



## DESCRIPTION

Datum Systems' new PSM-2100 offers state of the art performance and reliability with the best features of a sophisticated programmable modem, all at the industry's lowest price. The PSM-2100 uses Datum Systems' proprietary techniques of direct modulation and demodulation to completely eliminate transmit and receive IF sections and their associated filters. Sophisticated digital signal processing eliminates virtually all on board adjustments and provides performance within 0.3 dB of theoretical. Direct Digital Synthesis (DDS) of the transmit, receive and data rate synthesizers allow settings to 1 Hz and 1 bps respectively. The latest surface mount construction places all main modem circuitry on a single PCB.

The BER vs. Eb/No performance is unmatched by any other modem in its class. Add the optional Reed-Solomon codec and the performance is phenomenal.

The PSM-2100 is capable of performing as both ends of a satellite Single Channel Per Carrier (SCPC) link or as the VSAT remote site modem in a TDMA system (transmit burst mode). The transmit and receive can independently be operated using BPSK or QPSK modulation in either SCPC or VSAT mode.

The PSM-2100 has the most sophisticated receive acquisition and tracking system on the market, offering DSP fast acquisition over a programmable range of +/- 200 Hz to +/- 1.25 MHz.

The full front panel provides a backlit LCD display, full keypad and LED indicators for monitor and control of all modem parameters.

## FEATURES

- ◆ BPSK or QPSK operation.
- ◆ SCPC or VSAT remote mode (Burst modulation).
- ◆ Programmable receive acquisition/tracking range.
- ◆ Typical acquisition time of 1 second at 9.6 kbps QPSK, 0.3 seconds at 64 kbps QPSK.
- ◆ BER vs. Eb/No performance within 0.3 dB of theoretical. 10<sup>-7</sup> BER at 6.0 dB Eb/No (2.9 dB Eb/No with Reed-Solomon codec).
- ◆ DDS transmit and receive frequency setting in 1 Hz increments.
- ◆ Low power, light weight 1 U case.
- ◆ DDS setting of transmit and receive data rates from 3.6 kbps to 2.1 Mbps in 1 bps increments.
- ◆ Optional IBS multiplexer and Reed-Solomon codec available.
- ◆ Optional ADPCM codec available.
- ◆ 40 dB AGC range with +15 dBm composite input power.
- ◆ Fully programmable from either front panel or remote command without jumpers.
- ◆ Accurate Eb/No and Symbol Error Rate display.
- ◆ Two year limited warranty.

**SPECIFICATIONS**

Parameter	PSM-2100
Operating Modes, all programmable:	- Receive Continuous, - Transmit Continuous (SCPC) - Transmit Burst (VSAT)
IF Frequency Range:	50 to 90 MHz
Transmit Output Power (75 Ω BNC):	-5 to -25 dBm, programmable in 0.1 dB steps
Receive Carrier Power In (75 Ω BNC):	-20 to -60 dBm
Maximum Composite Receive Input Power:	+15 dBm or +40 dBc whichever is lower power
Transmit Frequency Setting:	1 Hz steps
Receive Frequency Setting:	1 Hz steps
Receive Acquisition Range:	Programmable from ± 200 Hz to ± 1.25 MHz
Frequency Reference:	Internal 2.5 ppm oscillator. 1ppm optional. External reference input on rear panel for 2.5, 5, 9, or 10 MHz.
Modulation and Demodulation:	Programmable for BPSK or QPSK independently
Forward Error Correction:	Viterbi, k=7. Concatenated Reed-Solomon Codec optional. (n=126, k=112, t=7)
FEC Rates Selectable:	1/2, 3/4 or 7/8
Data Rates Programmable at FEC rate 1/2: (without IBS mux or R-S option)	3.6 kbps to 525 kbps BPSK, 7.2 kbps to 1,050 kbps QPSK
Data Rates Programmable at FEC rate 3/4 or 7/8 (without IBS mux or R-S option)	7.2 kbps to 1,050 kbps BPSK, 14.4 kbps to 2,100 kbps QPSK
IBS Multiplex Option:	Standard IBS framing supporting enhanced fully buffered RS-232/485 overhead channel.
Data Rate Selection: Transmit & Receive:	Programmable in 1bps increments.
Receive Data FIFO Buffer: (Doppler Elastic Store)	4 bits to 131,070 bits, programmable in 1 bit increments, or in delay time.
Data Interface:	RS-449/422 or V.35 or RS-232 standard. IBS multiplex and Reed-Solomon codec options part of data interface card. ADPCM voice codec available.
BER Performance: with Viterbi FEC ½ rate: ½ rate Viterbi +R-S Concatenated FEC: ¾ rate Viterbi +R-S Concatenated FEC:	10-5 at 4.8 dB Eb/No, 10-7 at 6.0 dB 10-7 at 2.9 dB 10-7 at 4.0 dB
Fast Receive Lock Performance at FEC rate ½, 6.0 dB Eb/No, +/-30kHz acquisition range:	1 second at 9.6 kbps QPSK or 0.56 second at 9.6 kbps BPSK. 0.3 second at 64 kbps.QPSK
Front Panel Control:	LCD display and keypad provide full status and programmability.
Remote Control:            Terminal Mode:	Full screen live display and interactive control of all operating parameters and status.
Packet Mode:	Command driven RS-232/485 control and reporting of all operating parameters and status.
Case Dimensions:	EIA Rack mount : 1 RU (19"W X 16"D X 1.75"H.)
Input Power Requirements:	90 to 264 VAC, 50/60 Hz, Approx. 35 Watts.
Operating Conditions:	0 to 50° C, to 95% humidity, non-condensing.