CAMERA TUBE

Vidicon television camera tube with low heater consumption, integral mesh construction, magnetic focusing, magnetic deflection, short length (130 mm, 5 in), and 25.4 mm (1 in) diameter.

QUICK REFERENCE DATA	
Integral mesh	
Focusing	magnetic
Deflection	magnetic
Diameter	25.4 mm (1 in)
Length	130 mm (5 in)
Heater	6.3 V, 95 mA
Resolution	≥600 TV lines

The electrical and mechanical properties of the two types are essentially identical, the main difference being found in the degree of freedom from blemishes of the photoconductive layers.

XQ1031 – intended for use in industrial and broadcast applications in which a high standard of performance is required.

XQ1032 – general purpose tube for less critical industrial applications, experiments, amateur use etc.

OPTICAL

Diagonal of quality rectangle on photoconductive layer (aspect ratio 3 : 4)	max.	16	mm

Orientation of image on photoconductive layer:
The direction of the horizontal scan should be essentially parallel to the plane defined by the short index pin and the longitudinal axis of the tube, unless rotation of the tube is found necessary to minimize the number of blemishes in the picture.

Photoconductive layer	type A		
Spectral response, max. response at	approx.	550	nm

HEATING

Indirect by A.C. or D.C.; parallel and series supply

Heater voltage	V_f	6.3	V±10%
Heater current	I_f	95	mA

When the tube is used in a series heater chain, the heater voltage must not exceed 9.5 V_{rms} when the supply is switched on.

Data based on pre-production tubes.

CAPACITANCES

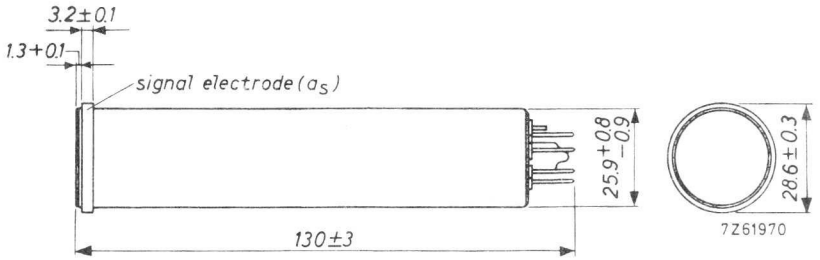
Signal electrode to all C_{as} 4.5 pF

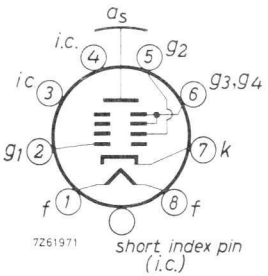
This capacitance, which effectively is the output impedance of the tube, increases when the tube is inserted into the deflection and focusing coil unit.

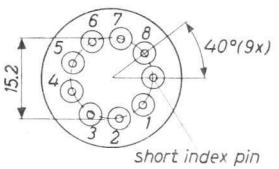
MECHANICAL DATA

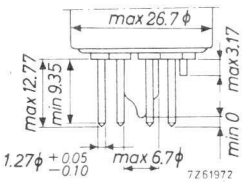
Dimensions in mm

Base: JEDEC no. E8-11, IEC 67-I-33a









Mounting position: any

Net mass approx. 50 g

ACCESSORIES

→ Socket type 56098 or equivalent

Deflection and focusing coil unit AT1102/01, AT1103 or equivalent

DEFLECTION magnetic

FOCUSSING magnetic

LIMITING VALUES (Absolute max. rating system)
for scanned area of 9.6 mm x 12.8 mm (3/8 in x 1/2 in)

"Full-size scanning", i.e. scanning of a 9.6 mm x 12.8 mm area of the photoconductive layer should always be applied. Underscanning, i.e. scanning of an area less than 9.6 mm x 12.8 mm, may cause permanent damage to the specified full-size area.

Signal-electrode voltage	V_{as}	max.	100	V
Grid no. 4 voltage and grid no. 3 voltage	$V_{g4, g3}$	max.	800	V
Grid no. 2 voltage	V_{g2}	max.	450	V
Grid no. 1 voltage, negative	$-V_{g1}$	max.	125	V
positive	V_{g1}	max.	0	V
Cathode-to-heater voltage, peak positive	V_{kf_p}	max.	125	V
negative	$-V_{kf_p}$	max.	10	V
Dark current, peak	I_{dark_p}	max.	0.25	μA
Output current, peak	I_{as_p}	max.	0.6	μA[1]
Faceplate illumination	E	max.	5000	lx
Faceplate temperature, storage and operation	t	max.	70	°C[2]
Cathode heating time before drawing cathode current	T_h	min.	1	min

1) Video amplifiers should be capable of handling signal-electrode currents of this magnitude without overloading the amplifier or distorting the picture.

