



T E N T A T I V E

DESCRIPTION:

THE FW-227 IS A 4 INCH IATRON (DIRECT VIEW STORAGE CATHODE-RAY TUBE) THAT PRODUCES A BRIGHT VISUAL DISPLAY OF ELECTRICALLY STORED INFORMATION.

THE TUBE INCORPORATES TWO WRITING GUNS, WHICH ARE ELECTROSTATICALLY FOCUSED AND DEFLECTED. THE TUBE DISPLAYS BRIGHT IMAGES ESPECIALLY SUITABLE FOR PHOTOGRAPHIC PURPOSES BECAUSE OF THE BLUE P-11 PHOSPHOR. THE ABILITY TO WRITE, STORE, AND ERASE INFORMATION AT WILL ARE FEATURES OF THE TUBE. GREY SHADES ARE PRODUCED IN ACCORDANCE WITH AMPLITUDE VARIATIONS OF THE INPUT SIGNALS. THE TUBE HAS THREE ELECTRON GUNS, TWO IDENTICAL WRITING GUNS, WHICH WRITE INPUT SIGNALS ON AN INSULATOR STORAGE MESH, AND A FLOOD GUN WHICH ILLUMINATES THE PHOSPHOR IN ACCORDANCE WITH THE STORED SIGNAL.

GENERAL:

DIMENSIONS	SEE OUTLINE ATTACHED
NOMINAL TUBE DIAMETER	4 INCHES
MINIMUM USEFUL DISPLAY DIAMETER	3 INCHES
PHOSPHOR	P-11 ALUMINIZED
OPERATION POSITION	ANY
WEIGHT	2.8 POUNDS
CATHODE PRE-HEATING TIME	30 SECONDS
FOCUS METHOD	ELECTROSTATIC
DEFLECTION METHOD	ELECTROSTATIC

MAXIMUM RATINGS:

	<u>FLOOD SECTION</u>
VIEWING SCREEN	10 KV
BACKING ELECTRODE	25 V
COLLECTOR	250 V
ANODE #4	150 V
ANODE #3	150 V
ANODE #2	150 V
ANODE #1	80 V

* TRADEMARK OF THE INTERNATIONAL TELEPHONE & TELEGRAPH CORPORATION

WRITE SECTION - EACH GUN

GRID #3	500 V	RESPECT WRITE CATHODE
GRID #2	150 V	RESPECT WRITE CATHODE
GRID #1	-150 V	RESPECT WRITE CATHODE
CATHODE	-1100 V	
PEAK VOLTAGE BETWEEN GRID #2 AND ANY DEFLECTING ELECTRODE OF CORRESPONDING GUN	\pm 500 V	
HEATER-CATHODE VOLTAGE	\pm 125 V	

TYPICAL OPERATING VALUES:

FLOOD SECTION

VIEWING SCREEN	4 KV DC	1.2 MA MAXIMUM
BACKING ELECTRODE	\pm 10 VDC	
COLLECTOR	\pm 180 VDC	2.0 MA MAXIMUM
ANODE #4	\pm 90 VDC	300 UA MAXIMUM
ANODE #3	\pm 20 VDC	500 UA MAXIMUM
ANODE #2	\pm 30 VDC	1.5 MA MAXIMUM
ANODE #1	\pm 60 VDC	2.0 MA MAXIMUM
CATHODE	0 V	4.5 MA MAXIMUM
HEATERS	6.3 V AC OR DC	1.4 A

WRITE SECTION - EACH GUN

HEATER	6.3 V AC OR DC	.6 A
CATHODE	-1000 VDC	1 MA
GRID #1 (CUTOFF - NOTE 1)	-70 VDC	RESPECT WRITE CATHODE
GRID #2		INTERNALLY CONNECTED TO ANODE #2
GRID #3 (FOCUS)	\pm 150 VDC	RESPECT WRITE CATHODE
DEFLECTION SENSITIVITY	60 VOLTS PER INCH,	APPROXIMATELY

RANGE OF OPERATING ADJUSTMENTS:

