

Product Brochure

SkyEdge IV Aquarius Family for Military and Government

Aquarius e-M, Aquarius Pro-M

Cutting Edge Technology for Military and Government

SkyEdge IV is a full-scale, state-of-the-art SATCOM network that meets the needs of any modern defense organization. With a rugged MIL-SPEC design, our field-proven system for land, sea, and air is suitable for any field condition, providing real time feeds for any platform and will provide compatibility on future unmanned and autonomous platforms.

SkyEdge IV Aquarius is an ultra-high-performance family of VSATs providing security forces with ruggedized terminals that can be deployed on vehicles or carried in a backpack, ensuring seamless connectivity for both on-the-move and on-the-pause missions. It further delivers reliable beyond line of sight (BLoS) connectivity between command and tactical levels, allowing a seamless flow of information. Our resilient networks provide true interoperability, drastically reducing the time between decision, implementation and evaluation. In addition, Gilat's low SWaP systems allow military and border patrol teams to exploit the full potential of long-endurance missions with airborne, maritime and land-based communications.

SkyEdge IV Aquarius was designed for operation over next-generation Very High Throughput Satellites (VHTS) GEO and Non-GEO (NGSO) constellations. The Aquarius family supports flexible satellites servicing multiple fixed and mobility applications such as heavy connectivity trunking links.

Supporting next-generation software-defined satellites, the Aquarius VSAT family provides uninterrupted service and enables seamless operation, "make before break" NGSO satellites handover, switching between GEO and NGSO or between different GEO satellites. To provide continuity of service for these use cases, Aquarius is equipped with dual transmit/receive interfaces and fast adaptive reconfiguration capabilities on both the forward and return channels supporting satellite on-the-fly changes.

The VSATs exhibit ultra-high processing capacity, achieving >2Gbps aggregated throughput and high packets-per-second processing.

Field-Proven, High-Speed Modems for Military and Government Satellite Communications

Designed to meet the satellite communications needs of commercial and military organizations, our high-throughput satellite modems support a wide range of IP-based voice, video and data services.

Benefits

- Secure communications – FIPS 140-3 Level 3, TRANSEC end-to-end solutions for C4I systems based on robust VSAT applications
- Generic Modem Interface (GMI) API enabling secure sovereign services over NGSO
- Ultra-high throughput and high PPS family of VSATs. > 2Gbps aggregated throughput and high packets-per-second processing
- Designed for ultra-high data intensive applications such as: COTM, COTP, UAV, AFV, Manpack
- Software-defined programmable VSAT for seamless operation over legacy and next generation flexible satellites
- High-performance Air Interface – DVB-S2X and Gilat TDMA and Elastic-SCPC (eSCPC) with very low SNR (VLSNR) ModCods
- Open standard interfaces for Antenna (OpenAMIP) and BUC (OpenBMIP)
- MIL-SPEC hardware design with Low SWaP systems to exploit the full potential of long endurance missions with airborne, maritime and land-based communications
- MEF Layer-2/L3 services



Aquarius-M Board



Aquarius Pro-M

Used in commercial applications, SkyEdge IV Aquarius is an ultra-high-performance family of VSATs providing high-speed seamless connectivity across land, sea, and air on C, Ku and Ka bands. These centrally managed VSATs provide users with fast access to broadband services regardless of their location, increasing productivity and lowering operational costs.

SkyEdge IV Aquarius family military-grade VSATs offers secure, highly reliable broadband C4I satellite communications for the net-centric battlefield, helping to ensure information superiority for troops on the ground. Specifically, these VSATs easily integrate into a variety of solutions such as manpack, flyaway and UAS terminals.

Setting a new standard for mission flexibility, SkyEdge IV Aquarius family delivers the necessary superior performance and high availability required to support on-the-move deployments for land and airborne platforms. Our high-performance and quick-to-deploy systems provide fast and reliable broadband connectivity for any mission under any conditions, as well as support a diverse range of civilian services.

