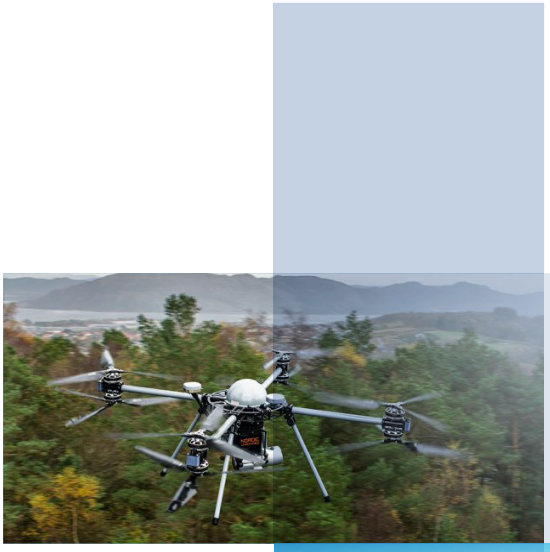
SD GOVERNMENT
A GOGO COMPANY

# UNMANNED AERIAL VEHICLE (UAV)

## SOLUTIONS CATALOG



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# SD GOVERNMENT

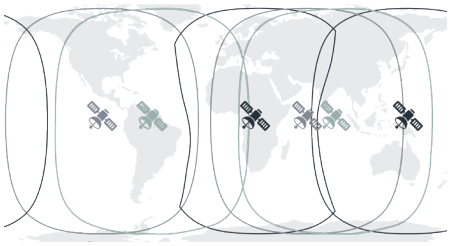
SD Government is the global #1 provider of end-to-end airborne satellite communications solutions for both manned and unmanned platforms. Emphasizing a customer-first approach, we prioritize delivering personalized service and expert support tailored to the unique requirements of government agencies. By guaranteeing secure and dependable communications, we facilitates seamless data sharing, real-time situational awareness, and a comprehensive “common operating picture,” empowering government entities with heightened operational efficiency and robust decision-making capabilities across diverse domains.

# SATELLITE NETWORKS

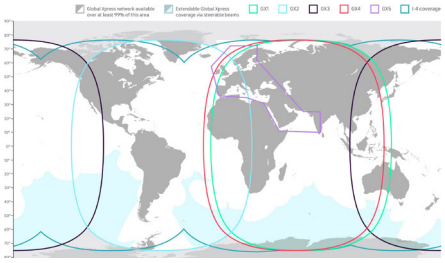
SD Government supports military and government customers by providing a network agnostic approach to customers' mission sets. Our sales team listens to your unique requirements, provides an unbiased solution set, backed by our 24/7/365 Network Operations Center, and secured by our global mobility network.

**IRIDIUM CERTUS (L-band):** The Iridium Certus L-band network of meshed LEO satellites is designed for high reliability and low latency. With standard IP data speeds up to 704 kbps download and 352 kbps upload, it's ideal for high-quality voice calls, email, internet access, video streaming, file, and IoT data transfer.

**VIASAT VUALE (L-band):** VuaLe delivers secure BVLOS connections for mission-critical communication, navigation, and surveillance services at any altitude. Powered by Viasat's robust global L-band network, VuaLe is developed by the same experts behind Iris and SwiftBroadband-Safety. It enables scalable operations, allowing one controller to manage multiple aircraft from a central location.



**VIASAT GLOBAL XPRESS (Ka-band):** Viasat Global Xpress offers wideband services over the Viasat Ka-band network for all mission environments with a consistent user experience worldwide. Steerable spot beams target capacity where needed for constant, reliable performance.

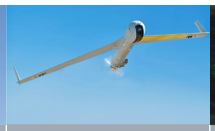


**SES FLEXAIR (Ku-band):** SES's FlexAir provides global, high-throughput Ku-band spot beams over the Intelsat EPIC network for data-intensive applications. FlexAir delivers high performance at a lower cost per bit with support for HD, full-motion video, which makes it ideal for airborne ISR operations as well as command and control links.