ANODE #2	\pm 25 TO \pm 50 VDC	ADJUST FOR BEST COLLIMATION
ANODE #3	\pm 15 TO \pm 40 VDC	ADJUST FOR BEST COLLIMATION
GRID #1 CUTOFF	-55 TO -110 VDC	RESPECT WRITE CATHODE, EACH GUN
GRID #3 FOCUS	\pm 130 TO \pm 330 VDC	RESPECT WRITE CATHODE, EACH GUN

* TRADEMARK OF ITT

TYPICAL PERFORMANCE:

RESOLUTION (NOTE 2)	
10% OF FULL BRIGHTNESS	100 LINES PER INCH
50% OF FULL BRIGHTNESS	50 LINES PER INCH
BRIGHTNESS	200 FT. LAMBERTS
WRITING SPEED (EACH GUN)	
28 VOLTS DRIVE WRITING TO 180 FT. LAMBERTS	11000 INCHES PER SECOND
ERASE TIME	5 MILLISECONDS
VIEWING TIME	NO VISIBLE DEGRADATION OF A SIGNAL STORED AT 90% BRIGHTNESS FOR AT LEAST 1 SECOND WITH NO ERASE APPLIED.

ENVIRONMENTAL DATA:

HIGH TEMPERATURE	MIL-E-5272A	PROCEDURE I
LOW TEMPERATURE	MIL-E-5272A	PROCEDURE II
TEMPERATURE-SHOCK	MIL-E-5272A	PROCEDURE I, EXCEPT HIGH TEMPERATURE TO BE 160°F AND LOW TEMPERATURE TO BE -65°F
ALTITUDE		70000 FT.
VIBRATION	6G	10-150 CPS
	2G	150-500 CPS
SHOCK (3 AXES)		
OPERATING	15G	FOR 32 MS, 18 IMPACTS
NON-OPERATING (CRASH SAFETY)	30G	FOR 11 MS, 18 IMPACTS

NOTES:

1. VISUAL CUTOFF OF THE STATIONARY WRITING BEAM IS TO BE DETERMINED IN A DARKENED ROOM. THE WRITING BEAM SHOULD BE FOCUSED AND THE BACKING ELECTRODE VOLTAGE REDUCED TO -20 VOLTS.
2. RESOLUTION MEASURED BY THE SHRINKING RASTER METHOD AT THE CENTER OF THE VIEWING SCREEN.
3. ERASE TIME IS THE SHORTEST TIME THAT INFORMATION CAN BE REMOVED AFTER BEING STORED AT 100% BRIGHTNESS.

* TRADEMARK OF ITT



SPECIAL PRECAUTIONS:

OBSERVE MAXIMUM RATINGS TO AVOID POSSIBLE DAMAGE TO THE TUBE. IN PARTICULAR THE VIEWING SCREEN VOLTAGE SHOULD BE LIMITED SO AS TO NEVER EXCEED 10 KV. THE FULL VOLTAGE SHOULD NOT BE APPLIED TO THE VIEWING SCREEN INSTANTANEOUSLY. AN ORDINARY RC FILTER AT THE OUTPUT OF THE POWER SUPPLY WILL PROVIDE ADEQUATE ASSURANCE THAT THE VOLTAGE BUILD UP WILL NOT BE TOO ABRUPT. THE VIEWING SCREEN POWER SUPPLY SHOULD HAVE A SERIES RESISTOR OF AT LEAST 1 MEG OHM.

REPEATED BOMBARDMENT WITH A HIGH CURRENT FOCUSED BEAM ON A SMALL AREA OF THE STORAGE SURFACE CAN BURN A DARK AREA INTO THE DISPLAY, WHICH MAY REMAIN FOR SEVERAL HOURS OR EVEN PERMANENTLY. THEREFORE, THE DEFLECTION VOLTAGES SHOULD BE APPLIED BEFORE OPERATING THE WRITING BEAM.

ADDITIONAL INFORMATION FOR SPECIFIC APPLICATIONS CAN BE OBTAINED FROM THE

ELECTRON TUBE APPLICATIONS SECTION
ITT COMPONENTS DIVISION
POST OFFICE BOX 412
CLIFTON, NEW JERSEY

* TRADEMARK OF THE INTERNATIONAL TELEPHONE & TELEGRAPH CORPORATION

