



F4210 (AN/AVS-6)



F4949 (AN/AVS-9)



F5050 (AN/PVS-23)

# F9800M22G/M24G

## IMAGE INTENSIFIER, GEN 3, 18-MM

### F9800 SERIES (MX-10160) M22G/M24G

#### BENEFITS

Wide range of performance levels

White Phosphor (P-45) available

For more than 50 years, Harris Corporation (Harris) has provided the military with premier vision-enhancing solutions. As the world's leading manufacturer of Generation (Gen) 3 image intensification technology, Harris continues to work hand-in-hand with customers to expand night vision and vision-enhancing capabilities, technologies, and resources.

Harris' Gen 3 F9800M22G/M24G image intensifier tubes are designed for use in all night vision systems that use an inverting tube, such as aviator goggles, ground systems, and weaponsights, as well as in OEM systems requiring this same tube type. Harris offers tube options with different performance levels that comply with the U.S. DoS and DoD guidelines for Gen 3 export.

#### DESCRIPTION

Each model in Harris' F9800 Series of Gen 3 18-mm image intensifier tubes consists of a high-efficiency GaAs photocathode bonded to a glass input window, a microchannel plate (MCP) current amplifier, and a P-43 phosphor screen deposited on an inverting fiber-optic output window. The 9800 Series is also offered in white phosphor configurations (F9400).

The Gen 3 photocathode is very sensitive to low-radiation levels of visible and, especially, near infrared light. It provides very high signal-to-noise ratio (SNR) for extended detection ranges at very low light levels. The 6-micron channel spacing in Harris' MCP provides exceptional resolution and extended detection ranges in low-light conditions. The MCP has an ion-barrier film that

preserves photocathode sensitivity during operation, greatly extending the life of Gen 3 tubes compared to Gen 2 or other types of unfilmed tubes, and end-of-life performance criteria is much greater than that of Gen 2.

Harris continues to improve Gen 3 F9800 image intensifier tubes to increase operational range and situational awareness for the user. Equipped with the world's fastest auto-gated power supply, the F9800 Series provides outstanding performances in high-light or light-polluted areas such as urban environments, quickly responding to bright light sources and preserving high-light resolution faster and more efficiently.

**EXPORT MODELS**

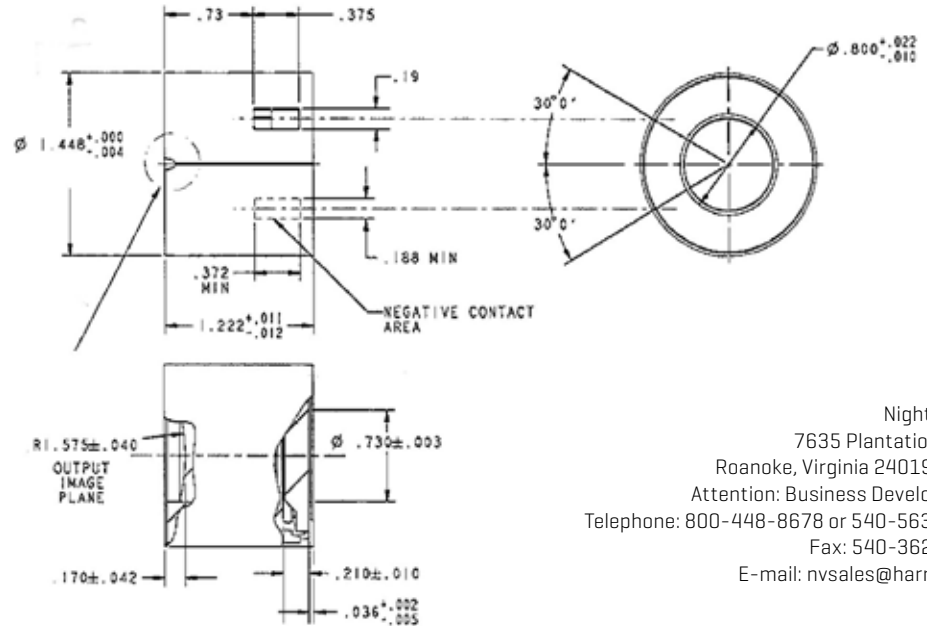
Harris offers F9800 models for export based upon maximum allowable figure of merit (FOM). FOM is the product of resolution, in line pairs per millimeter (lp/mm) multiplied by SNR as measured by U.S. industry standards.\*

\* Resolution and signal-to-noise ratio calculated by other methods may not be equivalent.

SPECIFICATIONS FOR: **F9800M22G/M24G, IMAGE INTENSIFIER, GEN 3, 18-MM**

TUBE MODEL	F9800M22G	F9800M24G
Resolution, lp/mm, (Minimum)	72	72
High-Light Resolution @20 fc (min) lp/mm	40	45
Photocathode Sensitivity (Minimum)		
@ 2856° K, $\mu\text{A}/\text{lm}$	2200	2400
@ 880 $\mu\text{m}$	120	130
Signal/Noise Ratio (Minimum)	28	30
FOM (Maximum)	2200	2400
EBI, $\times 10^{-11} \text{ lm}/\text{cm}^2$ (Maximum)	2.5	2.5
Luminous Gain, fl/fc		
@ $2 \times 10^{-6}$ fc (Minimum)	50000 - 80000	60000 - 80000
@ $2 \times 10^{-4}$ fc (Minimum)	14000 - 21000	14000 - 21000
Output Brightness, fl @1 and 20 Fc	2.8 - 4.2	2.8 - 4.2
Output Brightness Uniformity (Maximum)		
@ 2856° K, and @ 830 $\mu\text{m}$	3:1	3:1
MTF (Minimum)		
@ 2.5 lp/mm	Info Only	Info Only
@ 7.5 lp/mm	Info Only	Info Only
@ 15.0 lp/mm	61%	61%
@ 25.0 lp/mm	38%	38%
Photocathode Diameter, mm (Minimum)	17.5	17.5
Reliability, Hrs. (Minimum)	10000	10000
Power Supply	Auto-gated	Auto-gated
Maximum Spots Allowed in Each	Zone	Zone
Spot Size (in.)	1 2 3	1 2 3
>.012 or Larger	0 0 0	0 0 0
>.009 - .012	0 0 0	0 0 0
>.006 - .009	0 1 1	0 1 1
>.003 - .006	0 2 2	0 2 2

**DIMENSIONS (INCHES)**



**About Harris Corporation**

Harris Corporation is a leading technology innovator that creates mission-critical solutions that connect, inform and protect the world. The company's advanced technology provides information and insight to customers operating in demanding environments from ocean to orbit and everywhere in between. Harris has approximately \$8 billion in annual revenue and supports customers in 125 countries through four customer-focused business segments: Communication Systems, Space and Intelligence Systems, Electronic Systems, and Critical Networks.

Night Vision  
 7635 Plantation Road  
 Roanoke, Virginia 24019-3222  
 Attention: Business Development  
 Telephone: 800-448-8678 or 540-563-0371  
 Fax: 540-362-4979  
 E-mail: nvsales@harris.com

FLORIDA | NEW YORK | VIRGINIA | BRAZIL | UNITED KINGDOM | UAE | SINGAPORE

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