AND RECTANGULARITY

The y axis lies within 6° of the line which divides pins 6 and 7, and pins 1 and 12 symmetrically on the base.

The angle between the x and y axes for each trace is $90^\circ \pm 1^\circ$.

The angle between the two electrical y axes with the beams superimposed is within $\pm 1.5^\circ$.

MOUNTING

There is no restriction on the position of mounting.

In mounting the tube the main support should be at the end nearer the screen and so arranged that no stresses are produced in the glass. Adequate precautions should be taken to protect the tube from effects of shock or sudden acceleration. In particular a resilient pad should be provided between the flat face of the tube and any surrounding metal parts.

This tube is not intended to be soldered directly into the wiring. The tube socket and side pin connections should not be rigidly mounted but should have flexible leads and be allowed to move freely.

In most cases it will be necessary to provide a magnetic shield surrounding the tube. The tube may then be mounted conveniently by means of resilient rings inside the shield, the shield being rigidly supported by the external apparatus.



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ACCESSORIES

Sockets

The B12F socket can be supplied by the Carr Fastener Co. Ltd., of Stapleford, Notts., type No. VO/842. The tube manufacturers can supply sample quantities of this socket.

Cavity cap connectors

Any commercially available CT8 connector is suitable.

Typical examples are the Carr Fastener 71/529, 71/699, and 71/527.

Side pin connectors

There are no connectors specifically intended for use with the side pins of this tube. A standard miniature diode clip has been found adequate in many instances and in other applications miniature crystal microphone connectors have been used.

Mumetal shields

In view of the high sensitivity of the tube it is advisable to mount it as far as possible from transformers and chokes. If transformers or chokes are in close proximity to the tube, thicker or multiple shields may be required to avoid saturation and trace modulation.



Technical drawings of the BI2F Base, showing side and top views with dimensions in mm.

Side View (Left):

- Total height: 400 max
- Top width: 100 ± 2
- Bottom width: 14 max
- Offset from bottom: 11.0 max
- Internal offset: 6.0
- Internal offset: 105 $\pm$ 5
- Internal offset: 270 $\pm$ 5
- Internal features: i.p.s., x_1 , x_2 , y_1' , y_2'

Side View (Right):

- Top offset: 32.5 $\pm$ 1.5
- Internal offset: 50
- Radius: 750R
- Internal offset: 1.27 $\pm$ 0.06
- Internal offset: 12 $\pm$ 3.0
- Internal offset: 27 $\pm$ 3.0
- Internal offset: 9.0 max
- Min contact length = 2.0
- Internal offset: 53-58
- Internal offset: 226
- Internal feature: Cavity connector CT8

Top View (Left):

- Pins: Pin 1, Pin 12, Pin 6, Pin 7
- Coordinate axes: x_1 , x_2 , y_1' , y_2'

Top View (Right):

- Pins: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
- Coordinate axes: x_1 , x_2 , y_1' , y_2'
- Angle: $135^\circ \pm 10^\circ$
- Angle: $180^\circ \pm 6^\circ$
- Angle: 15°
- Angle: $\pm 15^\circ$
- Base: BI2F Base
- Viewed from base

All dimensions in mm.

Viewed from base

BI2F Base

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