RFL TSAT

SCADA Anywhere!

with a RFL TSAT satellite communication Solution

The RFL TSAT* 2150 Satellite Communications Network offers innovative cost-effective solutions for remote control, monitoring and data collection within SCADA (Supervisory Control And Data Acquisition) networks.

Traditionally SCADA networks have been relying on PSTN and radio link solutions to connect RTU's . However, RFL TSAT´s low cost HUB makes networks of all sizes affordable, even for smaller utilities and operators. The RFL TSAT 2150 is ideal for scalable systems, which may start with a small network and expand to a large one as the SCADA network grows. Due to TSAT's narrow bandwidth and low power output, the cost of the space segment becomes almost negligible. The low satellite transponder capacity and the low cost HUB makes the TSAT 2150 unique in the VSAT market.

The ultra-small bi-directional satellite communication system TSAT 2150 is designed specifically for low data rate communications in the Ku-band. In a closed user group system, the TSAT 2150 ensures continuous access to and complete control of the communications network.

Advantages:
In addition, the RFL TSAT 2150 comes with a variety of options, like full HUB redundancy for safety-critical applications, additional inbound link options for increased communication capacity, sleep mode option for low-power consumption as well as a voice options.

Key features:

- Very low cost HUB
- Very low cost space segment
- Safe and reliable communications link
- Proprietary, dedicated HUB
- Flexible access schemes and protocol options
- Competitive with PSTN and radio link solutions

Fields of Application:
Operating at data rates between 2,400 -14,400 bps and featuring flexible interfaces and protocol options, the TSAT 2150 offers a highly reliable and cost effective solution to collection and distribution of data in SCADA applications such as:

Electric Power
Automated meter reading, substation automation, automatic switching operations, earth fault detection, transformer monitoring etc.

Water
River, dam and reservoir level control, water flow, flood warning/alarm systems, dike management, coastal monitoring etc.

Environment
Rainfall, wind, temperature, atmospheric pressure, pollution/gas detection, lightning, earthquake etc.

RFL TSAT 2150 Unique features and benefits:

Dedicated Hub
Our private hub makes you the proprietor of the network.

You have full control of the network with no concerns about sharing space with other users.

Our small 1.2m Hub antenna can be placed at your control center, thus removing any cost of a leased line you might need from a shared-hub location.

Lowest Cost Hub
TSAT's lowest cost hub on the market makes small private networks affordable.

Low Data Rates 2400/4800/9600/14400 bps
TSAT requires only a very low satellite bandwidth, thus making your space segment costs almost negligible.

