THE NEW STANDARD IN WIDEBAND DATA RECEPTION

» Multi-mission
» License-free
» Reliable and secure
» Innovative

From the world leader in Earth Observation ground systems, the Viasat High-Rate Receiver 1200 provides high-speed demodulation and decoding of wideband transmissions at X- and Ka-band. Supporting current and future optical, SAR, scientific, and meteorological satellites with the latest waveforms, a single receiver can provide multi-channel support up to 2.4 Gbps data rate. With two IF inputs, each with two demodulators, it is particularly suited for high-resolution multi-channel or dual polarization satellites with wideband downlinks such as Worldview or Pleiades.

The receiver is designed to optimize the entire ground station, simplifying station design and maximizing reliability. With user selectable IF frequency bands and multi-channel tuning, legacy station components can be eliminated and overall station design optimized. The high reliability, FPGA/Linux-based design maximizes station reliability, ensuring images are received when it counts.

The receiver interfaces to popular image processors through ECL or 10 GbE connections and is typically used with a companion Viasat data processor to provide further data processing, data storage, and FTP and TCP forwarding.

The true multi-mission design allows it to be used in a variety of applications, from multi-satellite ground stations to satellite test-bench environments.

SUPPORTED SATELLITES

» Aqua/Aura/Terra
» Worldview-1/2/3
» Landsat-7/8
» Pleiades-1A/1B
» Spot-6/7
» Kompsat Series
» RadarSat-1/2
» TerraSAR-X/TanDEM-X

» IRS Series
» CartoSat Series
» COSMO-Skymed
» Gokturk-1/2/3
» GeoEye-1
» CBERS Series
» Sentinel Series
» Many Others…

HIGH-RATE RECEIVER 1200 AT-A-GLANCE

Hardware Advantages
» Two IF inputs
» Four demodulators
» Test modulator
» 2.4 Gbps total throughput
» Advanced coding
» Adaptive equalization
» Compact 2U design

Optimizes System Design
» User selectable input band
» Tunable IF frequency
» Multi-mission design

User Friendly
» All web GUI design
» Intuitive JSON interface

Security
» Hardware-based design
» Linux-based M&C

Reliability
» Non-PC based
» Redundant power supplies
» User serviceable fans
» MIL-STD-810 tested

Options
» VDP processor/storage
» LVDS or CML output
» Customized waveforms

SPECIFICATIONS

MODULATIONS AND RATES

Modulations	BPSK, QPSK, OQPSK, AQPSK[2], 8PSK,16QAM[1,2]
Variable Modulations	OQPSK/8PSK (Worldview-3)
Symbol Rates	» 7.5 to 200 MBd x 4 channels » 7.5 to 400 MBd x 2 channels
Baseband Interfaces	» Dual 10 GbE » ECL, data/clock interface[2]
Data Rates	» 7.5 to 600 Mbps x 4 channels » 7.5 to 1200 Mbps x 2 channels
Pulse Shaping Filters	» Root-raised cosine (0.2 to 1.0), Unshaped (sinc spectrum/I&D)

FEC

Convolutional/Viterbi	CCSDS r=1/2 (131.0-B)
» **Stacking**[2]	I+Q[1], 4I+4Q, 8I+8Q (450-SNUG)
» **Puncturing**[1]	2/3, 7/8 (131.0-B)
4D-8PSK-TCM	All CCSDS rates (401.0-B)
Reed-Solomon	CCSDS-223, -239 (131.0-B); DVB-S-239 (ETSI EN 300 421); Intelsat-235 (IESS-308)
» **Shortening**	0 to 32
» **Interleave Type**	CCSDS; Convolutional
» **Interleave Depth**	1 to 16
LDPC[2]	CCSDS r=7/8, (131.0-B)

FEC THROUGHPUT

BPSK	» Uncoded: 400 MBd[2] » Reed-Solomon: 200 MBd
QPSK AND OQPSK	» Uncoded: 400 MBd[2] » Convolutional/Viterbi: 200 MBd » Reed-Solomon: 200 MBd » LDPC: 400 MBd[2]
8PSK	» Uncoded: 400 MBd[2] » 4D-8PSK-TCM: 200 MBd » Reed-Solomon: 200 MBd

ADDITIONAL FRAME PROCESSING

Randomization	CCSDS, DVB-S, Intelsat, WorldView
Primary Framing Layer	CCSDS, DVB-S, Intelsat
Secondary Framing Layer	Asynchronous
Frame Length	16 to 4096 bytes
Advanced Data Processing, Recording, and TCP/IP Data Distribution	Available with Viasat Data Processor (VDP)[3]

ADDITIONAL FEATURES

Receive Equalization	Static tilt compensation Digital adaptive equalization
Built-in Test	
» **Bit Error Rate Tester**	Transmit and receive; 2^{23}-1, 2^{15}-1, 2^{11}-1, 2^9-1 PRBS (ITU-T O.150) and other sequences
» **Link Reporting**	Es/N0, offsets, decoder and frame processing statistics
» **GUI**	Constellation, spectrum, digital equalizer display
» **IF Loopback**	Internal loopback without cable changes
» **TX Noise Generator**	AWGN with calibrated Es/N0 (0 to 30 dB)
Baseband Data Metadata	Time-tagging, frame quality information

INTERFACES

IF Signal	
» **Connector**	SMA female
» **720 MHz Band Frequency**	720 ± 200 MHz; tunable
» **1200 MHz Band Frequency**	1200 ± 400 MHz; tunable
» **2400 MHz Band Frequency**	2400 ± 750 MHz; tunable
» **TX Signal Level**	-50 to 0 dBm
» **RX Receive Level**	-50 to -10 dBm
Baseband Data	
» **Protocol**	» ECL (SMA) » 10G Ethernet (SFP+)
» **Optional Protocols**[1]	CML (SMA), LVDS (RJ45/D-SUB)
» **Data Format**	Framed or unframed; with metadata
Monitor and Control	
» **Remote Connector**	10/100/1000 Ethernet (RJ-45)
» **Remote Protocol**	JSON-RPC over TCP/IP
» **Remote GUI**	Web browser
» **Local Interface**	Front panel display
External Reference Input	10 MHz (SMA)
Mains Power	90 to 264 VAC, 47 to 63 Hz; ≤300 W
Power Supply Redundancy	1:1; dual inputs

OTHER

Size	19 x 3.5 x 21 in (EIA rack-mountable)
Weight	≤15 kg
Certification	CE

NOTES

[1] Non-standard functionality, consult factory for availability

[2] Available in 2 channel mode only

[3] Separate optional unit