Technical Specifications

General

Fixed and Mobility VSAT
Multi orbit operation NGSO/GEO
Frequency Bands: C, Ku, Ka

Forward Channel

Standard:
DVB-S2X ACM
Carrier Rate:
5 Msps-500 Msps
Roll-off: 0.05, 0.10, 0.2
MODCODs:
BPSK-S 1/5 – 256APSK 3/4
(seamless MODCOD switching)
SNR range: -9.5 dB to +21 dB
FEC: LDPC, BCH

Return Channel

Elastix-Access:
eSCPC (Elastix SCPC)
Carrier Rate: 0.1 Msps (GEO) 1 Msps (MEO) – 250Msps
Roll-off: 0.05, 0.10, 0.2
Modulation: BPSK, QPSK, 16-Ary
SNR range: -15 dB to +15 dB
FEC: XDC

Enhanced Features

IP Features:
IPv4/IPv6, DHCP, NT/PAT, DNS Caching, IGMPv2, VLANs, VRFs, RIPv2, BGP, Static Routes
QoS
Per VSAT and Per Managed Group CIR, MIR, CBR, DiffServ and priority based queueing

Layer 2 Services Based Services

Utilizing MEF based standards
Types of Services:
E-LINE ACCESS, E-LINE TRANSIT (Based on MEF 51.1)

Embedded Application Acceleration & Protocol Optimization

TCP Acceleration, GTP Acceleration, Header Compression

Interface types:
UNI/ENNI
(untagged, 802.1q, 802.1ad)

Maximum Spectral Efficiency

Gilat's innovative transmission technologies deliver exceptional performance and space segment efficiencies with the highest availability. The enhanced performance air interface includes in the forward direction Wideband DVB-S2X carriers up to 500Msps with seamless Adaptive Coding and Modulation (ACM) with very low SNR (VLSNR) ModCods. In the return direction, Gilat's Elastix- SCPC (eSCPC) and TDMA access incorporate Gilat's unique advanced FEC coding XDC, delivering the industry's highest spectral efficiency, widest dynamic range and highest granularity.

Enhanced Central Service Management

The Aquarius VSAT family is part of a complete VSAT ground system that includes an advanced Network Management System (Elastix-TotalNMS) facilitating service management, monitoring and control, over-the-air software deployment and rich northbound interface for integration with external orchestrators and OSS.

Operation & Maintenance

End-to End OAM Transparent forwarding
OVC Management – based on MEF 7.3, MEF 60 and TMF640

IP Features:
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QoS

Per VSAT and Per Managed Group CIR, MIR, CBR, DiffServ and priority based queueing

Embedded Application Acceleration & Protocol Optimization

TCP Acceleration, GTP Acceleration, Header Compression

Security

AES-256 bit link encryption, ACL Firewall, X.509, Terminal Authentication
TRANSEC FWD and RTN
FIPS 140-3 Level 3

Mobility

Seamless Make-Before-Break Beam/Satellite/Orbit switching
OpenAMIP, OpenBMIP

Optional Add-Ons

Edge Compute module – COM Express based (various processing power options)

Modem Interfaces

RF Input / Output:
2xTX / 2xRX N-Type 50Ω
RF in frequency: 950-2150MHz
RF out frequency: 950-2400MHz
DISEqC

Management Interface

Secured Web-based local management, remote software upgrades over the air, NMS remote management, SNMP

Environmental and Mechanical Specifications

| | Form Factor | Throughputs | Lan Interfaces | Operating Voltage | Operating Temp. | Certifications |
|-----------------------|-------------|---------------|---|--------------------------------------|-----------------|---|
| Aquarius e-M | Board | 300/100 Mbps | 5 x 10/100/1000 BaseT | 100-240V AC 24V | -5°C – 50°C | CE, FCC, EMC MIL STD – 810H/461F/1275E |
| Aquarius Pro-M | Rack Mount | 1500/750 Mbps | 6 x 10/100/1000 BaseT + 2 x 10GbE SFP M&C Ethernet ports 5 x 10/100/1000 BaseT | 100-240V AC 48V DC Dual Power Supply | -30°C – 60°C | CE, FCC, EMC MIL STD – 810H/461F/1275E |



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