**EUTELSAT ONEWEB (LEO Ku-band):** Starting in 2024, Eutelsat Oneweb delivers high-speed, low latency low-Earth-orbit (LEO) satellite connectivity to the government / DoD markets. Providing global, highly consistent and reliable broadband service (195Mbps/36Mbps) around the globe.

# UAV EQUIPMENT | DRONE CLASSIFICATION

The United States Air Force (USAF) classifies unmanned aerial systems (UAS) into several categories based on their size, range, and capabilities. These categories include Group 1 through Group 5, with Group 1 comprising the smallest systems, often hand-launched and used for short-range reconnaissance missions and Group 5 comprising of the largest most sophisticated airframes. This classification helps the Operators effectively deploy and utilize these systems to meet a wide range of operational needs.

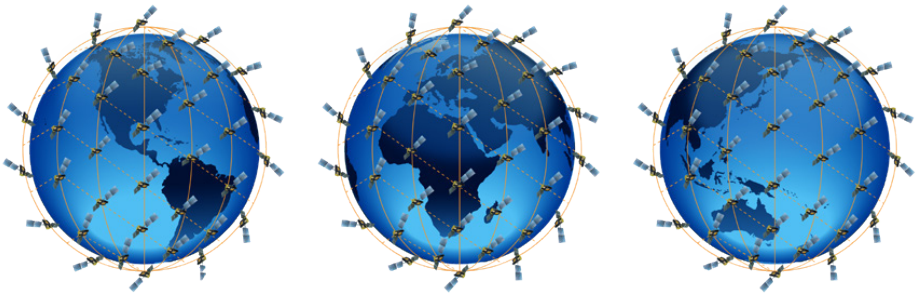
| |  |  |  |  |  |
|---|---|---|---|---|---|
| **UAV Group** | **Group 1** | **Group 2** | **Group 3** | **Group 4** | **Group 5** |
| Maximum Weight (lbs) | 0-20 | 21-56 | <1320 | <1320 | >1320 |
| Normal Operating Altitude (ft) | <1200 AGL | <3500 AGL | <FL 180 | <FL 180 | >FL 180 |
| Speed (kts) | 100 | <250 | <250 | Any Airspeed | Any Airspeed |
| Representitive UAV | Raven (RQ-11)<br>WASP | ScanEagle | Shadow (RQ-7B)<br>Tier II / STUAS | Fire Scout (MQ-8B, RQ-8B)<br>Predator (MQ-1A/B)<br>Sky Warrior<br>ERMP (MQ-1C) | Reaper (MQ-9A)<br>Global Hawk (RQ-4)<br>BAMS (RQ-4N) |

# UAV EQUIPMENT | SKYTRAC DLS 100 (L-Band)

SKYTRAC's DLS-100 is an Iridium Certus midband transceiver enabling real-time command and control, telemetry streaming, and GPS connectivity for unmanned aviation systems.

1. Truly Global Coverage with 99.9% Uptime Reliability
2. Beyond Visual Line of Sight (BVLOS) Communication
3. Iridium Certus Midband Connectivity with Onboard Server
4. Ideal for Global UAV and UAM Flight Operations
5. Multiple Interfaces for Analog and Digital Compatibility
6. Ruggedized for Mission-Critical Operations


**Band:** L-Band | **Network:** Iridium



# UAV EQUIPMENT | Viasat VuaLe Terminals

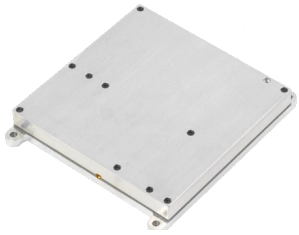
The VuaLe miniaturized communication system enables satellite and cellular connectivity for UAVs, helping you on your journey towards BVLOS.

An always-available secure datalink between vehicles, remote operators and air traffic control. Facilitating partners to develop new capabilities including command and control for safety, telemetry, data services, voice and video streaming.