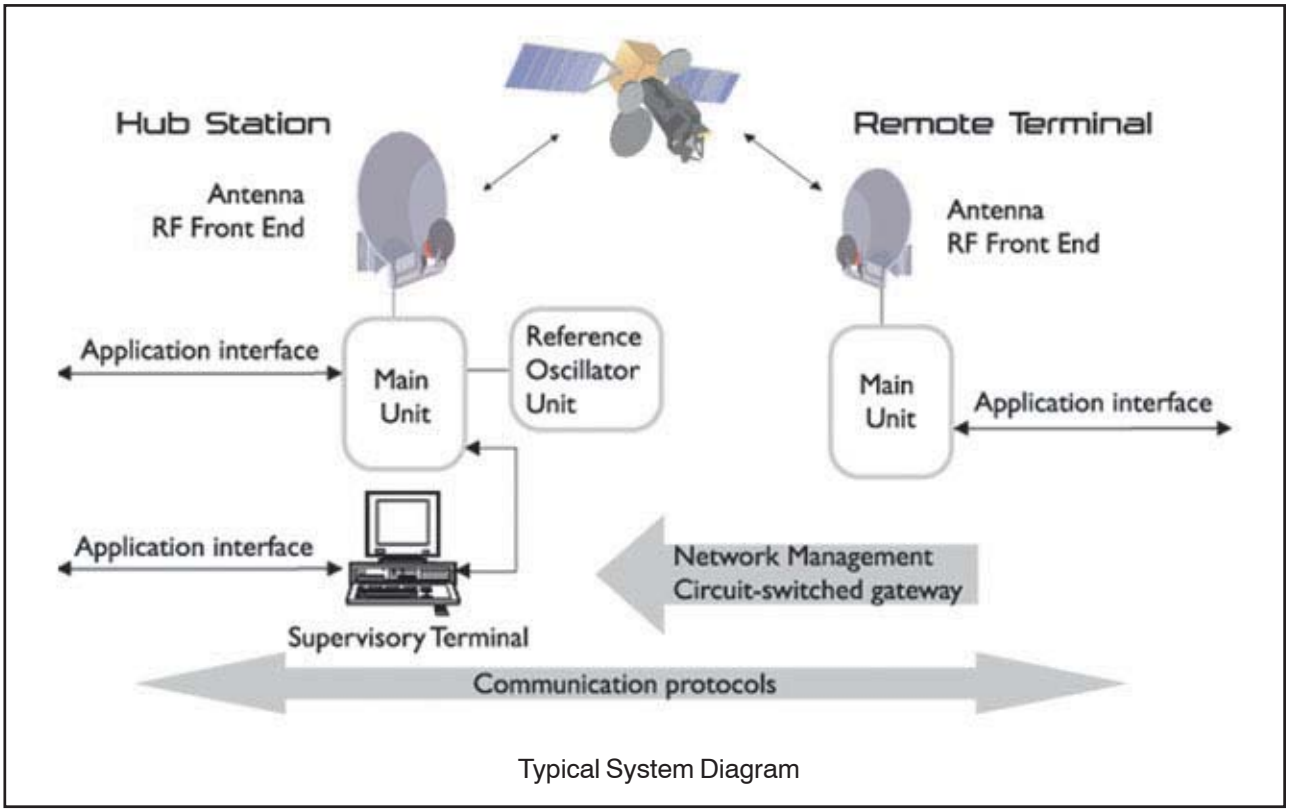
Small VSAT antennas
The small size of our VSAT antennas reduces our manufacturing costs. These savings are of course passed on to the end-user Small antennas make for reduced shipping and installation costs. Small antennas require no extra civil work costs or paperwork.

Network management System on a PC
The TSAT NMS runs under Windows NT/2000/XP on a normal PC, making the management of the network very easy. This easy and quick-to-learn system will reduce the costs of training your staff on the operation of a VSAT network.

