

TSAT 3000

A private satellite network for SCADA applications.

A dedicated, low-cost VSAT system that's designed to be compliant with legacy SCADA protocols.



Overview

The TSAT3000 VSAT satellite system is specifically designed to meet the demanding requirements of the SCADA and utility industries. TSAT3000 provides a private satellite network operating a direct communication channel between a process control centre and remote locations. By locating a private TSAT3000 HUB at a control centre, complete independence of any public infrastructure is obtained, and secure and reliable communication is assured. Reliability can be enhanced further with implementation of the load sharing redundant HUB option.

Dedicated lowest cost HUB

The TSAT3000 VSAT HUB is the lowest cost HUB on the market. The small size of the antenna and the 1U satellite router makes it convenient to locate the HUB directly at a process control centre, and no expensive back-haul from a shared HUB is necessary. This provides full end-user control of the complete network, ensuring reliable and secure communications.

Effective utilisations of space segment

A TSAT3000 network can be tailored to suit the Application being communicated and thus bandwidth is not squandered unlike other IP based VSAT solutions which offer a "best fit" and point to point solution only. TSAT3000 was designed to emulate legacy multidrop SCADA/Telemetry networks meaning satellite bandwidth use is optimised as each Remote Terminal within the same Group can share the same bandwidth. Traditional VSAT point to point systems allocate bandwidth to each Remote Terminal requiring a lot more bandwidth to communicate the same solution, resulting in increased operational costs when compared with a TSAT3000 network.

Details

Manufacturer:	• AV Satcom
Network:	• VSAT
Device Type:	• Modem
Markets:	• SCADA / Telemetry • Utility • Military • Marine • Renewable

Practical Data Rates

Channels with data rates as low as 9.6kbps can be provided, resulting in very low space segment rental costs. Bandwidth can be dynamically assigned when required and released when not required making most effective use of the satellite bandwidth.

Redundant HUB option

The low cost TSAT3000 HUB makes it economically viable to invest in completely redundant HUB implementations. Load sharing redundant HUB options, including auto fall-back and auto re-routing of data to/from the Remote Terminals on the event of a failure of the Main Hub, increase system reliability even more.

Powerful Network Management System

TSAT comes with a powerful Network Management System (NMS). The NMS is based on a client/server architecture, and can be operated locally and remotely. Through the NMS the operator can make use of the extremely flexible configuration options to optimise the performance of the network and monitor the

application data through the use of the inbuilt data analyser and SCADA protocol decoding facilities.

System scalability

The low cost HUB and space segment makes it possible to start off with a small and inexpensive network, and expand as network size and traffic demands grow.

The HUB can easily be expanded allowing additional communication channels to be added in either inbound or outbound directions, Combinations of these channels can be configured to provide the optimum solution. e.g. small outbound channels and larger inbound channels.

SCADA communication compliance

TSAT3000 is compatible with legacy SCADA protocols and systems as well as modern TCP/IP based protocols, allowing a smooth transition as SCADA networks are modernised.

Technical Specs

Physical Characteristics:

- Topology: SPC & Star Network
- Data rates:
 - 9.6kbps - 64kbps (typical)
 - 128kbps - 256kbps (option)
- Modulation methods: OQPSK, QPSK
- Forward error correction schemes:
 - Viterbi $\frac{1}{2}$, $\frac{3}{4}$, $\frac{7}{8}$

Media access methods:

- Outbound: TDM
- Inbound: Fixed TDMA, Enhanced Slotted Aloha, Slot Reservation Facility, Combinations of above

Satellite Frequency support

Tx:

- Ku 14.0-14.5GHz
- C 5.85-6.35 GHz

Rx:

- Ku 10.95-11.45/ 11.7-12.2 / 12.25-12.75 GHz
- C 3.4 - 4.1 GHz

Terminal Interfaces:

Application:

- 2x RS232 Serial Ports DB9
- 2x Ethernet ports RJ-45

Monitoring:

- RS32 RJ-11 port

Standards Compliance:

CE Conformance: R&TTE 1999/5/EC directive

Safety: EN 60065:1998

EMC: EN 301 489-1:2002

EN 301 489-12:2003

Radio spectrum: EN 301 428:2001

Protocol Support:

- Leased line - Fixed, transparent connection
 - Dialled line emulation (PSTN modem)
 - Protocol independent, proven to work with most legacy protocols including:
 - Modbus RTU/IP/ASCII, DNP-3, Serck, Proteus, IEC870-5-101/104, Seprol,
- Radio, RP570, ADPL 180, Comli, Sinaut ST1
- Packet switched protocol supp:
TCP/IP, UDP, VoIP

Environment and Physical:

IDU - RT

- 0°C - +55°C, <95% non-condensing

IDU - HUB :

- 0°C - +40°C, <95% non-condensing

ODU - RF units:

- -40°C - +55°C

IDU RT/HUB Satellite Router:

- Size: 404x 163x 44mm (1U)
- Weight: 2.25kg

Power Consumption:

Input Voltage:

- +/- 24 to 48VDC (typical)

Power consumption at +24V :

- 36W (typical with 1W BUC)
- 20W (Power save mode)
- 1.2Q (Hibernation mode)
- 72W (Maximum)