A complete low SWaP-C pre-type approved modular BGAN terminal with integrated antenna optimized for lightweight UAV applications, also applicable to many other use cases, and compatible with Viasat VuaLe data services.

**VuaLe 200 Antenna**
- Ultra compact integrated design
- Data rates up to 230 Kbps, over the global coverage through the Viasat VuaLe network

**VuaLe Module**
- Ultra compact design
- Data rates up to 230 Kbps, over the global coverage through the Viasat VuaLe network



**VuaLe Multi-link Module**
- Ultra compact design
- Supports satellite data rates up to 230 Kbps and LTE services of Mbps
- Data rates up to 230 Kbps, over the global coverage through the Viasat VuaLe network

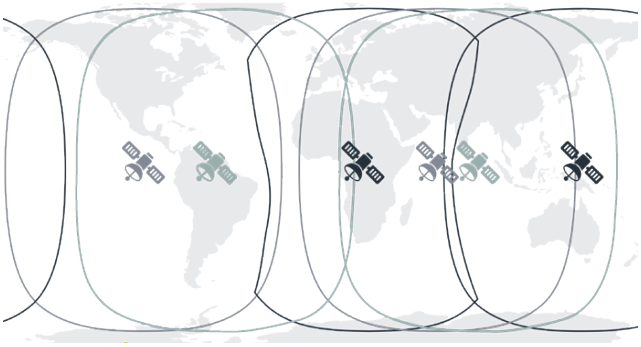
**Band:** L-Band | **Network:** Viasat VuaLe

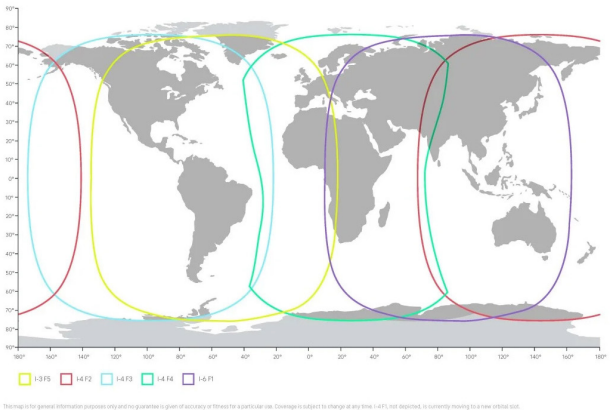
# UAV EQUIPMENT | Viasat ULW Terminal

The Viasat ULW terminal offers high data rate throughput for BLOS communications while minimizing the terminal's size, weight, and power (SWaP) requirements. It features integrated self-steering capability, eliminating the need for external navigation data and enabling operation in GPS-denied environments. It is the only solution that can offer assured global Mbps data rates from a system which weighs less than 2.5 Kg, supporting Full HD Video (1080p) and command and control, backed up by the reliability of L-Band (99.9% availability).

**Compatible Antennas:** IGA-4000

**Band:** L-Band | **Network:** Viasat L-Max



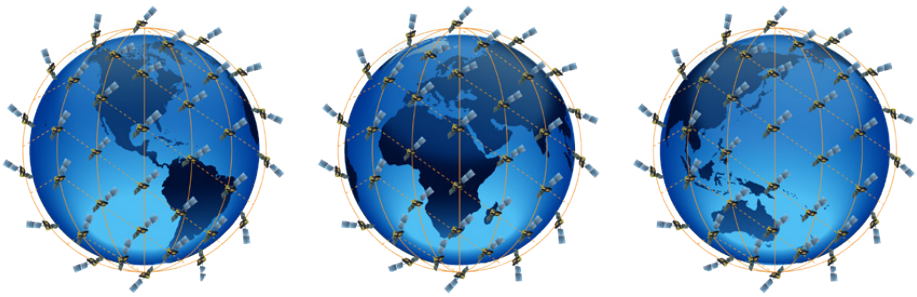
# UAV EQUIPMENT | SKYTRAC IMS-350

SKYTRAC's innovative IMS-350 UAV Satcom system provides cutting edge capabilities, broadband connectivity, and limitless applications in a daringly small form factor. The IMS-350 is SKYTRAC's flagship answer for UAV Satcom capabilities, providing both data link and custom onboard server capabilities for industries looking for reliable, robust, and proven global communications. Enhance your UAS with Wi-Fi, Cellular, and Satcom connectivity.

