



XSTAR SATELLITE IoT HUB

For Any Scale Satellite-based
IoT and M2M Connectivity

PRODUCT SHEET

SCALABLE SATELLITE HUB FOR MASSIVE IOT NETWORKS

Xstar is a software-defined IoT network hub designed to enable large-scale satellite-based IoT and M2M connectivity. Built on a hybrid architecture that combines an advanced digital unit with an integrated RF unit, Xstar supports massive terminal counts, flexible channel configurations, and scalable throughput—making it ideal for industrial, utility, and mission-critical networks. With native support for CDMA and DVB-S2X and optimized for GEO satellites, Xstar ensures robust, efficient, and cost-effective coverage in even the most remote fixed-site deployments.

HYBRID ARCHITECTURE FOR FLEXIBLE DEPLOYMENT

Xstar's dual-part architecture includes a modular digital hub unit and a compact RF unit that interfaces with the satellite link. This separation simplifies installation and integration into diverse ground systems and facilitates flexible scalability and redundancy. The system supports multiple return channels and beams, advanced CDMA demodulation with interference cancellation, and dynamic spectrum usage. With support for virtualization, VNOs, and IP-based traffic, Xstar fits seamlessly into modern network environments and enables agile service rollout.

ENGINEERED FOR DENSITY, BUILT FOR EFFICIENCY

With support for over one million terminals, dynamic congestion control, and adaptive power and spectrum allocation, Xstar is optimized for performance and efficiency. The integrated hub management software supports SNMP, static and dynamic IP addressing, and real-time performance monitoring. Available in Ku-band or extended Ku-band, and configurable in multiple hardware topologies, Xstar is a future-ready platform for satellite-based IoT expansion.

HIGHLIGHTS

- Software-defined IoT Hub platform for GEO satellite networks
- Support for CDMA (ESSA) and DVB-S2X protocols
- Scales to 1,000,000+ terminals
- Multi-beam and multi-channel support
- Successive Interference Cancellation (SIC) decoding
- Configurable return link:
2.5 / 5 / 10 MHz channel widths
- Terminal data rates: 4 kbps – 160 Kbps
- Forward throughput up to 220 Mbps
- Modular architecture with integrated L-band front-end
- Integrated 10 MHz reference clock generation / synchronization
- Integrated BUC power output
- Remote software upgrade and SNMP/CLI control
- Compact 2U (digital unit) and 2U (RF unit) form factor



XSTAR SATELLITE IoT HUB – SPECIFICATIONS

DIGITAL UNIT

RETURN LINK DEMODULATOR

Frequency Range: 950-2150 MHz
Signal Power: -30 to -60 dBm
Standard: ESSA (FSIM)
Channel Bandwidth: 2.5 / 5 / 10 MHz
Spreading Factors: 16, 32, 64, 128, 256
Data Rates per Terminal: 4 Kbps to 160 Kbps
Traffic Overhead: 7%
Congestion control:
Automatic Power spreading
Encapsulation: RLE
Throughput per Demodulator System:
2.75Mbps / 5.5Mbps
Cascading of Demodulators: Up to 3
Demodulator Processing Latency:
450 mSec per IC loop (upper bound)

SYSTEM INFORMATION

IP Encapsulation

MPE: According to ETSI 301192

Traffic Interface

Interface: 10/100/1000 BaseT

Network: L3

Control & Monitor

Serial port: Serial over USB CLI

IP: WEB API

Upgrade: SW and FW field upgradeable

Standards Compliance

Safety: CE

EMI/EMC: FCC part 15, Class A

Physical & Power

Dimensions: (L x W x H):

764 x 445 x 87 mm

Rack mount – 2U 19"

Weight: 18 Kg (average)

Power: 110-240 VAC, 50/60 Hz,
500 W (average)

BUC Power: 24 V / 4 A

Environmental

Operating temperature: 0° to 40° C

Storage Temperature: 0° to +60° C

Humidity: 5% to 95% non-condensing

RF UNIT

SYSTEM FUNCTIONALITY

- Single or Dual DVB-S2X Modulation/ Encapsulation
- Single SDR digitizer for digital unit demodulation
- Reference clock generation / synchronization

FORWARD DVB-S2X MODULATOR

Standard:

Fully compliant with ETSI EN 302 307

DVB-S2 Modes: CCM, VCM and ACM modes

Modulation:

QPSK, 8PSK, 16APSK, 32APSK, 64APSK, 128APSK, 256APSK

Symbol Rates: 100Ksps to 60Msps

Throughput: Up to 220Mbps

Roll Off Factors: 0.05, 0.1, 0.15, 0.2, 0.25, 0.35

Coding: LDPC and BCH according to DVB-S2

Code Rates:

1/4, 1/3, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10

Framing: Short and Normal

DVB-S2 Pilots: On / Off

Frequency Range: 950 – 2150 MHz

Signal Level: 0 to -30 dBm

RF Connector: Type F, 75 Ohm / SMA, 50 Ohm

Spurious Level: <-50 dBc / 4 KHz

Harmonics: <-50 dBc

Phase Noise: Better than IESS-316

Reference Clock:

10MHz internal

Stability ±2ppm over temperature and aging

External Clock: By configuration

Return Loss: >10 dB

TX Power Off: >50 dB

Flatness: ± 0.5 dB over any 36 MHz band,
± 2dB over the full band

SYSTEM INFORMATION

Networking

Integrated Ethernet Switch for Management

Management Port: 1GbE

Traffic Ports: 3 x 1GbE

Traffic Interface

Data Output: I/Q Stream over UDP

Control & Monitor

GbE interface: Web based with REST interface

IP address: Static or DHCP

Upgrade: Web-based

Standards Compliance

Safety: CE

EMI/EMC: FCC part 15, Class A

Physical & Power

Dimensions:

Rack mount – 2U 19"

Weight: 4.5 Kg

Power: 110-240 VAC, 50/60 Hz, 40 W max

Environmental

Operating temperature: 0° to 40° C

Storage Temperature: 0° to +60° C

For more information visit
www.novelsat.com

All registered trademarks are the property of their respective companies. This brochure is being provided for informational purposes only. The details contained in this document, including product and feature specifications, are subject to change without notice and shall not bind NOVELSAT-AYECKA to a specific product or set of features related thereto. DVB is a registered trademark of the DVB Project.