



RECEIVER DEMODULATOR

MODEL 421

Features

- ◆ Demodulator Bit Synchronizer
 - ◆ 3.5" Chassis
- ◆ 2 Input Ports
 - 40 dB Isolation
 - 35 dB Dynamic Range
 - 75 dB Dynamic Range (Option)
- ◆ Selectable IF
 - DC to 80 MHz (unfiltered)
 - RF Inputs Optional
 - Up to 3 Selectable IF filters
- ◆ Programmable Acquisition & Tracking Range
- ◆ Multi-Waveform Demodulation
 - Digital PM
 - Analog PM (optional)
 - BPSK
 - QPSK
 - SQPSK
 - U/AQPSK
 - FM (Optional)
 - SOQPSK (Optional)
- ◆ Dual Demodulators
 - PM / PSK (optional)
- ◆ Integrated Bit Synchronizers
 - Convolutional Decoder (optional)
- ◆ Remote Control
 - RS232
 - RS485 (Option)
 - Ethernet (Option)

General Description

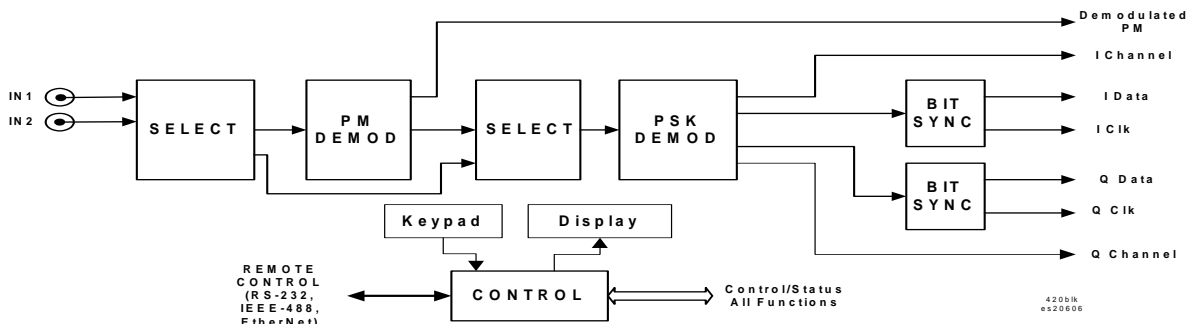
The MD421 Digital Receiver is an integrated solution consisting of an IF



Signal Processor, two Demodulators and Bit Synchronizers contained on a single slot 2U Chassis. This state-of-the-art receiver provides a compact, cost competitive, flexible solution to a wide variety of communications link scenarios.

Up to two IF input signals may be applied to the input selector multiplexer provides 45 dB (typical) of channel isolation thus insuring that only the signal of interest is applied to the IF signal processor. Depending upon specific user requirements, a band-pass or low-pass filter may be installed on the module. Optional an L, S or X-band RF input is also available. The RF signal is then down converted to a 70MHz IF prior to demodulation.

The demodulation process as well as 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 IF. PM / PSK waveforms are additionally scanned for acquisition at the subcarrier frequency. PSK sub-carrier or direct demodulation supported. Once signal acquisition is complete, synchronized signal tracking is performed whereby continuous validation of the lock state is maintained.





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SPECIFICATIONS

Input:

Input Ports	2
IF Center Frequency	DC To 80 MHz Optional RF Input Available (L, S, X-Band)
Input Isolation	45 dB Typical, 40 dB Worst Case
Dynamic Range	40 dB Typical, 35 dB Worst Case (75 dB optional)
Input Impedance	50 ohms
VSWR	< 1.5:1

Demodulation:

IF Acquisition / Tracking Range	± 255 kHz
Symbol Rate	100 bps to 10 Mbps
Loop Bandwidth	0.01% to 1% of Bit Rate (Analog PM 2 Hz to 20 KHz)
PM Demodulator	
Frequency Response	100 Hz to 6 MHz
Modulation Index	0 to 2 Radians
Locking Threshold	-24 dB CNR within the IF BW
Residual Phase Error	< 3 ⁰ RMS
PSK Demodulator (IF or Subcarrier)	
Modulation Waveforms	BPSK, QPSK, OQPSK, U/A QPSK SOQOSK (Optional)
Locking Threshold	6 dB Eb/No

Bit Synchronizer(s):(Optional)

Bit Rate	50 bps to 10 Mbps (BPSK) 100 bps to 20Mbps (QPSK) 100 bps to 6 Mbps aggregate (U/A QPSK)
Input Codes	NRZ-L,M,S; BIΦ-L,M,S
Output Codes	NRZ-L
Viterbi Decoder (optional)	Rate 1/2, 3/4 Constraint Length = 7
Outputs	Data & Clock; TTL or RS-422

Status Output:

Self-Test ; Signal Present; Carrier Lock; Bit Synchronization Lock; Viterbi Lock

Control Interface:

RS-232, IEEE 488 (Option), Ethernet (Option)

Environment:

Chassis	3.5 Inch Rack Mounted Chassis
Temperature	10 ⁰ C to 50 ⁰ C Operational; -40 ⁰ C to 85 ⁰ C Storage

Ordering Information

060206

MD421-00	Basic Unit	OP421-40	RS422 Bit Sync Outputs
OP421-02	Viterbi (R 1/2)	OP421-41	TTL Bit Sync Outputs
OP421-03	FM Demodulation	OP421-60	PSK6A IF PSK Modulator (BPSK,QPSK, SQPSK)
OP421-04	Viterbi (R 3/4)	OP421-7X	Filters (2 Selectable IF Filters)
OP421-21	IEEE-488 Remote Control	OP421-8X	RF to IF Down Converter
OP421-22	Ethernet Remote Control	OP421-93	Reed Solomon Option

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. Equipment specifications are subject to change without notice.

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