EDISWAN

31B82

CATHODE RAY TUBE—ALL ELECTROSTATIC 5″ DIA.
Helical Post Deflection Acceleration
For High Performance Oscillography

GENERAL

The 31B82 is a precision Cathode Ray Tube designed for high performance oscillography. It has high deflection sensitivity and a helical post-deflection accelerator which allows the application of high p.d.a. ratios. The screen is aluminised and the deflector plates are brought out to side arms.

RATING

Heater Voltage	V_h	6·3	V
Heater Current	I_h	0·6	A
Maximum Final Anode Voltage	$V_{a4(max)}$	12	kV
Maximum Second Anode Voltage	$V_{a2(max)}$	800	V
Maximum First and Third Anode Voltage	$V_{a1,a3(max)}$	2	kV
Maximum Negative Grid Voltage	$V_{g(max)}$	−200	V
Maximum Positive Grid Voltage	$V_{g(max)}$	0*	V
Maximum Third Anode Peak Voltage to X or Y plates	$V_{a3(pk)max}$	500	V
Maximum Heater/Cathode Voltage	$V_{h-k(max)}$	180	V
Maximum Isolating Shield Voltage	$V_{is(max)}$	2·1	kV
Maximum Deflector Plate Shield Voltage	$V_{def(max)}$	2·1	kV

* The grid must not become positive with respect to cathode.

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INTER-ELECTRODE CAPACITANCES (pF)†

Cathode/All other electrodes	$C_{k\text{-}all}$	4·6
Grid/All other electrodes	$C_{g\text{-}all}$	6·4
X1 Deflecting Plate/X2 Deflecting Plate	$C_{x1\text{-}x2}$	1·9
Y1 Deflecting Plate/Y2 Deflecting Plate	$C_{y1\text{-}y2}$	1·5
X1 Deflecting Plate/All other electrodes	$C_{x1\text{-}all}$	3·5
X2 Deflecting Plate/All other electrodes	$C_{x2\text{-}all}$	3·5
Y1 Deflecting Plate/All other electrodes	$C_{y1\text{-}all}$	2·8
Y2 Deflecting Plate/All other electrodes	$C_{y2\text{-}all}$	2·8

† With holder balanced out.

POST DEFLECTION ACCELERATOR—Helical

Resistance	R_{pda}	200–600	MΩ

ORIENTATION

Looking at the screen with the p.d.a. contact to the left, a positive potential applied to X1 will deflect the spot to the left and a positive potential applied to Y1 will deflect the spot upward.

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DIMENSIONS

Maximum Overall Length	469 mm
Maximum Screen Diameter	135·4 mm
Maximum Neck Diameter	52·55mm

MOUNTING

The tube should not be supported by the base alone, but should preferably be held in a rubber-lined clamping ring at the screen end together with a similar clamp round the magnetic screen close to the base.
The socket should have sufficient freedom of movement to accommodate the tube overall length tolerance and a small amount of lateral float to ensure good pin contact without straining the base.

SCREEN PHOSPHORS

Type	*Colour*	*Persistence*	*Application*
T1	Green	Medium	Visual
T3	Blue Actinic	Short	Photographic
T4	White	Medium Short	Visual/ Photographic
T6	Yellow Afterglow	Long	Visual
T7	Orange Afterglow	Very Long	Visual
T8	Yellow Afterglow	Medium Long	Visual

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TYPICAL OPERATION

Final Anode Voltage	V_{a4}	10 kV
Second Anode Voltage	V_{a2}	180 to 590 V
First and Third Anode Voltage	$V_{a1,a3}$	1·67kV
Grid Bias Voltage for cut-off	V_g	–50 to –80 V
Isolation Shield Voltage	V_{is}	1·57 to 1·7*kV
Deflector Plate Shield Voltage	V_{def}	1·57 to 1·7‡kV

* The inner end of the helix and the isolation shield are connected together inside the tube. With the correct potential on these electrodes, barrel and pin-cushion effects are minimised.

‡ Adjustment of the deflection plate shield potential controls the linearity of the Y deflection by variation of the edge effect of the Y deflection plates.

For many purposes the deflection plate shield (pin 12) may be connected externally to the isolation shield.

DEFLECTION CHARACTERISTICS—Under above conditions

Sensitivity of X Plates	S_x	$\frac{560}{V_{a3}}$ mm/V
Sensitivity of Y Plates	S_y	$\frac{2800}{V_{a3}}$ mm/V
Useful X Plate Scan		10 cm
Useful Y Plate Scan		4 cm

The undeflected spot will fall within a circle of 5 mm radius from the centre of the tube face.

Orthogonality of deflection axes : $\pm$ 1%

The edges of a raster the size of the useful scan will not deviate from the mean rectangle by more than 1·5%.

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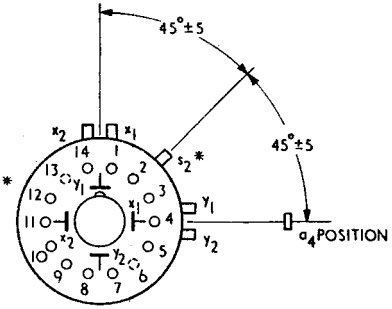
SIDE CONTACT—CT8

BASE—B14A (Diheptal)



Viewed from free end of pins.

CONNECTIONS

Pin 1	Heater	h
Pin 2	Cathode	k
Pin 3	Grid	g
Pin 4	No Connection	NC
Pin 5	Second Anode	a2
Pin 6	No Pin	NP
Pin 7	No Connection	NC
Pin 8	No Connection	NC
Pin 9	First and Third Anode	a1, a3
Pin 10	No Connection	NC
Pin 11	No Connection	NC
Pin 12*	Deflector Plate Shield	S1
Pin 13	No Pin	NP
Pin 14	Heater	h
Cap	Final Anode	a4
*	Isolation Shield	S2

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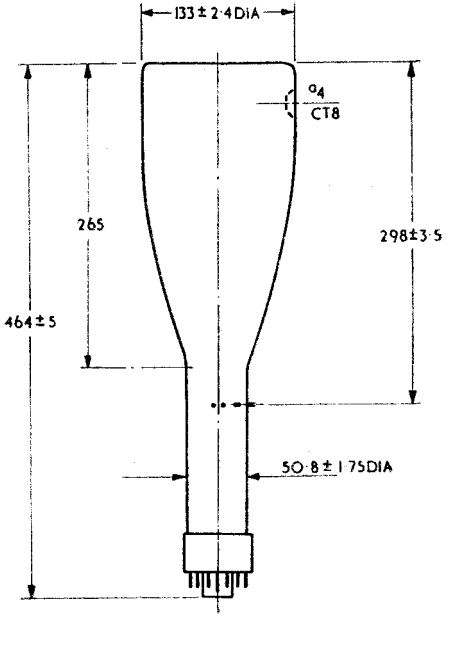

All Dimensions in mm.

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