

## VIPER II 40° Helmet Mounted Display

VIPER II is a lightweight binocular visor projected Helmet Mounted Display, based on the successfully flight proven VIPER monocular Helmet Mounted Display design concept. The visor combines and reflects dynamic flight data symbology and raster information to the pilot, projected from two high efficiency miniature CRT displays via two optical relay assemblies. The highly efficient optical design allows the use of a standard spherically curved aircrew visor, with a neutral density partially reflecting combiner coating. The visor coating ensures high display brightness, while maintaining high real world transmission with no coloration. Use of a spherical visor shape means display accuracy is insensitive to visor rotation, thus enabling partial raising of the visor and still maintaining an accurate display. The VIPER II display module can be fitted to all sizes of USAF and USN fixed wing helmets and uses existing liner systems. The optical relay system for each eye channel can be adjusted for individual interpupillary settings with no changes or modifications to the visor. The HMD can be configured to provide symbology only, display video from an external sensor, or a hybrid mode of video with symbology overlay. Both left and right eye relay optics are identical and therefore be interchangeable or have one removed to provide a monocular only display if required. Provision is made for a lightweight video sensor to be fitted to either side of the display module. When mixed with scan converted HMD symbology, it provides an excellent mission review and training capability. Additionally electrical output image intensification devices can be incorporated onto the module to provide an image intensified video picture. Further enhancements can be offered by fitting the VIPER II display module to the GEC-Marconi Avionics custom built lightweight helmet shell, offering reduced head supported weight.

The VIPER II Helmet Mounted Display can be operated from the GEC-Marconi Avionics Electronics Unit and Cockpit Control Unit.

These can be configured to provide the following functions:-

- 1553 Bus Interface
- Symbol Generation
- Display Drive
- High Voltage Power Supply
- Display Controls
- Video Sensor Interface
- Head Tracker Interface

When coupled to a suitable Head Tracking System, such as the GEC-Marconi Avionics DC Magnetic System, the VIPER II system will provide full space stabilised symbology and video pictures.



Displays Division

## Performance Summary

- Field of View 40° Binocular fully overlapping
- Exit Pupil >15mm on axis
- Eye Relief >70mm
- Resolution Better than 1mRad
- Adjustments Interpupillary range 60mm to 75mm
- Transmission Real world >70%
- Visor Standard spherical aircrew visor with neutral density reflection coatings giving no real world coloration
- Optical System Two high efficiency optical relays and single central brow mirror
- Display Module One size module fits the full range of Gentex HGU-33/P and HGU-55/P helmets
- Display Full stroke, raster and hybrid capability
- Weight 4.2 lbs (excluding oxygen mask)
- Logistics Single size visor and module for all helmet sizes. Interchangeable left and right eye relay optics can be adapted to monocular only by removal of one relay optic.
- Enhancements Interface for color camera  
Interface for electrical output image intensifiers  
Interface with GEC-Marconi Avionics lightweight helmet for mass savings.



*Complementary to our existing family of helmets.  
Above Crusader, below Viper I.*

### GEC-Marconi Avionics Limited Displays Division

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**GEC-Marconi**  
AVIONICS

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