

ML-8139 Direct-View Storage Tube

DESCRIPTION

The Machlett Type ML-8139 is a 5-inch diameter direct-view storage tube that is capable of bright visual displays of half-tone images. The tube features a high-resolution electrostatically focused write gun and a flood (viewing) gun. The write beam is deflected magnetically. The useful storage time for written information is approximately one minute. The erasure of information can be gradual or can be accomplished instantaneously.

The ML-8139 incorporates a magnetic shield to minimize magnetic fields which might affect the low-velocity flood-gun electrons. The tube is potted in this shield making it suitable for high-altitude operation, as well as sea-level applications.

GENERAL CHARACTERISTICS

Optical

Phosphor Type	P20	Aluminized
Fluorescence	Green Yellow	
Phosphorescence	Green Yellow	
Faceplate	Flat, Optical Quality	

Mechanical

Overall Length	11-1/8 + 3/8	inches
Maximum Diameter	5.670	inches
Useful Screen Diameter	4	inches
Neck Length	4-7/8	inches

Bases:

Flood gun (Miniature 7-pin)	JEDEC	E7-1
Write gun (8-pin)	JEDEC	E8-11*
Terminals	See outline drawing	
Mounting Position		Any

* Fits standard vidicon socket

Electrical

Flood and Write Guns:

Heater voltage, (AC or DC)	6.3	volts
Heater current	.6 ± 10%	Amps

Write Gun:

Focusing	Electrostatic
Deflection	Magnetic

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MAXIMUM RATINGS

All voltages shown are with respect to flood-gun cathode, unless otherwise specified.

View-Screen Voltage	10000	volts
View-Screen Dissipation	10	watts
Storage-Mesh Voltage	0 to + 200	volts
Collector-Mesh Voltage	300	volts
Anode No. 3 (Collimating) Voltage	300	volts
Anode No. 2 Voltage (Both Guns)	200	volts
Anode No. 1, Flood Gun, Voltage	200	volts
Grid No. 1, Flood Gun, Voltage:		
Negative-bias value	125	volts
Positive-bias value	0	volts
Positive-peak value	2	volts
Grid No. 1, Write-Gun, Voltage		
with Respect to Write-Gun Cathode:		
Negative-bias value	125	volts
Positive-bias value	0	volts
Positive-peak value	2	volts
Peak Heater-to-Cathode, Write-Gun, Voltage		
with Respect to Write-Gun Cathode:		
Heater negative with respect to cathode	180	volts
Heater positive with respect to cathode	180	volts
Anode No. 1, Write-Gun, Voltage (Focus Electrode)	-3000	volts
Cathode, Write-Gun, Voltage	-3000	volts

TYPICAL OPERATING CONDITIONS

Viewing Section

Screen Voltage	8000	volts
Storage Mesh Voltage	5	volts
Collector Mesh Voltage	120	volts

Flood Gun

Cathode Voltage	0	volts
Grid No.1(Control) Voltage	0 to -30	volts
Grid No. 2 (Anode No. 1) Voltage	80	volts
Anode No. 2 Voltage (Both Guns)	0 to 15	volts
Collimating Electrode Voltage (Anode No. 3)	20 to 40	volts

Write Gun

Cathode Voltage	-2500	volts
Grid No. 1 (Control-Grid) Voltage		
Referenced to Write-Gun Cathode	-35 to -90	volts
Anode No. 1 (Focus electrode) Voltage		
Referenced to Write-Gun Cathode	350 to 750	volts

