UNMANNED SURVEILLANCE SYSTEM
For Rapidly Deployable Area Surveillance Applications
Video surveillance of convoy routes, made possible by the Harris packaged system solution, can enhance troop safety and mission success.
Here are many systems available for providing video for fixed installation security. However, there are no cost-effective solutions for providing nomadic, unmanned video surveillance of areas obscured from the base or that cover the lines of communications connecting remote bases—until now.

Procuring a complex C4ISR* system is usually no easy matter. Too often customers spend substantial time and resources, only to find themselves behind schedule and over budget, with a system that does not meet their requirements. Harris Corporation’s new, simplified approach to C4ISR systems procurement uses pre-engineered system configurations that provide fast, cost-effective solutions to today’s most critical operational needs, such as tactical surveillance.

Instead of designing a unique system for every customer, Harris has developed a comprehensive family of preconfigured systems. Each system is fully integrated and includes all equipment, cables, software, and manuals, with training and installation available. Every system has undergone extensive testing and can be relied upon to meet its objectives.

This executive summary describes the Rapidly Deployable Area Surveillance System (RDASS) and outlines the advantages of our packaged C4ISR systems:

- **Low Risk** – Field proven and comprehensively tested systems provide existing, cost-effective solutions
- **Fast Delivery** – Complete systems can be delivered in a matter of months to meet urgent operational needs
- **Simplified Procurement** – Systems can be purchased as off-the-shelf items, eliminating long system definition and development phases
- **Phased Implementation** – Packaged systems form building blocks that enable the incremental acquisition of capability
- **Flexibility** – Systems are readily customized and can be integrated by in-country partners

All this from Harris, a company with over 50 years of large-scale international communications systems experience, the most comprehensive range of tactical communications products, and world-class systems engineering and integration capabilities.

*C4ISR = Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance

Contact Harris now to discuss your C4ISR systems needs: www.harris.com/systems
Warfighters on the tactical edge have never been more vulnerable. Operating in small teams, their forward bases, camp perimeters, and avenues of approach are both hard-to-patrol and critically important for maintaining their units’ defense and security. Lines of communication between these deployed personnel and their supporting headquarters can be easily attacked with hastily emplaced IEDs, snipers, and other asymmetric threats. Commanders must at the same time deal with the realities of manpower and budget constraints.

Federal and paramilitary forces face similar challenges as they try to secure their country’s borders from transnational terrorists, drug trafficking organizations, and illegal immigrants. Also challenged to operate with constrained resources, they may need to detect and identify threats in remote border regions in order to prioritize a response.

A video surveillance capability is the logical answer for observing and protecting these perimeters, borders and avenues of approach with a minimum of personnel. Much more so than with still image reports, long-range video enables the user to track a target’s movements at standoff ranges, so that intent can be determined quickly enough to effectively respond to threats.

Other surveillance methods have proven to be too costly and complicated (unmanned aerial vehicles—UAVs), ineffective due to limited persistence and range (micro-UAVs), or too difficult and dangerous to emplace and maintain (covert ground sensor-based imaging or video systems). What is needed is an integrated, portable video surveillance system that mitigates the above drawbacks while meeting the rigorous and specific requirements of the warfighter and border security force at a reasonable cost. Such a system must be:

- Able to be emplaced and operational quickly, minimizing manpower requirements and allowing commanders to respond to the fast-changing tactical environment
- Unmanned, with a robust, reliable system for transmitting the video data and for controlling the camera and other deployed equipment
- Deployable at ranges of tens of kilometers, so that appropriate decisions about threats can be made and countermeasures can be taken in a timely fashion
- Able to withstand harsh environments such as high wind, blowing sand, and extreme temperatures
- Compact and rugged enough for deployment by vehicle or helicopter to remote areas
- Able to support multiple, simultaneous camera emplacements, for wide area coverage
- Sustainable, with long-lasting, low-cost power supply that requires little maintenance, to reduce operating expenses

Protecting warfighters’ camp perimeters and other critical remote areas

THE OPERATIONAL CHALLENGE
The Harris Rapidly Deployable Area Surveillance System (RDASS) provides sensor-cued and operator-controlled video surveillance of the area of interest quickly, securely, and cost-effectively. In short, the trailer-mounted system provides a reliable, at-the-ready, wide-area persistent surveillance capability for protecting forward bases—or for keeping watch over other remote areas—for warfighters, paramilitary groups, or security forces facing both conventional and asymmetric threats.

