

Model 4460

PORTABLE DIGITAL RF/IF RECEIVER



KEY 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 Features

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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GENERAL SPECIFICATIONS

Inputs

RF Frequency	LL, UL, LS, US, C & CIF Bands - see features on front page for details
Noise Figure	< 4 dB typ
IF Filters	Selectable filter bandwidths (Standard set provided)
Dynamic Range	> 100 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 3.0 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	0 bps to 10 Mbps- Standard (20 Mbps *)
Multi-H (ARTM Tier 2)*	

Bit Synchronizer(s)

Bit Rate	50 bps to 10 Mbps PCM/FM & BPSK (20 Mbps *) 100 bps to 20 Mbps QPSK/SOQPSK (40 Mbps *) NRZ-L/M/S; Bi0-L/M/S, RNRZ (Other codes available as needed)*
Input Codes	NRZ-L/M/S; Bi0-L/M/S, RNRZ (Other codes available as needed)*
Output Codes	NRZ-L/M/S; Bi0-L/M/S, RNRZ (Other codes available as needed)*
Decoders *	Viterbi Rate 1/2, 1/3*, 2/3*, 3/4*, 5/6*, 7/8* ; Reed Solomon*, LDPC*
Descrambler	V.35 / V.36 (CCITT/ Intelsat)

Data Output

Analog	
TTL, RS422 (Standard)	
Ethernet Data Output (IRIG 218, IRIG-106 Ch-10*, HDLC/AX.25*)	
Encapsulated Data & Quality that supports GDP Best Source Selector *	

Control Interface

Ethernet (Standard)

Environment

Temperature 10°C to 40°C Operational; -40°C to 70°C Storage (Extended bit rates available)

Status Output

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

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 OP4460-VI Remote Control VI Software
OP4425-30 AM/AGC Antenna Tracking	

WHY GDP

Recognizing that no standard product can meet all the needs of all users, GDP stands ready to provide units tailored to unique applications. Over fifty years of experience, far-ranging expertise, excellent products, and outstanding support make GDP not just a telemetry system supplier, but a partner you can rely on to meet your needs.

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