

Precision Timing for Airborne Reconnaissance



Why This Case Study Is Relevant

It demonstrates the importance of resilient, rugged timing platforms for Aerial Intelligence, Surveillance and Reconnaissance (AISR) systems.

Background

The US military needed a time synchronization solution for critical reconnaissance data as part of an aircraft modernization program. To accurately receive sensor data, receivers on surveillance aircraft must stay on frequency and the recorded data must be time stamped for data center synchronization across the military communications network. Customer requirements included a proven precision time and frequency reference system that could:

- Receive military encrypted reference signals from GPS satellites
- Perform consistently during aircraft vibration signal interference and other harsh conditions
- Provide multiple signal outputs such as IRIG, AMDCLS, 10 Mhz and 1PPS

Solution

The customer selected Orolia's SecureSync®, the first Defense Information Systems Agency (DISA) approved military timing and synchronization platform in a rack-mounted system. SecureSync was enhanced with a rugged chassis designed to meet the specific high vibration profile of the customer's aircraft. In addition, a low-phase noise crystal oscillator minimized signal interference from vibration. A GPS SAASM unit received encrypted reference signals, and specific outputs were configured to pass the signal to units in other areas of the aircraft. This innovative AISR support system also provided a 10 MHz frequency reference and a 1 PPS signal for precision time stamping as data was received.



Results

Multi-sensor AISR systems collect intelligence day and night, in all weather conditions, to provide real-time actionable information to tactical commanders and combat teams across the full range of military operations. To analyze and disseminate the data accurately, precision frequency and time stamping systems are required. The SecureSync timing and frequency platform provided a rugged, configurable solution to collect and synchronize data using encrypted military GPS signals. Orolia's unique solution, including sensor to sensor communications, compatibility with the aircraft's vibration profiles, and configurable outputs, delivered a cost-effective solution to meet program requirements. This military customer is now able to conduct critical surveillance and reconnaissance missions with confidence in their data precision and reliability.