



Application Solutions Case Study: Airborne and Battlefield Systems

Product Name - Hornet



Elmo
Motion Control
www.elmomc.com

Machine Description

In today's world, defense is a huge concern for all countries. Weapons management and troop deployment are only two of the many critical factors that can affect the outcome of field operations.

Ground-based and aerial antennas are used for surveillance and reconnaissance on foot and in the air. These systems are critical for successful field operations and for human safety. Most of these systems are deployed in desert and other harsh environments, adding the requirement for dependable and reliable operation to the already numerous challenges in these applications.



Figure 1: Ground Based Antenna



Figure 2: Aerial Vehicle Antenna

The Challenge

- Accurate tracking is required for the telemetry
- The environment requires operation in extended temperatures
- Direct upgrade from stepper-based system
- The application has demanding requirements for size and weight

The Elmo Solution

The Hornet digital drive was selected because it provides a compact form factor is rated suitable for extended environmental conditions and includes sophisticated on-board intelligence. The Hornet provides the most efficient and advanced servo control in a very compact package.



Figure 3: Hornet Intelligent Digital Drive

Because the majority of the installation sites are desert based or in aerial vehicles, the ability to withstand extended temperature ranges is a critical factor in selecting the drive and the other electronic components in the system.

The Hornet is a member of Elmo's ExtriQ family of digital drive options. These ExtriQ based products conform to MIL-Spec standards, not only for extended temperatures, but also for extended shock and vibration. In addition, because incremental or digital encoders are typically affected by harsh environments (temperature, shock, vibration), resolvers which are more robust in harsh environments are used. The Hornet's compact, built-in resolver interface provides an additional benefit in this application.

Connectivity

The Hornet is a PCB mounted device which enables an efficient and cost effective implementation. This allows the customer to simply integrate the digital drive and other electronic systems/circuits on a single PCB board. The Hornet's compact size allows the user to mount the drive on or near the actual motor or load assembly, thus minimizing cable lengths and increasing reliability.



Figure 4: Hornet digital drive installed on Elmo's evaluation PCB offering.

Command and feedback interfaces used in this application are:

- Step & Direction
- RS-232
- Resolver

Components

- HOR-5/60R
- Hornet Digital drive, 5 A cont / 10 A peak, 7.5-59VDC equipped with Resolver feedback.

Why Elmo:

- Extreme Environment Package Elmo Hornet+ MPC Tetra Compact
- Compact size and low weight
- Command and feedback Interfaces
- Step & Direction
- RS-232 Communication
- Resolver Interface
- Positioning Performance
- Active tracking accurate to 0.1 degree

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