

Digital RF receiver (PCI)

Features

- Form Factor
 - PCI Single Slot
- Diversity Combiner*: Pre-D & Post D*
- Noise Figure
 - < 10 dB
- Wide Dynamic Range
 - > 80 dB
- RF/IF Frequencies
 - 2185 MHz to 2485 MHz
 - 1700 MHz to 1850 MHz
 - 1427 MHz to 1545 MHz
 - 100 MHz to 1100 MHz*
 - 1Khz to 180MHz*
 - 4400 MHz to 5500 MHz*
 - Other Frequencies Available
- 4 Selectable IF Bandwidths
- Multi-Waveform Demodulation
 - BPSK, QPSK, OQPSK
 - UQPSK*, AQPSK*
 - SOQPSK
 - Analog FM & PCM/FM
 - GMSK*
 - ARTM* Tier 0,1 & 2*
- 3 Demodulators
 - PCM / PSK*
 - 1 RF, 2 SCs* (Per Channel)
- 2 Bit Synchronizers
 - 50 bps to 10 Mbps PCM/FM (20 Mbps*)
 - 50 bps to 10 Mbps BPSK (20 Mbps*)
 - 50 bps to 20 Mbps QPSK (40 Mbps*)
 - 100 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*
 - HDLC / AX.25 (e.g. CUBSAT)*
- 3 Frame Sync's per Channel *(Pattern Detectors)
- Byte Aligned Ethernet Data Output*
- Best Source Selector Compatible Output*
- Chapter 10 Output*
- Chapter 7 Decoding*
- Tracking Antenna Control Support
 - Envelope / Coherent AM*
 - SNR*
- IRIG-B*
 - Input (Time Tag Ethernet Data Out)
- Remote Control
 - PCI Bus, Ethernet*

*OPTIONAL

General Description

The RDM207 (PCI) Single Channel Digital RF/IF Receiver 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 PCI card. This state-of-the art module 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. IF 1KHz to 180MHz, P-Band 100 MHz to 1100 MHz, C-Band ...). Multi-Band options are also available.

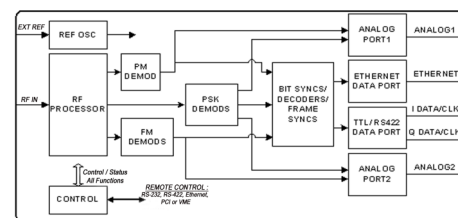
The demodulation process, as well as the baseband bit synchronization process, is totally performed in the digital domain. Signal acquisition is performed by scanning the IF within the programmed acquisition band centered about the selected Carrier frequency. PM / PSK waveforms are additionally scanned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

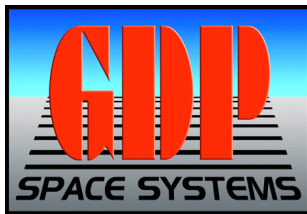
The Bit Synchronizer data is output via TTL and RS-422 outputs.

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 and RCC Best Source Selector products.



TYPICAL CHANNEL (CH 1, CH 2 & Combined*)



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 * 4400 MHz to 5250 MHz* (Other Freq's Available)
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 0/1*
Locking Threshold	6 dB Eb/No
PCM/FM Demodulator	
Data Rate	1 kHz to 10Mbps (20+ Mbps *)

Bit Synchronizer(s):

Bit Rate	50 bps to 10 Mbps PCM/FM, BPSK (20 Mbps *) 100 bps to 20 Mbps QPSK (40 Mbps *)
Input Codes	NRZ-L,M,S; RNRZ-L, BIF-L,M,S
Output Codes	NRZ-L,M,S, RNRZ-L
Viterbi Decoder	Rate 1/2, 1/3*, 3/4*, 7/8*
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:

PCI Bus (Standard), Ethernet*

Environment:

Card Size	PCI Single Slot
Temperature	10°C to 40°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

RDM207-00	Basic Unit (XX-02=VME; 20=PCI)	OPRDM207-41	Extended Bit Rate (20 Mbps BPSK, 40 Mbps QPSK)
OPRDM207-01	Bus Control	OPRDM207-45	Ethernet Data Output (Byte Aligned)
OPRDM207-02	Viterbi (R=1/2)	OPRDM207-61	IRIG B Time Input
OPRDM207-03	FM Demodulation	OPRDM207-65	Ethernet Chapter 10 Output
OPRDM207-04	Viterbi (R 3/4)	OPRDM207-8X	Special Frequency Bands
OPRDM207-05	SOQPSK	OPRDM207-93	Reed Solomon
OPRDM207-07	PM/PSK	OPRDM207-2XX	LDPC
OPRDM207-08	GMSK	OPRDM207-VI	Remote Control VI Software
OPRDM207-09	A/UQPSK w / Ambiguity Resolution		
OPRDM207-30	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.