The onboard quad-core server supports sensor-matched applications that can parse collected data to determine what to transmit in real-time. The integrated smart router polices data traffic by prioritizing data throughput, ensuring efficient use of Satcom and cellular channels.

**Compatible Antennas:** Iridium/GPS – Low Gain, Certus 350 Active High Gain, and Certus 200 – Active Low Gain

**Band:** L-Band | **Network:** Iridium

# UAV EQUIPMENT | Gilat Black Ray 72Ka (Ka-Band)

Gilat's BlackRay 72Ka UAS terminal utilizes commercial and military geostationary satellite capacity in Ka band to provide full-duplex satellite communication, Supporting Mbps data rates and weighing just 5 Kg, it is the world's lightest purpose-designed UAV antenna for either Ku or Ka-Band.

The fully integrated system has all of the RF components and modem card included within the 1 LRU design and has been operationally proven for a wide variety of unmanned platforms.

The system is network agnostic and so supports a wide range of satellites. SDG would review and propose a suitable option, based on the Customer area of operations.

**Compatible Ground Modem:** GLT1000

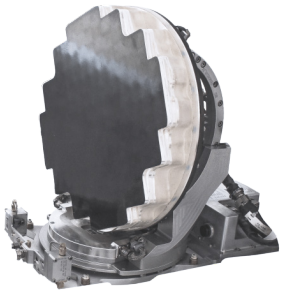
**Band:** Military and Civil Ka-Band | **Network:** Iridium

# UAV EQUIPMENT | Gogo Satcom Antenna Systems

Gogo (SD Government parent company) offers a range of high performance, gobal high-speed commercial connectivity options. Powerful, proven options with a lightweight footprint.

Plane Simple Ku-Band ATMA

SES



Plane Simple Ka-Band ATMA

Viasat

Gogo Galileo electronically steered antenna

eutelsat ONEWEB
eutelsat GROUP

# UAV EQUIPMENT | Plane Simple® **Ku-Band** Advanced Tail Mount Antenna (ATMA)

Originally designed for business aviation, the PSKu ATMA was the first network integrated COMSATCOM terminal. Capable of speeds of 25/3 Mbps on the global SES Flex network, the antenna systems boasts only two Line Replaceable Units (LRUs) and has a roadmap to support 50Mbps/5Mbps.

The PSKu has been tested on multiple Max Endurance Operations aboard C-130 airframes, demonstrating exceptional beyond visual line-of-sight (BVLOS) performance for endurance operations lasting over 24 hours.

**Compatible Modem:** SD SMU

**Band:** Ku-Band | **Network:** SES Flex

PLANE SIMPLE®
Satcom Antenna Systems

SES


| ATMA Specs | |
|---|---|
| Size (LxH) | 14.82in x 13.28in (376.35mm x 337.31mm) |
| Swept Volume | 12.07in (306.70mm) |
| Weight | 26.5lbs (12.02kg) |
| Input Voltage | 28 VDC (Supplied by SMU) |
| Power Consumption | 200 Watts Max, 180 Watts Typ. |

| SMU Specs | |
|---|---|
| Size | ARINC 600 Style 4 MCU |
| Weight | 13lbs Max (5.89kg) |
| Input Voltage | AC Version: 115VAC 400 HZ Nominal (Current 2.5A)<br>DC Version: 28 VDC Nominal (Current 10A) |
| Power Consumption | 303 Watts Max |

# UAV EQUIPMENT | Plane Simple® **Ka-Band** Advanced Tail Mount Antenna (ATMA)

The Plane Simple™ Ka Antenna System enables broadband inflight connectivity services over the Viasat Global Xpress Ka network. The first COMSATCOM terminal to effectively transmit dual-polarity signals with Viasat's GX5 high throughput satellite (HTS), effectively doubling the amount of data that can be transmitted.