The Harris Rapidly Deployable Area Surveillance System provides commanders:

- **Real-Time Intelligence** — Real-time video of remote areas enables commanders to efficiently determine threat location, size, maneuver direction, equipment, and likely intent.
- **Early Warning** — Accurate, early detection and identification of potential threats outside of direct fire weapon range.
- **Force Multiplier** — Target-activated remote video acts as a virtual combat outpost to enable resource-constrained commanders to make timely decisions without the “fog of war.”
- **Video Management and Storage** — Video surveillance data can be used to provide evidence to prosecute criminals, review operations, determine patterns of life, and train future forces.
- **Proven Capability** — The system is available now, to help commanders deal with difficult force protection scenarios from conventional and asymmetric threats.

The Rapidly Deployable Area Surveillance System can transmit real-time video feeds to tactical operations centers, where intelligence officers and agents can review and correlate the data.
Providing unmanned surveillance now, without the cost and risk of a custom program

The Rapidly Deployable Area Surveillance System (RDASS) utilizes the advanced wideband communications capabilities of our Falcon III® tactical radio and video compression products integrated with leading-edge partner video systems. It provides nomadic surveillance capabilities which can be deployed at a moment’s notice to enhance situational awareness and target detection capabilities.

The standard RDASS consists of two trailers—each of which contains all the necessary equipment, power sources, and software to provide unmanned video surveillance at ranges of more than 20 kilometers (terrain dependent) from the monitoring station. This capability supports the following types of scenarios:

- Sensors have indicated a threat has crossed a mountainous border region. The RDASS trailers are deployed into the flat lands adjacent to the mountains, so that the threats can be detected as they descend into the valley. The remote operator can track the threats using the pan/tilt/zoom cameras, and a response team can be directed to intercept them.

- A platoon has been tasked with fortifying a key avenue of approach in preparation for a larger scale movement. RDASS trailers are towed into place by platoon vehicles and used to provide surveillance of the approaches. After the main force has passed through the area, the RDASS equipment is quickly stowed and the platoon can join its company.

- Convoys are often attacked in a particular section of a road through a rugged area. An RDASS trailer is deployed by helicopter to a hilltop overlooking the area. Video of the road is streamed back to base so that this critical segment of the road is under constant surveillance.

- A forward operating base (FOB) has mast-mounted video surveillance cameras at the guard posts; however, several ravines and small valleys cannot be seen directly from the camp. The RDASS is deployed beyond the base perimeter to observe these areas. Ground sensors are deployed in the low areas, so that the cameras are automatically panned to an area of interest and audible and visual alarms are generated at the FOB monitoring station through the Harris Falcon C2View application. This slew-to-cue capability allows the operator to perform other missions until targets are detected in the area.

Using the standard rechargeable batteries and diesel generator, the RDASS can operate for more than a month without resupply. The system has been designed to accept optional solar panels so it can be deployed for even longer periods of time; alternatively, the solar power source can serve as a backup capability for the generator. The achievable mission duration for the solar power system will depend on the size of the array chosen and the sunlight conditions of the deployment area.
Key Features:

- **Reduced Manpower Requirements** – Provides 24/7 perimeter and area surveillance using sensors or target detection software which reduces manpower requirements

- **Flexible Deployment** – Manned or unmanned surveillance trailers can be deployed by towing or air transport, for either short or long duration missions

- **IP-Based Communications** – This architecture allows networked distribution of video information across Harris tactical radios and existing customer communications infrastructure

- **Customized Off-the-Shelf Availability** – The RDASS is a Harris packaged system based on ruggedized military equipment, and can be readily customized as required

- **Enhanced Personnel Safety** – Unmanned operation and long unattended life minimize exposure to threats

- **Scalability** – Each monitoring node can support from one to four surveillance trailers
The Rapidly Deployable Area Surveillance System equipment is ready for delivery

The Rapidly Deployable Area Surveillance System (RDASS) is based on existing capabilities that have been delivered to the field. The use of standard interfaces and protocols has allowed us to rapidly integrate these capabilities onto a trailer platform for ease and speed of deployment.

