# Model 4460

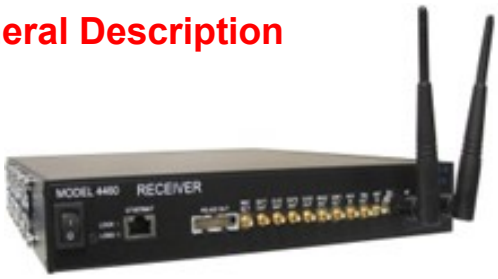
## Portable Digital RF/IF Receiver

## Features

- Form Factor
  - 10.75 x 12 x 1.75 inch chassis
- Noise Figure
  - < 10 dB
- Wide Dynamic Range
  - > 80 dB
- RF Frequencies
  - 2185 MHz to 2485 MHz
  - 1700 MHz to 1850 MHz
  - 1427 MHz to 1545 MHz
  - 550 MHz to 1100 MHz*
- 4 Selectable IF Bandwidths
- Multi-Waveform Demodulation
  - BPSK
  - QPSK
  - OQPSK
  - UQPSK*
  - AQPSK*
  - SOQPSK (ARTM Tier 1)*
  - Analog FM & PCM/FM*
  - GMSK*
- Demodulators
  - PM / PSK*
  - 1 IF, 2 SCs*
- 2 Bit Synchronizers*
  - 50 bps to 10 Mbps BPSK (20 Mbps*)
  - 100 Bps to 20 Mbps QPSK (40 Mbps*)
  - 100 Bps to 20 Mbps QPSK (40 Mbps*)
  - 100 Bps to 20 Mbps QPSK (40 Mbps*)
  - Viterbi Decoders*
  - Reed-Solomon*
- 2 Frame Sync's (Pattern Detectors)
- Byte Aligned Ethernet Data Output
- Remote Control
  - VME/PCI Bus*
  - RS232 or RS485*
  - Ethernet*

*** OPTIONAL**

## General Description




The Model 4460 Single Channel Digital Receiver is housed in a 10.75 x 12 x 1.75 inches high chassis. This light weight portable unit is powered by a standard laptop power supply. It may also be run from a standard laptop external battery unit. This unit is an integrated solution consisting of an RF Signal Processor, 2 Demodulators, 2 Bit Synchronizers and 2 Frame Synchronizers (Pattern Detectors) contained on a single slot 6U VME card. This state-of-the art module provides a compact, cost competitive, flexible solution to a wide variety of communications link scenarios.

The Model 4460 processes 3 RF Bands: S Band, 2185 MHz to 2485 MHz; Upper L Band, 1700 MHz to 1850 MHz; and Lower L Band 1427 MHz to 1545 MHz (other frequencies available). Depending upon specific user requirements, a choice of 4 IF filters are available.

The demodulation process, as well as the baseband bit synchronization process, is totally performed in the digital domain. Signal acquisition is performed by scanning the IF within the programmed acquisition band centered about the selected Carrier frequency. PM / PSK waveforms are additionally scanned for acquisition at the subcarrier frequencies. Once signal acquisition is complete, synchronized signal tracking is performed whereby continuous validation of the lock state is maintained.

A variety of FEC decoders are available and two fully programmable frame synchronizers are included for pattern detection.

Data is output via Byte aligned Ethernet (optional), TTL or RS422 ports. The unit supports an optional Ethernet output mode by which frame synchronized byte aligned data can be transported. UDP/IP transport is provided for raw data and, optionally HDLC/AX.25mdata. IRIG-106 Chapter 10 compatible output is also available.

An Encapsulated data and data-quality output may be included that supports the GDP Best Source Selector products.

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## Portable Digital RF/IF Receiver

## Specifications

**Input:**

| | |
|---|---|
| RF Frequency | 2185 MHz to 2485 MHz, 1700 MHz to 1850 MHz, and 1427 MHz to 1545 MHz |
| Noise Figure | < 10 dB |
| IF Filters | 4 selectable filter bandwidths |
| Dynamic Range | > 80 dB |
| Input Impedance | 50 ohms |
| VSWR | < 2:1 |

**Demodulation:**

| | |
|---|---|
| IF Acquisition / Tracking Range | ± 255 kHz |
| Loop Bandwidth | 0.01% to 1% of Bit Rate (Analog PM 2 Hz to 20 KHz) |
| PM Demodulator | |
| Frequency Response | 100 Hz to 15 MHz |
| Modulation Index | 0 to 2.8 Radians |
| PSK Demodulators | |
| Types | 1 IF, 2 SC* |
| Modulation Waveforms | BPSK, QPSK, OQPSK, UQPSK*, AQPSK*, GMSK*, SOQOSK ARTM Tier 1* |
| Locking Threshold | 6 dB Eb/No |
| PCM/FM Demodulator* | |
| Data Rate | 1 kHz to 20 Mbps (30 Mbps*) |

**Bit Synchronizer(s): (Option)**

| | |
|---|---|
| Bit Rate | 50 bps to 10 Mbps BPSK (20 Mbps*)<br>100 bps to 20 Mbps QPSK (40 Mbps*) |
| Input Codes | NRZ-L,M,S; BIF-L,M,S |
| Output Codes | NRZ-L |
| Viterbi Decoder* | Rate 1/2, 1/3, 3/4, 7/8 ...options |
| Descrambler | V.35 / V.36 (CCITT/ Intelsat) |

**Data Output**

TTL, RS422 (Standard)
Frame Sync'd Byte Aligned Ethernet Data Output*

**Control Interface:**

Ethernet (Standard); RS-232*; PCI/VME Bus*

**Environment:**

| | |
|---|---|
| Card Size | PCI/VME, Single Slot |
| Temperature | 10°C to 50°C Operational; -40°C to 85°C Storage |

**Status Output:**

Signal Present, Carrier Lock, Bit Synchronization Lock, Viterbi Lock, Frame Lock, Doppler

* OPTIONAL

## Ordering Information

| | | | |
|---|---|---|---|
| MD4460-00 | Basic Unit (Single Channel) | OP4460-40 | Bit Syncs w/Frame Syncs (Pattern Detectors) |
| OP4460-02 | Viterbi (R 1/2) (Requires OP-40) | OP4460-41 | Extended Bit Rate (20 Mbps BPSK, 40 Mbps QPSK) |
| OP4460-03 | Analog FM & PCM/FM | OP4460-45 | Ethernet Data Output (Byte Aligned Data) |
| OP4460-04 | Viterbi (R 3/4..) (Requires OP-40) | OP4460-61 | IRIG B Time Input |
| OP4460-05 | SOQPSK | OP4460-65 | Ethernet Chapter 10 Output |
| OP4460-07 | PM/PSK | OP4460-7X | Filters (Selectable BW Filters) |
| OP4460-08 | GMSK | OP4460-8X | Special Frequency Bands) |
| OP4460-09 | A/UQPSK w/Ambiguity Resolution | OP4460-81 | P-Band (180 to 1100 MHz) |
| OP4460-15 | CPM | OP4460-93 | Reed Solomon |
| OP4460-30 | AM/AGC Antenna Tracking | OP4460-93 | LDPC |
| OP4425-30 | AM/AGC Antenna Tracking | OP4460-VI | Remote Control VI Software |

* *Recognizing that no standard product can meet all the needs of all users, GDP stands ready to provide units tailored to unique applications.*
* *The statements in this data sheet are not intended to create any warranty, expressed or implied. Specifications are subject to change without notice.*

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