



PSK Subcarrier Modem

Model 780M

Features

- Independent Modulator and Demodulator
- Tunable Modulated Subcarrier 1 kHz to 2 MHz
- Data Rates to 250 kbps
- True BPSK Modulation
- RS232 Remote Control
- High Contrast VF Display

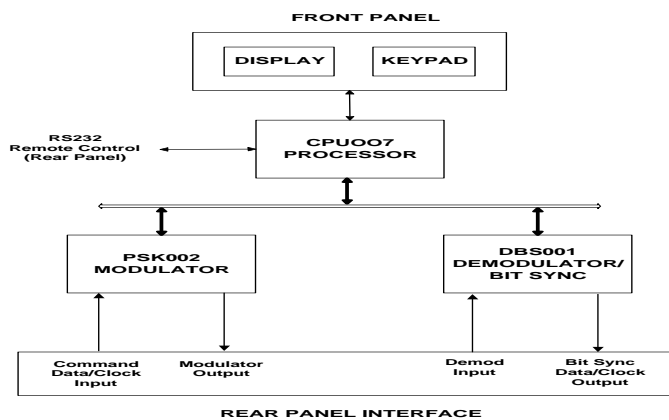
functions within the 780M are microprocessor controlled from either the front panel or the RS232 remote control port with the exception of the PSK modulator output level which is controlled by a front panel potentiometer.

General Description

The GDP Space Systems Model 780M PSK Subcarrier Modem provides BPSK subcarrier modulation and demodulation in a single 3.5 inch high, 19 inch rack mount chassis. The 780M provides non-coherent modulation of a subcarrier by an input



data stream. An internal PSK demodulator and bit synchronizer provides a path for data and clock output. The ability to support differential coding adds flexibility to the spacecraft commanding system. All



The Processor provides an interactive, menu-driven front panel user interface or accepts formatted ASCII string from the RS232 remote control port.

The Modulator section accepts TTL or RS422 command data and clock, provides decoding and encoding of the input, then BPSK modulates a selectable frequency subcarrier. The resulting output is a sine wave. The subcarrier frequency is tunable from 1 kHz to 2 MHz.

The demodulator/bit synchronizer section has two selectable inputs. A BPSK modulated subcarrier is acquired and the recovered baseband signal from the demodulator is passed to the bit synchronizer, where clock is recovered from the baseband data. Data and clock are provided as both TTL and RS422. Differential decoding and encoding of the recovered baseband data is provided.

The Model 780M supports a wide variety of applications encompassing testing through TT&C link support. While testing a data link, the unit allows the up-link is to be dynamically monitored. The up-link is generated by the modulator section and the wrapped around signal is monitored by the demodulator/bit synchronizer section. The Modulator and the Demodulator/Bit Synchronizer sections are independent of each other and user selectable parameters are controlled separately via the front panel, or the remote control interface. Therefore, the unit is ideally suited for TT&C applications.



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SPECIFICATIONS

MODULATOR

- Data Inputs:** Command data with 0 degree clock (Two ports - TTL, RS422)
Input data rates: DC to 250 kbps
Data input code conversion: NRZ-L/M/S; BiPhase-L/M/S, None
- Subcarrier:** Frequency: Tunable, 1 kHz to 2 MHz; Resolution: 1 Hz
Combined Accuracy and Stability: +/- 1 ppm
- Outputs:** BPSK, 0/180 degree phase shift, sine wave
Non-coherent modulation
Modulation data code conversion: NRZ-L/M/S, None
Output level: Adjustable, 0 to 6 volts p-p; terminated in 50 ohms.

DEMODULATOR/BIT SYNCHRONIZER

- Input:** Two input ports, user selectable: 100 mV to 4.0 V p-p; NRZ-L/M/S
Subcarrier frequency: 16 kHz, +/- 1%, BPSK
Modulation: 2 kbps +/- 1%, NRZ-L/M/S
Sync Acquisition: >12 dB Eb/No
BER: within 2 dB of theory, 12 dB Eb/No
- Outputs:** Data and 0-degree clock on each of two ports (TTL, RS422)
Selectable output codes: NRZ-L/M/S

FRONT PANEL: VF Display and Keypad, Mod Output Level Control, LED Status Indicators:

REMOTE CONTROL INTERFACE: RS232 Serial Interface (Standard)

POWER: 115 Vac, +/- 10%; Single phase, 57-63 Hz; 100 Watts, max.

MECHANICAL: 3.5 in. (H) x 20 in. (D) x 19 in. (W); 15 lbs.; Non-tilting slides provided.

ENVIRONMENT, OPERATING: Temperature: 0 °C to +40 °C
Relative Humidity: 5% to 95%, non-condensing
Altitude: 0 to 10,000 ft.

Ordering Information

MD780M-00 Basic Unit
OP780M-11 IEEE-488 Remote

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