A standard RDASS is delivered with two Trailer Systems, each of which includes:
- Point-to-Multipoint (PMP) High Capacity Line-Of-Sight (HCLoS) Radio System (with narrow beam antenna)
- Network Interface Unit
- Video Processor
- Tactical Video/Infrared Pan/Tilt/Zoom (PTZ) Camera and Interface Box
- 17-Meter Telescoping Tower
- Six Ground Sensors for camera cueing
- Multi-Source Power Supply System

In addition to the two Trailer Systems, the standard RDASS includes one Command Post Monitoring Node with:
- Point-to-Multipoint (PMP) High Capacity Line-Of-Sight (HCLoS) Radio System (with sector antenna)
- Network Interface Unit
- Rugged Laptop loaded with specialized software for viewing the video, controlling the camera, and configuring the radio
- Transport Cases for HCLoS system and PC
- 15-Meter Heavy-Duty Mast
- Cables and Ancillaries

This configuration is very flexible, and additional functionality and alternate equipment sets are easily incorporated either at initial purchase or as a subsequent upgrade. The standard system can be delivered within approximately four months, as shown on the schedule opposite.

The additional equipment and functionality which may be purchased as options are noted below and listed in the System Description section:
- System scaling from one to four surveillance nodes
- Additional camera features and capabilities
- Additional ground sensors
- Features that further reduce emplacement time and manpower requirements, such as self-erecting masts
- Formal certification of the trailer for helicopter sling loading transport
- Solar power augmentation
Typical Four-Month Delivery Schedule

Low-Risk System Characteristics:

- Pre-engineered system implementation
- Integration risks are eliminated
- Standard interfaces and protocols ease incorporation of future enhancements
- Leverages the combat-proven Harris Falcon III® radio technology
- Expandable, with ability to add features and functions as required
The Rapidly Deployable Area Surveillance System (RDASS) provides a flexible solution to a commander’s need for video surveillance.

The RDASS allows a commander to quickly respond to requirements to augment his security posture around a forward operating base or at remote locations. It can provide semi-permanent or temporary unmanned surveillance capabilities for a variety of missions including video of masked areas around a base camp, temporary video observation of “hot spots,” and observation of lines of communication.

The system includes two trailer-mounted, long-range video surveillance nodes and a command post monitoring node. Video and video command and control signals are passed over the RF-7800W High Capacity Line-of-Sight (HCLOS) radio located at each of the three nodes. The use of directional antennas at the surveillance nodes and operation in the Point-to-Multipoint mode supports line-of-sight deployments at ranges of up to 45 kilometers and the ability to expand the system by adding additional surveillance nodes.

A long-range, dual day/night camera system is mast-mounted at the surveillance node and provides human-sized target detection at typical ranges of 4 kilometers. The analog video output is converted to IP data packets via a video processor to make use of the wireless broadband IP pipe provided by the HCLOS radio. The processor also enables the camera system to slew to cues from the Harris-provided ground sensors. The use of analog video cameras allows greater freedom in customizing the system for particular customer requirements.

All surveillance node equipment is mounted on a trailer which can be towed by vehicle; this trailer is also designed for helicopter sling-loading. The standard system includes a tower that can extend to 17 meters which holds the RF-7800W and camera. The surveillance node is powered from a bank of batteries commonly used in military vehicles and available at army depots. Other batteries are also supported by the system design. A diesel generator automatically turns on to recharge the batteries. Mission durations of 30 days are typical.

The Harris RF-7400E-CV001 Falcon C2View video management application is utilized at the monitoring node to display and record the video, and this software allows the operator to control the pan/tilt/zoom functionality of the remote cameras. The software can support up to four surveillance nodes simultaneously.
RF-7600P-UI301 Rapidly Deployable Area Surveillance System Equipment

**STANDARD CONFIGURATION**

Two Surveillance Trailers, each containing:
- IEC Camera M1-NSTI-M28
- RF-7800W HCLOS radio with directional antenna and RF-7800W-IU100 Network Interface Unit for streaming video to the monitoring node
- Multi-Source Power Supply System
- Six RF-5400VH Mini-Sensors with seismic and passive infrared detectors
- Video Processor for digitizing and compressing the video stream, and cueing the camera based on sensor reports
- 17-Meter Telescoping Tower

Monitoring Node containing:
- RF-3577 rugged laptop with the RF-7400E-CV001 Falcon C2View video management and camera control software
- RF-7800W HCLOS with sector (wider beamwidth) antenna and Network Interface Unit for receiving video and controlling up to four surveillance nodes
- 15-Meter Mast

**OPTIONAL CAPABILITIES**

- Up to two additional surveillance trailers per command post monitoring node for larger area coverage
- Additional Harris sensors for cueing the remote cameras to minimize the need for constant video monitoring
- Longer range EO/IR cameras for enhanced surveillance capability
- Range extension capabilities for the RF-7800W
- Options for laser rangefinders and target designators to determine target coordinates
- Network video recorder for long-term storage of video
- Motorized mast deployment to reduce emplacement time
- Formal certification of the trailer for helicopter sling loading
- Solar panels for extended unmanned operational life
The wideband nature of Falcon III® radios and the long-range video capabilities of our partner’s cameras provide the underlying technology that enables Harris to provide an off-the-shelf rapidly deployable video surveillance system.