The advanced tail mount terminal design features only two Line Replaceable Units (LRUs), simplifying installation and configuration requirements. Through the use of common wiring, customers can seamlessly swap out components providing a cost-effective transition path as technology advances.

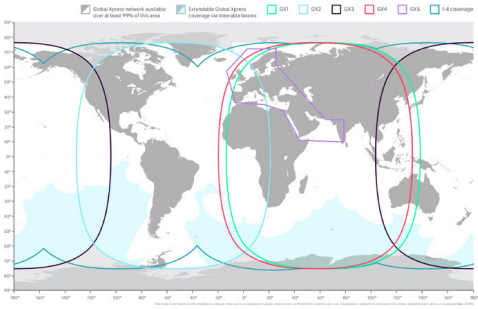
As a Gogo manufactured product, the Plane Simple Tail Mount Terminal also allows for advanced support and troubleshooting by the SD support team, improving the overall connectivity experience.

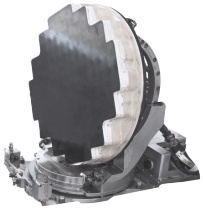
**Compatible Modem:** SD SMU

**Band:** Ka-Band | **Network:** Viasat GX

PLANE SIMPLE®
Satcom Antenna Systems

Viasat






| ATMA Specs | |
|---|---|
| Size (LxH) | 14.82in x 13.28in (376.35mm x 337.31mm) |
| Swept Volume | 12.07in (306.70mm) |
| Weight | 26.5lbs (12.02kg) |
| Input Voltage | 28 VDC (Supplied by SMU) |
| Power Consumption | 200 Watts Max, 180 Watts Typ. |

| SMU Specs | |
|---|---|
| Size | ARINC 600 Style 4 MCU |
| Weight | 13lbs Max (5.89kg) |
| Input Voltage | AC Version: 115VAC 400 HZ Nominal (Current 2.5A)<br>DC Version: 28 VDC Nominal (Current 10A) |
| Power Consumption | 303 Watts Max |

# UAV EQUIPMENT | Gogo Galileo LEO Electronically Steered Antenna (ESA)

Gogo Galileo fuselage-mounted, electronically steered antennas deliver the highest performance connectivity in the smallest, most efficient form factor. Designed for all aircraft sizes, and leveraging Eutelsat's OneWeb LEO satellite network that is built for mobility for global coverage - this innovative solution delivers real solutions to prior limitations.

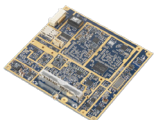
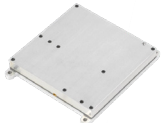
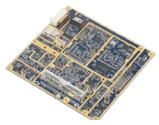
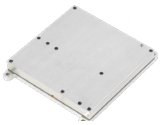
**Compatible Modem:** Gogo AVANCE / SD SMU

**Band:** LEO Ku-Band
**Network:** Eutelsat's OneWeb LEO satellite network

| ESA Specs | |
|---|---|
| Size (Starting at) | 24.0" L x 11.8" W x 2.1" H (609.6 mm L x 299.72 mm W x 53.34 mm H) |
| Weight (Starting at) | 21.6 lbs (9.80 kg) |
| Total Power Consumption | 165 - 330W |
| Performance | Up to 195Mbps/36Mbps |