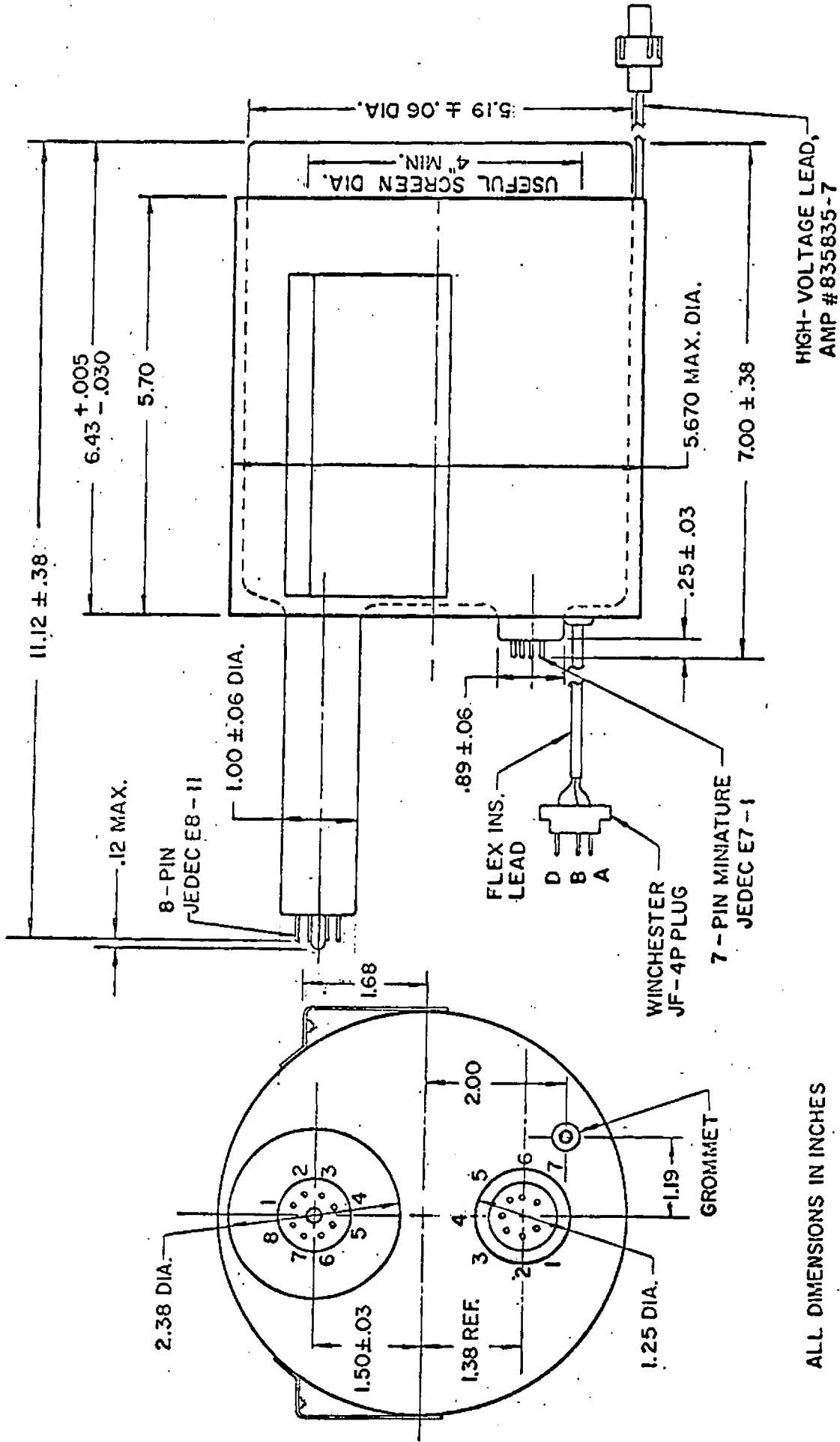
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Currents

Viewing Screen	0 to 500	μ A
Storage Mesh	0 to 75	μ A
Collector Mesh	< 2	mA
Collimator (Anode No. 3)	< 2	mA
Anode No. 2, Both Guns	< 2	mA
Grid No. 2 (Anode No. 1), Flood Gun	< 25	μ A
Cathode, Flood Gun	0 to 2	mA
Anode No. 1, Write Gun (Focus)	< 1	μ A
Cathode, Write Gun	0 to 1500	μ A

PERFORMANCE

Writing Speed (10 μ A beam current)	100000	inches/sec.
Light Output at 8 kv	1600	f.l. min.
Written Resolution (10 μ A beam current)	60 to 80	lines/inch
Erase Time	50 to 250	milliseconds
Half Tones	5	minimum



ALL DIMENSIONS IN INCHES

ED-27380/RI

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TABLE A

PIN CONNECTIONS

Flood-Gun Socket

7-Pin JEDEC E7-1

Pin 1 -- Anode No. 1
Pin 2 -- Grid No. 1
Pin 3 -- Heater
Pin 4 -- Heater
Pin 5 -- I. C. (Do not use)
Pin 6 -- Anode No. 2 (both guns)
Pin 7 -- Cathode

Write-Gun Socket

8-Pin JEDEC E8-11

Pin 1 -- Grid No. 1
Pin 2 -- Heater
Pin 3 -- Heater
Pin 4 -- I. C. (Do not use)
Pin 5 -- Cathode
Pin 6 -- I. C. (Do not use)
Pin 7 -- No. Connection
Pin 8 -- Anode No. 1 (focus)

Flexible Lead Connections

A Pin, Plug JF-4P -- Storage Mesh
B Pin, Plug JF-4P -- Collector Mesh
C Pin, Plug JF-4P -- Vacant
D Pin, Plug JF-4P -- Collimator
AMP Flexible Lead -- View Screen