



Avionics

HEAD UP DISPLAY

The SHUD-1000 is a state-of-the-art, dual or single refractive combiner, capable of displaying Attack, Navigation and Landing information. The main feature of the graphic engine is to generate the symbology handler and router to drive the HUD formats in cursive only or in cursive on raster mode, managed through a dual redundant 1553B Remote Terminal.

The SHUD-1000 combines high performance and low cost to make it the best solution for new military aircraft or for upgrades to existing aircraft and optimised at customer request.

It also incorporates an intelligent Up Front Control Panel NVIS compatible capable to perform Mission Data Entry (MDE) functions and to interface the avionics system either as an additional Remote Terminal unit on a 1553B bus or via a RS422 dedicated serial link. A colour TV Camera can be installed on the SHUD to record the projected symbology superimposed to the image of the external sight.

The SHUD-1000 also has autonomous capability to project a reticule used as a Stand By Site (SBS) in reversionary mode, in case the Graphic generator module fails, by appropriate command on the UFCP. The SHUD Equipment will be operative in the full aircraft flight envelope and will be able to display the required data in any aircraft attitude.

The SHUD-1000 (including the UFCP) is compatible with NVIS GEN III, Type 1 or 2, Class B MIL-STD-3009. The SHUD-1000 is a plug-in unit facilitating therefore its installation and removal without need of any special tools.

The SHUD-1000 combiner is provided with a special mechanical interface to the PDU main body that guarantees its interchangeability without mechanical or electronic reharmonisation.

SHUD-1000

TECHNICAL CHARACTERISTICS

PHYSICAL CHARACTERISTICS

Dimensions	L 497mm x W 170mm x H 358mm (including combiners and UFCP)
Weight	Max 16.0Kg
Cooling system	Natural convection only
UFCP Controls	Forty-eight momentary pushbuttons configurable at customer request. Rotary controls for display brightness cursive brightness and raster contrast and brightness

SHUD-1000 CHARACTERISTICS

Display Type	Dual Refractive Combiner
Exit pupil	140mm
TFOV	25° circular
Combiner displacement error	< ± 0.1 mrad TFOV
Combiner distortion error	< ± 0.2 mrad TFOV
Accuracy	< 0.3 mrad - centre < 1.3 mrad -0° to +5° circular < 3.0 mrad -5° to +10° circular
Parallax	Vertical < 0.7 mrad -0° to +12° circular Horizontal < 0.7 mrad -0° to +12° circular
NVIS Compatibility	Type II, class B, MIL-L-85762A
Brightness	0 - 10000 cd/m ² Cursive 0 - 300 cd/m ² Raster
Writing Speed (@ 6000 cd/m ²) 17°/ms	Max 272°/ms
Contrast (@ 100000 lux)	> 1.2:1

ELECTRICAL INTERFACES

Raster Video Input	One monochrome video signal stanag 3350 (including combiners and UFCP)
System communications	One dual redundant 1553B RT interface for the HUD One 1553B RT interface for the UFCP One RS422 serial link
Power	28VDC aircraft according to MILSTD-704E 5VDC, 0.5 A max, lighting power for UFCP backlight
Power consumption	170W max

ENVIRONMENTAL CHARACTERISTICS

Temperature	-40°C to +55°C - MIL-STD-810E (operating) -55°C to +80°C - MIL-STD-810E (storage)
Vibration	0.033 g ² /Hz, MIL-STD-810E, Method 514.4, Procedure I
Altitude	Operating on continuous duty from 107.9kPa at sea level to 14.7kPa approximating an altitude of 45,000ft
Humidity	As per MIL-STD-810E, Method 507.3, Procedures II o III
Shock	As per MIL-STD-810, Method 516.4, Procedures I and V
EMI/EMC	As per MIL-STD-461D / MIL-STD-462D
Reliability	> 3300hrs