# UAV EQUIPMENT | SWaP COMPARISON



| | SKYTRAC DLS 100 | VuaLe 200 Antenna | VuaLe Module | VuaLe Multi-Link Module | Viasat ULW Terminal |
|---|---|---|---|---|---|
| **Class** | Group 2/3 | Group 2/3 | Group 2/3 | Group 2/3 | Group 3 |
| **Size** | **Height** – 1.5in (38.1mm)<br>**Depth** – 2.7in (68.6mm)<br>**Width** – 8.7in (221mm) | **Height** - 3.27in (83mm)<br>**Diameter** – 5.71in (145mm) | **Height** – 0.59in (15mm)<br>**Length** – 3.74in (95mm)<br>**Width** – 3.74in (95mm) | **Height** – 0.59in (15mm)<br>**Length** – 5.51in (140mm)<br>**Width** – 3.74in (95mm) | **Height** – 1.77in (45mm)<br>**Length** – 8.66in (220mm)<br>**Width** – 5.31in (135mm) |
| **Weight** | 1.64lbs (742.8g) | .95lbs (430g) | 0.36lbs (165g) | 0.51lbs (230g) | 3.75lbs (1700g) |
| **Band** | L-Band | L-Band | L-Band | L-Band+ LTE | L-Band |
| **Network** | Iridium | Viasat VuaLe | Viasat VuaLe | Viasat VuaLe + LTE | Viasat L-MAX |
| **Max Data Rates** | 88/22 Kbps | 230 Kbps | 230 Kbps | 230 Kbps + xxMbps | XMbps, (location dependent) |
| **Frequencies** | 1616 MHz to 1626.5 MHz | 1626 – 1675 MHz | 1626 – 1675 MHz | 1626 – 1675 MHz (L-Band) and Cat 1 LTE world-wide coverage | 1626 – 1675 MHz |
| **Power** | Input Voltage: 10-32V DC<br>Power max typi-cal: TBC | **Input Voltage:** 6s or 8s LiPo battery packs or 28VDC<br>**Power max typical:** 27.5W | **IInput Voltage:** 6s or 8s LiPo battery packs or 28VDC<br>**Power max typical:** 27.5W | **Input Voltage:** 6s or 8s LiPo battery packs or 28VDC<br>**Power max typical:** 27.5W | Core Module: **Input Voltage:** 18-36V<br>**Power max:** 150W IGA-4000:<br>**Input Voltage:** 12-32VDC<br>**Power max:** 20W |
| **Environment** | Ruggedized and IP67 compliant with EMI shielded hard-anodized aluminum | IP67 DO-160 section 8 standard vibration (category S) | DO-160 section 8 standard vibration (category S) | DO-160 section 8 standard vibration (category S) | Core Module: MIL-STD-810H IPX6, IP6X IGA-4000: DO-160G |

# UAV EQUIPMENT | SWaP COMPARISON

| | SKYTRAC IMS-350 | Gilat Black Ray 72Ka | SD Plane Simple Ku-Band ATMA | SD Plane Simple Ka-Band ATMA | SD Plane Simple Ku-Band ESA |
|---|---|---|---|---|---|
| **Class** | Group 3 | Group 3/4 | Group 4/5 | Group 4/5 | Group 4/5 |
| **Size** | **Height** – 2.5in-(6.4cm)<br>**Length** – 7.28in(18.5cm)<br>**Width** – 5.74in-(14.6cm) | **Height** – 9.5in-(24cm)<br>**Length** – 11.8in-(30cm)<br>**Width** – 11.8in-(30cm) | **Height** – 13.28in-(33.7cm)<br>**Length** – 14.82in-(37.6cm)<br>**Width** – 12.07in-(30.6cm) | **Height** – 13.28in-(33.7cm)<br>**Length** – 14.82in-(37.6cm)<br>**Width** – 12.07in-(30.6cm) | **Height** – 3.4in-(8.64cm)<br>**Length** – 39.5in-(100.33cm)<br>**Width** – 17.6in-(44.7cm) |
| **Weight** | 3.0lbs (1.36kg) | 11 lbs (5kg) | 39.5lbs (17.91kg) | 39.5lbs (17.91kg) | <65lbs (27.22kg) |
| **Band** | L-Band | Ka-Band (Civ + Mil) | Ku-Band | Ka-Band (Civ) | Ku-Band |
| **Network** | Iridium CER-TUS | Agnostic | SES Flex | Viasat GX, including Polar coverage | Eutelsat OneWeb (Technologies) |
| **Max Data Rates** | 704/352 Kbps | XMbps, (location dependent) | 25/3 Mbps (increasing to 50/5 Mbps by end of 2025) | 20/2.75 Mbps (roadmap to increase to 100/5 Mbps) | 195/36 Mbps |
| **Frequencies** | 1616 MHz to 1626.5 MHz | (Rx) 17.8-21.2GHz<br>(Tx) 27.5-31GHz | (Rx) 10.70 – 12.75 GHz<br>(Tx) 13.75 – 14.50 GHz | (Rx) 17.7 – 20.2 GHz<br>(Tx) 27.5 – 30 GHz | (Rx) 10.7 - 12.7GHz<br>(Tx) 14.0 - 14.5GHz |
| **Power** | **Input Voltage:** 28 VDC<br>**Max Power:** 115W | **Input Voltage:** 28 VDC<br>**Max Power:** <60W | **Input Voltage:** 115 VAC<br>**Max Power:** 200W | **Input Voltage:** 115 VAC<br>**Max Power:** 200W | **Input Voltage:** 115AC<br>**Max Power:** 330W |
| **Environment** | DO-160 | MIL-STD-810H | DO-160 | DO-160 | DO-160 |

