



TECHNICAL
INFORMATION
SERVICE

Technical Information

CK1362

CATHODE RAY TUBE

The type CK1362 is a low-voltage electrostatic focus, magnetic deflection ten inch cathode ray tube with a special Infrared Stimulable Phosphor. Except for the phosphor screen characteristics, it is similar in all respects to the 10WP7A which included a desirable aluminized screen for high brightness and contrast. A unique feature of this tube is the ability to store energy in the phosphor of the screen and later, when irradiated by infrared, to release it in the form of light. The details of the storage characteristics are described in the notes.

GENERAL DATA

Storage Phosphor	Blue
Fluorescence	Yellow-Green
Phosphorescence	Long (variable via the storage characteristic)
Persistence	Electrostatic
Focusing Method	Magnetic
Deflecting Method	50°
Deflection Angle	

ELECTRICAL DATA

HEATER CHARACTERISTICS:

Heater Voltage	6.3 ± 10% volts
Heater Current	0.6 amps.
Peak Heater - Cathode Voltage: ♦	
Heater Negative with Respect to Cathode	
During warm-up period not to exceed 15 sec.	410 volts DC
After equipment warm-up period	180 volts DC
Heater Positive with Respect to Cathode	180 volts DC

DIRECT INTERELECTRODE CAPACITANCES: μfads . (approx.)

Grid #1 to all other electrodes	6
Cathode to all other electrodes	5

DESIGN CENTER MAXIMUM RATINGS:

Collector Voltage ■	12,000 volts DC
Grid #4 Voltage (Focusing Electrode)	-500 to +1000 volts DC
Grid #2 Voltage	700 volts DC
Grid #1 Voltage:	
Negative-Bias Value	180 volts DC
Positive-Bias Value	0 volts DC
Positive-Peak Value	0 volts

CHARACTERISTICS AND TYPICAL OPERATION:

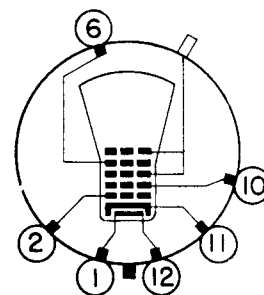
Collector Voltage ■	10,000 volts DC
Grid #4 Voltage (Focusing Electrode) ●	0 to 300 volts DC
Grid #4 Current	-15 to +15 μAdc

MECHANICAL DATA

BASE . . . Small Shell Duodecal
6-Pin

CAP . . . Recessed Small Cavity

BASING



12 M
BOTTOM VIEW

TERMINAL CONNECTIONS:

Pin 1	Heater
Pin 2	Grid #1
Pin 6	Grid #4
Pin 10	Grid #2
Pin 11	Cathode
Pin 12	Heater
Cap	Grids #3 and #5 (Collector)



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ELECTRICAL DATA (Cont'd.)

CHARACTERISTICS AND TYPICAL OPERATION: (Cont'd.)

Grid #2 Voltage	300 volts DC
Grid #1 Voltage □	-28 to -72 volts DC
Line Width ⊕	0.017 inch max.
Spot Position (undeflected) ▲	0.5 inch

MAXIMUM CIRCUIT VALUES:

Grid #1 Circuit Resistance	1.5 meg. max.
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- *Collector, Grids #3 and #5 are connected internally and referred to as Collector. Brilliance and definition decrease with decreasing collector voltage. In general, collector voltage should not be less than 7000 volts.*
- ◆ *Cathode should be returned to one side or to the mid-tap of the heater transformer winding.*
- *With grid #1 voltage adjusted to produce a collector current of 50 μA, with the pattern adjusted for best overall focus. Measured with a 525-line interlaced and synchronized 6 X 8 inch pattern.*
- *Visual extinction of focused 6 X 8 inch raster pattern.*
- ⊕ *Measured with a 525-line interlaced and synchronized pattern. Pattern width adjusted to 90% of minimum useful screen diameter. Ib - 50 μA. Line width is the merged raster height divided by the number of lines (525) (measured in center of tube face).*
- ▲ *The center of the undeflected, focused spot with fall within a circle of 1/2" radius concentric with the center of the tube face, with tube shielded.*

APPLICATION NOTES:

The CK1362 is capable of storing information on the screen for 20 minutes or less after the beam is cut-off, depending on how the tube screen is scanned. Readout is accomplished by irradiating the screen with infrared in the 1 micron range.

The infrared stimulated display is, in effect, a form of controlled persistence. The readout, with nominal excitation, will persist for about 30 seconds. By reducing, however, the voltage to the infrared sources at first and increasing it as desired when the picture is viewed, longer storage times, up to a minute or more, can be obtained. The readout display brightness will be higher with an increase in infrared, but the higher brightness will reduce the usable readout viewing time. If erasure is desired, an increased input to the infrared source will decay the stored image in a few seconds.

Since white light will fog the stored picture and reduce the contrast, it is advisable to reduce even stray light by both the use of a viewing hood on the face of the tube and a filter system on the infrared lamp. A suggested display set-up would be to use an infrared source consisting of a circle of six 25 watt 115-125 V #25 T8 DC G.E. lamp arranged to evenly stimulate the screen. The lamp filters should pass 1 micron or higher (Polaroid #XR70 .010" thickness) and the lamps should be mounted in light-tight boxes. If improved operation is desired, the viewing hood should fit the operator's face and an additional infrared attenuating filter should be placed over the face of the tube. The total number of lamps would be used to erase the screen, while four would be used for readout. These lamps should be operated at 30-75 volts for readout, and 115 V for erasure. The actual arrangement of parts and conditions will dictate the voltage necessary to obtain optimum results. This information is offered for explanatory purposes covering an actual condition. Better combinations for individual requirements may be derived by experimentation.

One suitable application for the CK1362 is in a True Motion Radar Indicator where, after ten minutes operation, an infrared application will show the actual direction of moving objects by the trails present on the radar screen.

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