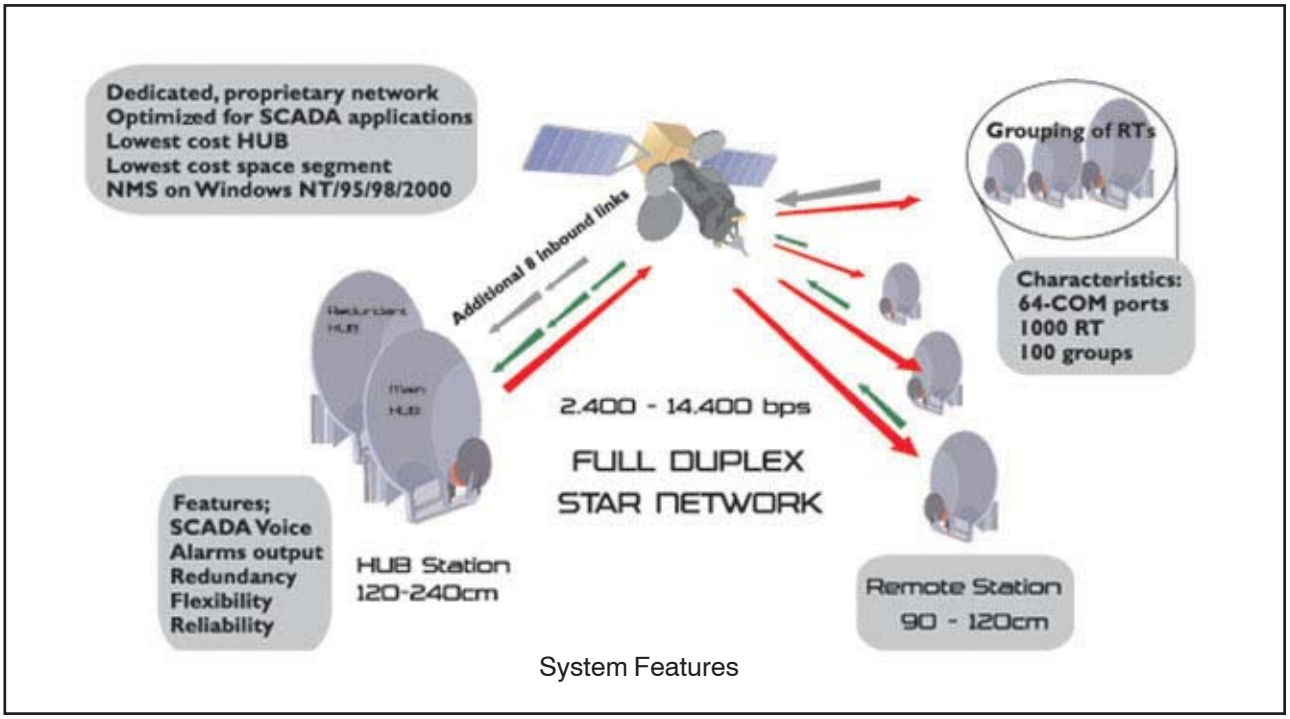
Optional Voice Capability
Allows voice communication in parallel with your data flow.

Optional Multiple Inbound Links
Additional inbound channels will improve network capacity in cases of high traffic and high response time requirements.

Optional Redundant Hub
Two parallel systems with Remote Terminals being able to use backup Hub if primary Hub is not available.



Typical System Diagram



System Features

TSAT 2150 Specifications

Antenna
Remote 36” (90 cm), 48” (120 cm)
Hub 48” (120 cm), 71” (180 cm), 95” (240 cm)

Frequency
Transmit: 14.0 - 14.5 GHz
Receive: 10.95 - 11.45, 11.7 - 12.2,
12.25 -12.75 GHz

Modulation and data rates
2-4PSK: 2400, 4800 bps
OQPSK: 9600 bps (FEC 1/2)
14400 bps (FEC 3/4)

Access Methods
Outbound: TDM.
Inbound: TDMA, Slotted Aloha.

Application Interface
RT: 2x Async. RS232, DB9

Options:
- RS422/RS485
- X.25, DB25
- IP/Ethernet, RJ45

HUB: 4-64 Async. RS 232, DB25

Options:
- RS422/485
- X.25
- IP/Ethernet, RJ45

Communication protocols
Circuit switched: Point-to-Point,
MultidropPSTN modem dial-up emulation,
Leased line emulation

Options:
Packet switched: X.25 SVC/PVC, TCP/IP

Mounting
Antenna: Wall or ground mount, 3 inch pole Main Unit/Indoor Unit: Desktop

Options:
- 19" rack mount
- Outdoor cabinet

Weight and dimensions:
Antenna
36” (90cm) -21 lbs (9.4kg)
48” (120cm) - 41kg

RF Front End
TX and RX - 3.5 lbs (1.6kg)

Main Unit
12.75” x 10.12” x 2.75” - 5.5 lbs
(324x257x69 mm - 2.5 kg)

Link budget examples
The table shows transponder load for typical Ku band satellites expressed in Units. The Unit as defined by Eutelsat corresponds to one 64 Kbps channel towards a 3.3 meter receiving antenna. One transponder containes approximately 400 Units.

HUB = 48” (120 cm) / RT = 36” (90 cm)

	2400 bps	4800 bps	9600 bps
Outbound link	.11 units	.22 units	.45 units
Inbound Link	.08 units	.16 units	.28 units
Total System	.19 units	.38 units	.73 units

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