**High Capacity Line-of-Sight Radio**

The Harris RF-7800W High Capacity Line-of-Sight (HCLOS) radio is a new generation microwave radio. Its small size and weight (2.5 kg) make it ideal for tactical deployments to the company level, where traditional, heavy microwave and relay systems have been too cumbersome to be utilized. The RF-7800W is a truly IP-based platform, allowing any IP application to utilize its broadband speed and connectivity (up to 90 Mbps at 90 km ranges with clear line-of-sight in point-to-point mode). Its open architecture allows users to easily switch from point-to-point or point-to-multipoint deployments (such as in the RDASS) with minor configuration changes.

Extending Internet service and broadband connectivity to the company level enables forward commanders to receive the information they need, such as tactical video, when they need it.

**Dual Electro-Optic/Infrared Camera System**

For its long-range camera requirements, Harris has integrated equipment from highly respected vendors such as IEC Infrared. As shown on the opposite page, the standard camera system includes mid-range, dual day and IR cameras that provide surveillance capability 24 hours a day, even under harsh environmental conditions. A single RDASS can provide surveillance of up to 100 square kilometers.

This system can be augmented with additional target acquisition features such as:

- Longer-range cameras
- Laser rangefinders and illuminators
- Image-intensified cameras
Infrared capability means that the RDASS surveillance nodes can be operational 24 hours a day.

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<tr>
<th>FEATURES</th>
<th>BENEFITS</th>
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<tr>
<td><strong>High Capacity Line-of-Sight (HCLOS) Radio RF-7800W</strong></td>
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<tr>
<td>NATO Band IV Frequency Operation</td>
<td>Allows for NATO and Public Safety interoperability by supporting the full NATO Band IV (4.4 - 5.0 GHz) as well as the Public Safety Band (4.94 - 4.99 GHz)</td>
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<tr>
<td>High Data Rates</td>
<td>Supports high data rate applications such as video transfer by enabling 90 Mbps (PTP) and 45 Mbps (PMP) aggregate, on-air data rates</td>
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<tr>
<td>Spectrum Flexibility</td>
<td>Flexible frequency and spectrum management including channel bandwidths of 5, 10, 20, and 40 MHz (PTP only) with a channel step size of 1 MHz</td>
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<tr>
<td>Security</td>
<td>Supports secure communications by implementing FIPS 197-compliant 256-bit AES data encryption, certified to FIPS 140-2 Level 2</td>
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**NightStalk EO/IR Camera M1-NSTI-M28**

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<td>Dual Day/IR Camera</td>
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<td>Long Target Detection Ranges</td>
<td>Typical 4 km detection range allows system to detect threat activity at ranges outside of direct fire weapon range</td>
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<tr>
<td>Programmable Scan Patterns</td>
<td>Reduces operator burden and allows slew-to-cue capability with remote sensors</td>
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Harris has earned a worldwide reputation as the low-risk vendor of choice for tactical radios and systems, with 99 percent of our international program customers reporting that Harris meets or exceeds their expectations. Our responsive program management team and customer service organization will deliver and support a highly capable surveillance system.

An agile manufacturing process enables Harris to modify production to meet customer demands. With one of the highest-volume defense communications manufacturing facilities in the world, we have the commitment and capability to deliver on our promises.

Unlike many other companies, Harris has “boots on the ground” experience, supporting our products from initial fielding to obsolescence. In fact, we are currently servicing systems that have been deployed for more than 20 years, underscoring our absolute commitment to customer satisfaction. Our customers rate Harris an average of two times higher than our nearest competitor.

As a proven provider of advanced radio, sensor, and integrated systems to customers in over 120 countries, Harris has extensive experience in providing logistics and sustainment support throughout the world. We have developed highly successful processes for fielding, maintaining, supporting, repairing, and upgrading our equipment, no matter where it is deployed.