# VIDEO CODECS

videosoft

### Readiness for Remote Operation

SD Government now offers Videosoft's groundbreaking video compression and streaming technology, designed to deliver exceptional ultra-low bandwidth performance starting from just 4kbps. Videosoft's highly customizable and easily adaptable technology revolutionizes streaming capabilities and ensures reliability when paired with SDG-serviced networks.

### Eyes in the Sky

Videosoft's solutions enhance situational awareness and optimize decision-making processes, empowering military drone operations with confidence and precision. Offering real-time control and remote viewing with ultra-low bitrates, it drives tactical advantages and operational efficiency. Adaptable with minimal processor demands, it ensures compatibility across a broad range of platforms and delivers customized solutions with superior size, weight, and power (SWaP) options for military applications.

| HARDWARE BASED: | SOFTWARE BASED: | SERVICES: |
|---|---|---|
| • Standalone hardware encoders<br>• External weatherproof kits | • Software only encoders for Linux, Android and IOS<br>• Server side management andviewing software<br>• Third party VMS integration<br>• OEM components for third party products | • SaaS – Hosted services<br>• Airtime packages<br>• Support and maintenance programs<br>• Bespoke software integrations and developmentsx |

# VIDEO CODECS

### Total Recall™ Tool

The Total Recall image enhancement tool allows users to select an area of interest from a stream, regardless of bit rate, and easily download high-resolution images from the gateway. If the encoded live stream does not provide the needed detail at the moment, this feature offers detailed visual confirmation of events. This powerful tool assists in investigations, handles critical situations, and manages live events by monitoring incidents in real-time. It enables swift action with minimal downtime or disruptions, fostering seamless collaboration among teams and experts across various locations.

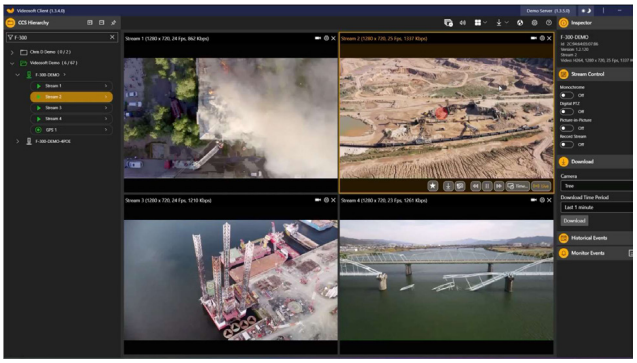
### FireBird F-100

The FireBird™ F-100 is our smallest gateway, designed specifically for video streaming applications where size and weight are critical. Measuring only 105mm long, 47mm wide, and 25mm high, the FireBird™ F-100 is ideal for covert surveillance or integration into small spaces.

Running Videosoft's Edge Gateway software (see separate datasheet), the FireBird™ F-100 enhances real-time situational awareness by providing multiple simultaneous streams to command centers and field operatives through efficient bandwidth management.