2) Under difficult environmental conditions a flow of cooling air directed at the faceplate is recommended. When televising flames and furnaces appropriate infrared absorbing filters should be used.

OPERATING CONDITIONS AND PERFORMANCE

for a scanned area of 9.6 mm x 12.8 mm and a faceplate temperature of 30 ± 2 °C

CONDITIONS

Grid no. 4 and grid no. 3 (beam focus electrode) voltage	V_{g_4}, V_{g3}	250 to 300	V	1)
Grid no. 2 (accelerator) voltage	V_{g2}	300	V	
Grid no. 1 voltage	V_{g_1}	adjusted for sufficient beam-current to stabilize highlights		
Blanking voltage, peak to peak when applied to grid no. 1 when applied to the cathode		 50 20	 V V	
Field strength at centre of focusing coil	H	3200 (40 Oe)	A/m	2)
Field strength of adjustable alignment coils	H	0 to 320 (0 to 4 Oe)	A/m	3)
Deflection		see note 4)		

PERFORMANCE

		min.	typ.	max.		
Signal electrode voltage for dark current of 20 nA	V_{as}	20	30	50	V	
Signal current faceplate illumination 8 lx c.t. 2856 K, dark current 20 nA	I_S	125	200		nA	5)
Decay: residual signal current 200 ms after cessation of the illumination (8 lx, c.t. 2856 K)			10	15	%	
Amplitude response at 400 TV lines in picture centre		30	40		%	6)
Limiting resolution in picture centre		600			TV lines	
Grid no. 1 voltage for picture cut-off with no blanking applied	V_{g1}	-40	-60	-100	V	
Average γ of transfer characteristic for signal currents between 0.02 and 0.2 µA			0.65			
Spurious signals (spots and blemishes)		see note 7)				

NOTES

1) Beam focus is obtained by the combined effect of grid no. 3, the voltage of which should be adjustable over the indicated range, and a focus coil having a field strength of 3200 A/m (40 Oe).

2) The polarity of the focusing coil should be such that a north-seeking pole is attracted to the image end of the focusing coil, with this pole located outside of and at the image end of the focusing coil.

3) The alignment coil unit should be positioned on the tube so that its centre is at a distance of approx. 94 mm (3 11/16 in) from the face of the tube and that its axis coincides with the axis of the tube, the deflecting yoke and the focusing coil.

4) The deflection circuits must provide sufficiently linear scanning for good black-level reproduction. The output current being proportional to the velocity of scanning, any change in this velocity will produce non-uniformity.

5) Signal current is defined as the component of the output current after the dark current has been subtracted.

6) Square-wave response. Measured with a video amplifier system having an appropriate bandwidth. 8 lux on specified target area, target voltage adjusted for a dark current of 20 nA, beam set for correct stabilization.

7) Conditions:
The camera focused on a uniformly illuminated two-zone test pattern, the diameter of the centre zone (1) being equal to the raster height. Zone (2) being defined as the remainder of the scanned area. Signal electrode voltage adjusted for a dark current of 20 nA, illumination on target 8 lx (c.t. = 2856 K).

Scanning amplitudes of the monitor adjusted to obtain a raster with an aspect ratio of 3 : 4.

Monitor set-up and contrast control adjusted for faint raster when lens of camera is capped, and for non-blooming bright raster when lens of camera is uncapped.

Under the above conditions the number and size of the spots visible in the monitor picture will not exceed the limits stated below. Both black and white spots must be counted, unless the amplitude is less than 50 % of the peak white signal.

XQ1031

Spot size in % of raster height	Maximum number of spots zone 1	zone 2
> 1	none	none
1 to 0.6	none	none
0.6 to 0.2	1	2
⩽ 0.2	*	*

XQ1032

Spot size in % of raster height	Maximum number of spots	
	zone 1	zone 2
> 1	none	none
1 to 0.6	1	3
0.6 to o.2	3	5
⩽ 0.2	*	*
	max. 8	

* Do not count spots of this size unless concentration causes a smudgy appearance.

a) Minimum separation between any 2 spots greater than 0.3 % of raster height is limited to a distance equivalent to 4 % of raster height.

b) Tubes are rejected for smudge, lines, streaks, mottled, grainy, or uneven background having contrast ratios greater than 1.5 to 1.