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Border Patrol Enlists High-Tech Surveillance System with Galil Controller

The Night Hawk HT helps the U.S. Border Patrol in its fight against illegal and unwanted crossings.

They are the guardians of our Nation's borders. They are America's frontline against drug traffickers, terrorists and illegal immigrants. And with violence on the rise and perhaps as many as 850,000 people unlawfully entering the United States per year since 2000, the U.S. Border Patrol has its hands full.

Stretched thin along over 6,000 miles along the US-Mexican and US-Canadian borders, the U.S. Border Patrol employs helicopters, sniffing dogs, the Texas Rangers, unmanned aircraft drones, all-terrain vehicles, watchtowers, horse-mounted agents and imposing, 20-foot tall steel walls to help fight the fight.

But it's simply not enough.

To fill in the gaps and increase security, the Department of Homeland Security's (DHS) Customs and Border Protection (CBP) agency in 2006 accelerated efforts to build a "virtual fence" using steel towers equipped with infrared sensors, remotely operated cameras, communications devices and radar.

Aiding the U.S. Border Patrol in the New York (near Niagara Falls) and Detroit sectors is the Night Hawk High Torque (HT) Surveillance Platform developed by PVP Advanced Electro-Optical Systems, Inc. (PVP) of Tustin, CA in cooperation with L3-CE of Mason, OH.

With an off-the-shelf DMC-4020 two-axis Ethernet motion controller from Galil Motion Control handling the azimuth and elevation motors and delivering a positioning accuracy of .05 degrees, each Night Hawk HT is capable of providing round-the-clock, 360 degree surveillance for ranges up to 20 miles.

The Galil controller "…allows the user to point the sensors at the desired target or region of interest," said Geoff Miller, program manager at PVP. "The sensors are used to locate and track targets at long range using narrow fields of view. This requires the ability to make very small and accurate movements to keep the targets within the field of view. Also, we are at times cued to the targets using radar or other sensors, so precise pointing is required to locate the target."

Like its stabilized direct drive version, the Night Hawk HT features a high-performance, rugged and very flexible "Pan and Tilt" gimbal. It accepts a wide range of sensors and video tracker configurations, and can function continuously under the most extreme conditions without the need for scheduled maintenance.

In addition to its torque limit, tracking error and modulo position features, a key factor for PVP in selecting the DMC-4020 is that it provides both the servo controller and motor drivers as a single integrated package. Not having to purchase and integrate two separate components saved space, wiring, programming time and cost.

The Galil controller also sped production, helping PVP move from concept to prototype within four months, and to shipping fully operational production units in just six weeks.

"It supported rapid integration with the motors in less than one day, and uses the DMC programming language which we are very familiar with from our CPV and existing Night Hawk products," said Miller.

"The Night Hawk HT system, which uses the DMC-4020, was designed to be a no compromise, lower cost option for users who did not require the ultra high pointing accuracy and stabilization of the drive Night Hawk," Miller added.

PVP also designed the Night Hawk HT so that all command and control can be funneled through a single Ethernet interface. It also supports multiple user interface options including a standard graphical user interface, TASS ICD-001 and an integrated ITS interface which supports the user interface currently deployed by the U.S. Border Patrol.

According to an August 2009 article in Photonics Spectra, the DHS expects the "virtual fence" to help border patrol agents identify and intercept 70 to 85 percent of all illegal passages in the U.S. The effectiveness of such high technology, including PVP's Night Hawk HT, is significant. ■

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