### Client Viewer

Use the Videosoft Client Viewer app to connect to and view live video and audio from remote cameras. When paired with Videosoft Encoders, you can set up comprehensive video and audio streaming applications for ISR, Command and Control, Blue Force Tracking, and many other uses.



# 24/7 SUPPORT

### SDG Technical Support

Providing the highest levels of customer support are part of SDG's DNA. Our technical experts are always on standby to help you 24/7/365 globally should any issues arise in flight. Our Network Operations Center (NOC) displays real-time activity for global customer connectivity, enhanced visibility into the overall health of each aircraft, and combines this with intelligent data analysis to deliver optimal performance.

Predictive alerting is also triggered by the service intelligence platform, enabling remedial action well before any potential issues. Our NOC identifies systemic issues across partner satellite networks to enable remedial measures that minimize any customer downtime. If the data is behaving differently than expected, we are often aware of it before either our customer, the end user or our partners, which means we can begin to fix issues more quickly.

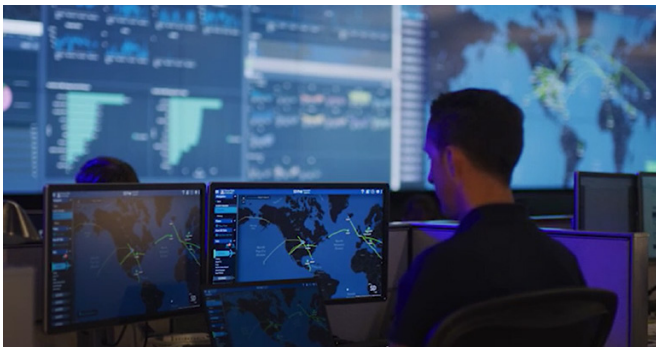
### SATCOM ONSITE™

Satcom Onsite™ Services (S.O.S.) provide technical services and support at the customer's location for any aircraft in distress. Proprietary SDG software tracks satellite systems statuses and triggers alerts and notifications when connectivity issues arise. Our specialists then contact customers to perform system and configuration checks, resolving any problems.

### Entry Into Service

SDG's Entry into Service (EIS) team provides on-site training and support for new and existing customers to ensure optimal use of our products and services. Our Technical Solutions Managers ensure seamless delivery of SDG solutions, including the Satcom Direct Router (SDR®), SD Pro® data management platform, and SDG Infrastructure and Cybersecurity Solutions. We offer user training, troubleshooting, and solution development to ensure flight department staff are comfortable and confident with SDG services on their aircraft.

Our support extends beyond initial training, with ongoing Wellness Checks and regular reviews of aircraft usage and associated services to recommend upgrades or modifications as needed. The customer support team is available to troubleshoot issues and train flight department members to prevent future problems.



# HOW TO BUY

SDG strives to simplify government purchases for end users by offering a streamlined procurement process that adheres to global governments' regulations and standards. We provide personalized assistance and expert guidance throughout the entire purchasing journey, ensuring that customers have access to the most suitable and cost-effective satellite communication solutions for their specific government requirements. Additionally, SD Government maintains a strong commitment to transparency, competitive pricing, and exceptional customer support, making the procurement experience efficient and hassle-free for government agencies.

### Contact Sales

One of the easiest ways to begin the procurement process is to contact your local SDG representative. We can provide up-to-date hardware, network, and SaaS information tailored to your mission's requirements. If you don't know who your sales representative is, simply call **+1 321.777.0771** or email **government@satcomdirect.com**, and we will connect you with your local subject matter expert (SME).

### Site Visit

Interested in learning more about COMSATCOM solutions or an SDG product or service? Our globally located team is always available to come to you and demonstrate our capabilities and tailor packages to meet your demands.

### Foreign Military Sales

SD Government is a trusted partner for U.S. government and military agencies, and holds several framework contracts for SATCOM solutions. It is possible for approved international Government Customers to procure via the Foreign Military Sales (FMS) route. Please contact SD Government to discuss further.

# CONNECT WITH US:

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