Viasat High-Rate Receiver 3200

For Remote Sensing and Earth Observation

The Viasat High-Rate Receiver 3200 provides up to 6.4 Gbps transfer rates. These unprecedented data rates offer a substantial increase in data density for next-generation Ka-band Earth Observation satellite applications.

KA-BAND HIGH-RATE DATA FOR EARTH OBSERVATION

Viasat, the world leader in remote sensing, ground systems, developed the Viasat High-Rate Receiver 3200 to take maximum advantage of the 1.5 GHz spectrum allocated to Ka-band Earth Observation missions.

The Viasat High-Rate Receiver 3200 provides two independent IF channels, either one demodulator and decoder per IF channel at 1600 Msps per demodulator/decoder or two demodulators and decoders per IF channel at 800 Msps per demodulator/decoder. It achieves data rates of up to 4800 Mbps per IF channel for a total throughput of 9600 Mbps. The receiver provides digital cross-pol cancellation between the IF channels using Viasat's patented algorithm. The single channel configuration allows two receivers to be utilized for high-rate dual polarized links, achieving up to 9.6 Gbps downlink capability.

The receiver is designed for full remote lights-out operational scenarios. All control capability is provided through web-based GUI and JSON-based management and control. All non-volatile storage is sanitizeable for use in operational data sensitive applications.

OPTIONAL FRONT END PROCESSOR FOR DATA CAPTURE, PROCESSING AND ARCHIVE

The Viasat High-Rate Receiver Data Processor extends the features of the Viasat High-Rate Receiver 3200 by providing data capture, processing and archive for up to 4 Gbps transfer rates. The processor can ingest two independent data streams and provides streaming and playback over 10 GbE Ethernet from the Viasat High-Rate Receiver 3200.

The Viasat Data Processor processes and archives data at rates up to 4000 Mbps and performs raw-data and processed-data archiving simultaneously. The processor streams raw or de-framed data out in near-real-time and provides streaming playback of archived raw or de-framed data all over the 10/100/1000 BASE-T or 1000/10 GbE interface. FTP and SAMBA file transfer methods are also provided.

HIGH-RATE RECEIVER 3200 AT-A-GLANCE

High-Rate Receiver 3200

- Designed for high-rate Ka-band and other high-rate satellite to ground links
- Total throughput of 9600 Mbps in dual channel mode
- Extremely high-rate single channel downlinks
- Single modulator channel to support full loopback testing
- Internal loop-back and BERT capabilities
- Digital cross-polarization cancellation
- Remote lights-out operation

Optional Data Processor

- Optional equipment that adds data capture, archiving, sorting, and playback capability to the High-Rate Receiver 3200
- Data capture, processing, and archive for up to 4 Gbps transfer rates
- RAW bitstream archiving
- VCID sorting and storage of TM and AOS framed data

Viasat High-Rate Receiver 3200

SPECIFICATIONS

MODULATIONS AND RATES

Modulations	QPSK, OQPSK, 8PSK, 16APSK[1,2], 32APSK[1,2]
Symbol Rates	100 to 1600 MBd x 2 channels 100 to 800 MBd x 4 channels[1,2] 7.5 to 200 MBd x 8 channels[1,3]
Data Rates	200 to 4800 Mbps x 2 channels 200 to 2400 Mbps x 4 channels[1,2] 15 to 600 Mbps x 8 channels[1,3]
Pulse Shaping Filters	Root-raised cosine (0.2 to 1.0) Unshaped (sinc spectrum/I&D)

FEC

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

ACM/VCM

CCSDS SCCC[1,2] (131.2-B)	Modcods 1-22
DVB-S2/S2X[1,2] (ETSI EN 302 307-1/-2)	Modcods 1-28

FEC THROUGHPUT

QPSK and OQPSK	Convolutional/Viterbi: 200 MBd[1,2] Reed-Solomon: 200 MBd[1,2] LDPC: 1600 MBd Uncoded: 1600 MBd
8PSK	4D-8PSK-TCM: 200 MBd[1,2] Reed-Solomon: 200 MBd[1,2] Uncoded: 1600 MBd
SCCC	500 MBd
DVB-S2/S2X	Consult factory
Advanced Data Processing, Recording, and TCP/IP Data Distribution	Available with Viasat Data Processor (VDP)[2]

ADDITIONAL FEATURES

Receive Equalization	Static tilt compensation; digital adaptive equalization
Cross-Polarization Interference Cancellation	Digital adaptive cancellation
Transmit Equalization	Static tilt compensation
Frame Processing	CCSDS, RS DVB[1,3], Asynchronous data layers
Randomization	Synchronous (CCSDS, DVB-S[1,3]); Asynchronous (WorldView[1,3])
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**	E_s/N_0, Offsets, Decoder and frame processing statistics
» **GUI**	Constellation, spectrum, digital equalizer display
» **IF Loopback**	Internal loopback without cable changes
» **Transmit Noise Generator**	AWGN with calibrated E_s/N_0 (0 dB to 30 dB)
Baseband Data Metadata	Time-tagging, frame quality information
Power Supply Redundancy	1:1; hot-swappable

INTERFACES

IF Signal	
» **Connector**	SMA female
» **720 MHz Band Frequency**	720 MHz ± 200 MHz; tunable
» **1200 MHz Band**	1200 MHz ± 400 MHz; tunable
» **2400 MHz Band**	2400 MHz ± 750 MHz; tunable
» **Transmit Signal Level**	-60 dBm to 0 dBm
» **Receive Signal Level**	-50 dBm to -10 dBm
Baseband Data	
» **Connector**	10G Ethernet (SFP+)
» **Protocol**	Framed or unframed; with metadata
Monitor and Control	
» **Remote Connector**	10/100/1000 Ethernet (RJ-45)
» **Remote Protocol**	JSON-RPC 2.0 over TCP/IP
» **Remote GUI**	Web Browser
» **Local Interface**	Front Panel Display
» **Ext. Frequency Reference**	SMA female, 10 MHz
» **Mains Power**	90 to 264 VAC, 47 to 63 Hz; ≤ 460 W

OTHER

Size (W x H x D)	19 x 5.25 x 21 in (EIA rack-mountable)
Weight	≤ 30 lb
Certification	CE

NOTES

[1] Consult factory for availability

[2] Optional functionality

[3] Available with VHR-1200

CONTACT

SALES
TEL +1 760 476 4755 **EMAIL** insidesales@viasat.com **WEB** www.viasat.com/antenna-systems