



VHR-400 AT-A-GLANCE

Fully digital, high-rate PSK demodulator and test modulator providing maximum rate coverage for the remote sensing band.

Preprogrammed to cover existing remote sensing missions; field programmable to support future missions.

Tunable IF frequencies and data rates.

Modular, compact chassis to permit configuration to individual system requirements and to minimize rack space.

A single chassis can accommodate two 400 Mbps demodulators and a 400 Mbps test modulator.

LINUX operating system for more secure operation.

The VHR-400 brings maximum data rate (400 Mbps OQPSK) capability to the Earth Exploration band, and provides an unprecedented level of user configurability.

ViaSat (the world leader in remote sensing) is proud to introduce our fourth-generation high-rate modem, the VHR-400, has been specifically designed for the remote sensing and earth observation marketplace. This modem is based on ViaSat's 30 years of remote sensing and earth observation ground station design, manufacture and deployment expertise.

The VHR-400 is a state-of-the-art digital modem, designed to meet the demanding requirements of current and future remote sensing and earth observation missions. It delivers full coverage of the commercial remote sensing band, at data rates up to 400 Mbps QPSK. With its modular design, the modem can be tailored to the individual requirements of each customer. The modem may be configured for various combinations of demodulators, FEC decoders and a test modulator. The test modulator may be used to perform end-to-end bit error rate testing without the need for external test equipment.

Satellite configurations are preprogrammed for simple remote and front panel operation and the modem is field programmable to accommodate newly defined future missions. The LINUX-based operating system provides a high degree of reliability and security from web-based threats.

VHR-400 ViaSat High Rate Modem

Key Features

PSK demodulator and optional test modulator providing tunable data rate coverage from:

- 1 to 200 Mbps BPSK
- 2 to 400 Mbps QPSK, OQPSK, and GMSK
- 3 to 600 Mbps 8PSK

Tunable IF with either of two frequency options:

- 470 to 970 MHz or
- 950 to 1450 MHz

Programmable matched filter for bandwidth limited downlinks (SRRC and custom filtering options)

Amplitude tilt equalization to compensate for cable tilt to improve BER performance

Test modulator includes built-in BER test capability and internal noise source

Simplified front panel scroll button control

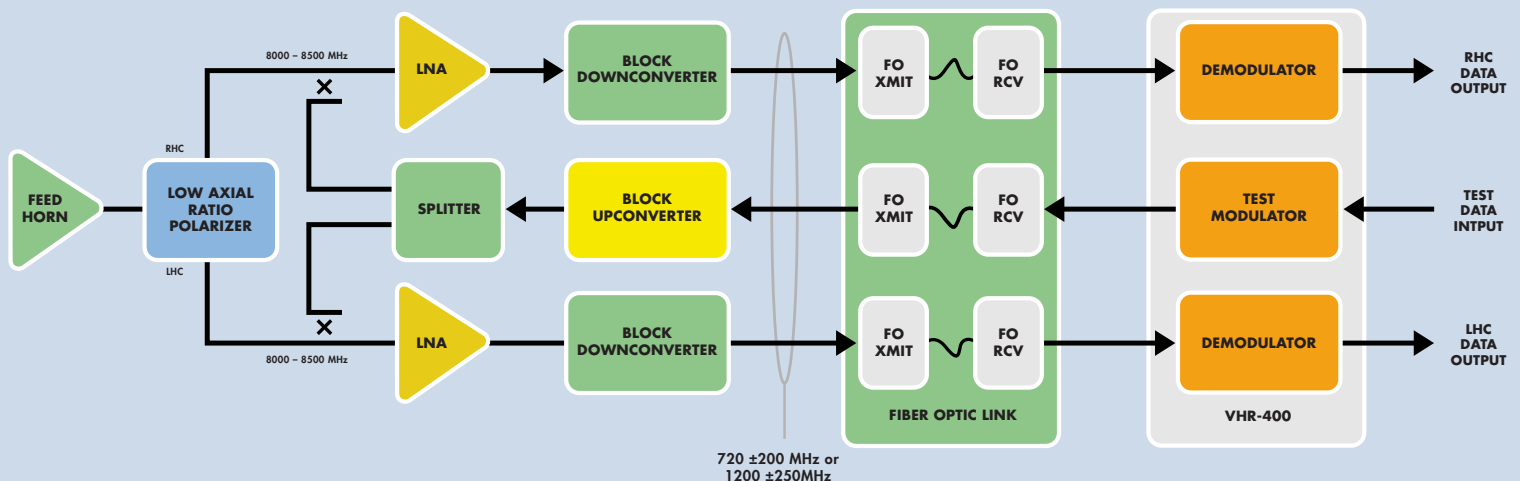
XML based Ethernet remote monitor and control

