

# 1U Digital RF Receiver Single/Dual Channel

## Features

- Up to 2 Channels per 1U Box
- Diversity Combiner\*: Pre-D\* & Post-D\*
- Form Factor
  - 1U Rack-Mountable Chassis
- Noise Figure
  - < 10 dB (Low Noise Option Available)
- Wide Dynamic Range
  - > 80 dB
- RF Frequencies
  - 2185 MHz to 2485 MHz (Std)
  - 1700 MHz to 1850 MHz (Std)
  - 1427 MHz to 1545 MHz (Std)
  - 100 MHz to 1100 MHz \*
  - 4400 MHz to 5500 MHz \*
  - Others Frequencies Available
- Multi-Waveform Demodulation
  - BPSK, QPSK, OQPSK
  - UQPSK \*, AQPSK \*
  - SOQPSK (ARTM Tier 1) \*
  - Analog FM & PCM/FM \*
  - GMSK\*
  - PCM/FM (ARTM Tier 0)\*
  - CPM (ARTM Tier 2)\*
- 3 Demodulators (Per Channel)
  - PCM / PSK\*
  - 1 RF, 2 SC \* (Per Channel)
- 2 Bit Synchronizers (Per Channel)\*
  - 50 bps to 10 Mbps BPSK (20 Mbps \*)
  - 50 bps to 20 Mbps QPSK (40 Mbps \*)
  - 2 Viterbi Decoders \*
  - R=1/2, 1/3\*, 2/3\*, 3/4\*, 5/6\*, 7/8\*
  - Reed-Solomon \*
  - LDPC\*
- 3 Frame Synchronizers per Channel\*
- Byte Aligned Ethernet Data Output\*
- Best Source Selector Compatible Output\*
- DQE/DQM Output Modes for BSS\*
- 70 MHz, IF Inputs & Outputs
- Tape (IRIG 106) Inputs & Outputs
- Tracking Antenna Control Support
  - Envelope / Coherent AM\*
  - SNR\*
- IRIG-B\*
  - Input, Output
- Space Time Code (STC)\*
- Adaptive Equalization\*
- SLE (Support for Space Applications)\*
- CCSDS (Support for Space Applications)\*
- IRIG Chapter 10 Compatible Output\*
- IRIG Chapter 7 Compatible Output\*
- Remote Control
  - Ethernet & RS-232

**\* Optional Features**

## General Description



The 3rd Generation GDP Model 4426 Digital RF Receiver is available in single or dual channel configurations in a 1U rack-mounted chassis. Each channel is completely independent and includes an integrated solution consisting of an RF Signal Processor, Demodulators, optional Bit Synchronizers and Frame Synchronizers. Diversity Combiner (Pre-D and Post-D) is optional. This state-of-the-art receiver provides a compact, cost competitive, flexible solution to a wide variety of communications link scenarios.

The Model 4426 processes 3 RF Bands: S Band, 2185 MHz to 2485 MHz; Upper L Band, 1700 MHz to 1850 MHz; Lower L Band 1427 MHz to 1545 MHz. Additional RF bands are available (i.e. P Band 100 MHz to 1100 MHz, C-Band ...). Multi-Band options are also available.

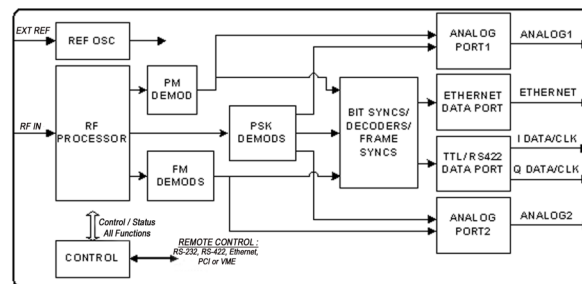
The demodulation process, as well as the baseband bit synchronization process, is totally performed in the digital domain. Signal acquisition is performed by scanning the IF within the programmed acquisition band centered about the selected Carrier frequency. Waveforms are additionally scanned for acquisition 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 optional FEC decoders are available and two fully programmable frame synchronizers (pattern detection) are provided with the bit synchronizer option.

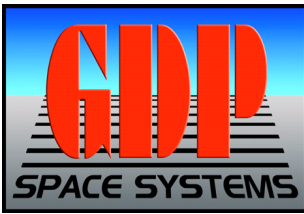
With the Bit Synchronizer option, data is output via TTL and RS-422 outputs.

The unit supports an optional Ethernet output interface by which frame synchronized byte aligned data can be transported. UDP/IP transport is provided for raw data. 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.



Typical Channel (CH 1, CH 2 & Combined\*)



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Channel Specifications

Input:

RF Frequency 2185 MHz to 2485 MHz & 1700 MHz to 1850 MHz & 1427 MHz to 1545 MHz or 100 MHz to 1100 MHz \*
Noise Figure 4400 MHz to 5250 MHz\* (Other Frequency's Available)
IF Filters < 10 dB (Low Noise Option Available\*)
Dynamic Range Selectable filter bandwidths (Standard set provided)
Input Impedance > 80 dB
VSWR 50 Ohms
< 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 10 bps to 20 Mbps (30 Mbps \*)
Multi-H (ARTM Tier 2)\*

Bit Synchronizer(s): (Option)

Bit Rate 50 bps to 10 Mbps BPSK (20 Mbps \*)
100 bps to 20 Mbps QPSK (40 Mbps \*)
Input Codes NRZ-L/M/S; BIF-L/M/S, RNRZ (Other codes available as needed)\*
Output Codes NRZ-L/M/S; BIF-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-106 Ch-10, HDLC/AX.25)\*
Encapsulated Data & Quality that supports GDP Best Source Selector \*

Control Interface:

Ethernet & RS-232 (Standard)
IEEE 488 \*

Environment:

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

Table with 4 columns: Part Number, Description, Option Number, and Description. Includes items like MD4426-00-1U Basic Unit (Single Channel), OP4426-01 2nd Channel Card, and OP4426-30 AM/AGC Antenna Tracking.

\* 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.