Many of our product and technical service representatives have prior military experience, and establish a close, personal bond with our customers. Our comprehensive service offering includes classic telephone and email support as well as web-based services. The Harris Premier website (https://premier.harris.com/) provides customized access to:

- Computer-based training courses and manuals
- Frequently asked questions
- Application notes
- Purchase of accessories and ancillaries

Customers also can use the website to:

- Download and track software upgrades
- Receive warranty and maintenance support, including RMA numbers and returned goods status

System training is another important consideration. Harris trains approximately 5,000 students per year on the installation, operation, and maintenance of its equipment and systems. This process occurs in our company classrooms, at customer locations, and in the field. Our students (our customers) consistently rate the training they receive as meeting or exceeding their expectations.
The Harris Rapidly Deployable Area Surveillance System provides economic benefits throughout its entire life cycle:

**Low Risk** — Our customer knowledge, program management, technical expertise, and world-class customer support serve to reduce fielding risk.

**High Performance** — The open architecture design capitalizes on technology refresh of components, maximizing the value of customers’ investments over an extended time period.

**System Sustainment and Supportability** — Sustainment issues are reduced by the use of rugged military equipment (with existing training and ILS packages) and the availability of Harris field service representatives.

**Life-cycle costs are reduced by:**
- Use of common equipment and software applications
- 24/7 support capabilities
- Available in-country training and training material
- Common equipment interfaces and programming
- Availability of installation and maintenance by in-country partners
- Availability of extended warranties beyond the standard 12 months
- Low-cost upgrade paths
Harris RFCD supplies tactical and public safety radio products in over 120 countries worldwide

Millions of people and hundreds of government agencies throughout the world rely on assured communications® solutions from Harris to deliver critical information to the right place at the right time. They know there is too much riding on the outcome to risk anything less. What sets Harris apart is our depth of expertise, breadth of experience, and focus on providing the most advanced products, systems, and services that meet or exceed the requirements of our customers.

Harris is one of the only companies in the world specializing in advanced technology for capturing, aggregating, distributing, and analyzing the full range of wireless communications including voice, data, video, and imaging. We use this unique capability to provide systems and networks for customers in defense, intelligence, government, public safety, healthcare, broadcast, and energy markets.

Harris RF Communications Division (RFCD) is the leading supplier of tactical, secure voice and data communications products, systems, and networks to military, government, and commercial organizations worldwide. More than 50 years of international experience is leveraged into the design and deployment of Harris RFCD’s packaged C4ISR system solutions.

The Rapidly Deployable Area Surveillance System is one more example of Harris responding to the needs of its customers.

Harris has internationally acclaimed products which have left everyone else in the dust.  » International Customer

I firmly believe that Harris RF Communications really listens to their customer base and lives by the creed: the customer is king. I truly feel that sense of partnership with Harris, and I’ve been dealing with Harris for years now.  » NATO Staff Member
Always connected. Never alone.

Our proven solutions provide:

- Voice, data, and video where it’s needed, when it’s needed
- Cost effectiveness throughout the life cycle of the system
  - No long, costly development cycle
  - Unsurpassed in-country support during and after delivery
- Scalability and growth options
- Configurable solution sets
- On-time delivery of quality systems
As your partner, Harris is committed to your success

Harris Corporation welcomes the opportunity to discuss the Rapidly Deployable Area Surveillance System in more detail, and how it can be applied to your missions and applications.

We believe that our packaged systems provide a significant value to you, our customer, in the following ways:

- The systems are available now, eliminating long and expensive development and procurement cycles.
- The use of the latest wideband Falcon III® tactical radios supports new operational capabilities, such as live video and situational awareness, that have not previously been possible.
- Pre-engineered system designs emphasize commonality of equipment and resources to reduce life-cycle sustainment costs such as training, sparing, and maintenance.
- Our systems engineers and in-country partners can readily customize the solution, as required.
- The systems are supported by our world-class customer service organization that operates in every part of the world and is second to none.

With approximately $6 billion (USD) in annual revenue, Harris is an international communications and information technology company serving government and commercial markets worldwide. We are confident that our packaged C4ISR system solutions represent the best value with the lowest schedule, cost, and technical risks for meeting your complex operational challenges.

**Our solutions leverage:**

- Falcon III wideband radio technology
- Tactical video processing and management technology
- Open standards and interfaces
- Focused program teams
- Over 50 years experience providing state-of-the-art military systems
- Product service teams that deploy to our customer
- Nearly 7,000 engineers and scientists throughout the corporation
You need to know who’s out there