Compact telecom standards-based chassis with 4 user configurable slots for configuration with up to two demodulators and a test modulator

Optional FEC decoder module provides Viterbi and TCM error correction



Typical Remote Sensing Receive Subsystem





Satellites Supported by the VHR-400:

AURA

AERO

AQUA (DB & DP Modes)

CBERS (CCD & HW-DT)

COSMO Sky-Med

ENVISAT(MERIS & ASAR)

EO-1

EROS-A

EROS-B

ERS-2

GeoEye-1/2

IceSat

IKONOS

IRS-1C/D (PAN & LISS)

IRS-P5 (Cartosat-1)

IRS-P6 (RESOURCESAT)

Kompsat-1

Kompsat-2

Kompsat-5

METOP

OFEQ

QuickBird

RADARSAT-1/2

SPOT-4/5

Terra DB mode)

WorldView-1/2

SPECIFICATIONS

IF Frequency: 470 – 970 or 950 – 1450 MHz

Tuning Step Size: 100 kHz

Carrier Acquisition Range: ± 1 MHz

Doppler Tracking Rate: ± 12 kHz/sec

Modulation Types:

BPSK, QPSK, OQPSK,

Optional GMSK, 8PSK

Demod IF Input Level: -50 to 0 dBm

Modulator IF Output Level: -70 to 0 dBm

Symbol Rates: 1 Msps to 200 Msps

Symbol Rate Step Size: 1 kpsps

Tilt Equalization: ± 5.0 dB, in 0.1 dB increments

Matched Filtering:

Non-Bandlimited (sinc/x spectrum)

Square Root Raised Cosine

Custom Filters

Bit Error Rate: ≤ 1 dB from theory

Output Format: Two Differential ECL Outputs

Each with Data and Clock

Remote Control: ETHERNET

Dimensions: 5U, 16 in deep

Weight: ≤ 25 lbs

Prime Power:

85 to 265 Vac, auto-sensing, auto-ranging

47 to 63 Hz

≤ 375 W (depending upon configuration)

RANGE OF DATA RATES DIFFERENTIAL DECODING

MODULATION TYPE	RANGE OF DATA RATES	DIFFERENTIAL DECODING
BPSK	1 to 200 Mbps	NRZ-L/M/S
OQPSK	2 to 400 Mbps	NRZ-L/M/S
QPSK	2 to 400 Mbps	Modulo-4 Gray Codes
GMSK	2 to 400 Mbps	NRZ-L/M/S
8-PSK	3 to 600 Mbps	NA

TYPICAL CONFIGURATIONS

	SLOT 1	SLOT 2	SLOT 4	SLOT 5
1 Channel	Demod			
1 Channel with Test Modulator	Demod		Test Mod	
2 Channels with Test Modulator	Demod		Test Mod	Demod
2 Channels with FEC	Demod	Decoder	Decoder	Demod

ViaSat, Inc.

1725 Breckinridge Plaza
Duluth, GA 30096

Tel: +1.678.924.2400

Fax: +1.678.924.2480

www.viasat.com

