LIGHTWEIGHT VIDEO SIGHT II (LVS II)
FIRE CONTROL SYSTEM

Crew Served Weapons Fire Control System

KEY SUB-SYSTEMS

Color Video Display	Full color, high resolution, LCD display with graphic user interface overlays
Ballistics Processor	High performance computer processor module which calculates the corrected aim point
Day Optics	Full color, high resolution CMOS day camera
Night Optics	Latest generation 17mm, 640 x 512, 30 Hz thermal imager
Laser Range Finder	Accuracy to 2,590 meters, ANSI Z136.1 Class 1M
Power	Single BB-2590 or BA-5590 internal or external 28 VDC

The Crew Served Weapons Lightweight Video Sight II (LVS II) is an integrated module that gives the operator the ability to detect, recognize, identify and engage targets in both day and night conditions through day color video and night thermal imaging cameras. Developed by General Dynamics, the system allows operators to engage targets using the most sophisticated fire control available for crew served weapons. The system is designed and integrated with the MK47 and MK19 40mm Grenade Machine Guns as well as the M2/M2A1 .50 caliber machine gun.

The system is operated by controls mounted to the back plate of the host weapon, which allow the operator to navigate a graphical user interface presented on the video display. A laser range finder enables the operator to quickly and accurately determine distance to target. This information, combined with data from integrated sensors (air temperature, atmospheric pressure, sight pitch and sight cant) and various user inputs (such as ammunition type, range wind, and cross wind) are fed into a ballistic solution algorithm (BSA) and used to calculate the ballistic solution. The solution is presented to the operator as a corrected aim-point on the color LCD flat panel. The LVS II is fully compatible for use with AN/PVS-7 or equivalent night vision goggles.

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Another key feature of the LVS II is the method of super elevation, required when firing 40mm ammunition. This allows the operator to maintain the target image within the operator's field of view of the LCD display while super-elevating the weapon to obtain a correct ballistic solution. The LVS II is also fully compatible with the MK285 40mm Air Bursting Ammunition, a round which is fully integrated with the MK47.

The LVS II is designed to replace the existing lightweight video sight currently used with the MK47 MOD 0 Advanced Lightweight Grenade Launcher, while retaining the menu options to minimize training costs.

KEY SUB-SYSTEM DESCRIPTIONS

Video Display

The LVS II uses a color 1024 x 768 flat panel LCD to present the operator with target area imagery overlaid with a graphical user interface (GUI). The display has controls for brightness, contrast and GUI intensity. A removable hood serves as a day time sun screen and protects against spill lighting at night.

Ballistics Processor Module (BPM)

The heart of the LVS II is a high-performance computer processor that executes a ballistic solution algorithm (BSA). The BSA calculates and displays a corrected point of aim as a displaced aiming reticle via the GUI. To calculate the data, the BSA uses range-to-target data provided by the integral laser range finder, barrel super elevation angle and pitch and cant angles provided by internal inclinometers, ambient atmospheric temperature and atmospheric pressure provided by internal sensors, and manual operator inputs for cross wind and range wind coupled with the specific exterior ballistic characteristics of the selected ammunition type.

Day Optics

The LVS II uses a full color, high resolution day video camera that provides a fixed 3X standard level of magnification with a 5 degree horizontal and 4 degree vertical field of view. The camera fields of view are digitally scaled to match those of the thermal camera, allowing for transition between sensors while maintaining equivalent image representation. User selectable 2X E-zoom (6X net magnification) enables close-in target viewing for both day and thermal channels.

Night Optics

The LVS II uses a 17μm, 640 x 480, 30 Hz thermal imager that provides a fixed 3X standard level of magnification with a 5 degree horizontal and 4 degree vertical field of view. The detection recognition identification performance capabilities are comparable to those of the currently fielded AN/PAS-13 heavy thermal weapon sight.

Laser Range Finder (LRF)

The LVS II uses an integrated 1,550 nanometer LRF that is eye safe per ANSI Z136.1 Class 1M and undetectable with night vision devices based on image intensifier tubes. The LRF has a 10 to 5,000 meter total measuring range and a plus or minus one meter range accuracy to a distance of 2,590 meters.

Power

The LVS II is powered by a single BB-2590 or BA-5590 internal back-up battery, which will support a minimum of eight hours continuous operation on a fully charged battery. The system can also accept external 28 VDC power, allowing operation using auxiliary power sources such as vehicle power or external battery packs. While operating from an external auxiliary power source, the system recharges its internal/integral battery, provided the battery installed is an appropriate rechargeable type, such as the BB-2590.

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