

PRODUCT SPEC SHEET

HPD 1000 DATA MODEM FOR ASTRO 25 HPD SYSTEMS



ASTRO 25 HPD SYSTEMS

HPD 1000 DATA MODEM

For government agencies that are on the move and require data in the mobile environment, the HPD 1000 data modem connects mobile workstations to back end application servers through the ASTRO 25 HPD data service.

KEY BENEFITS

- Supports ASTRO 25 HPD in 25 kHz bandwidth channels in 700/800 MHz
- Supports Project 25 (P25) 9.6 kbps conventional data interoperability (764-870 MHz)
- Full duplex operation optimizes performance by increasing the throughput capability of application communications
- Allows for colocation of HPD 1000 modem with mission critical voice radios without interference with proper antenna installation
- Adaptive modulation allows for increased reliability of data transmission
- Ethernet and USB 2.0 connectivity
- Integrated GPS (optional)

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SPECIFICATIONS

Dimensions	2.4 x 9.5 x 14.3 in (60 x 241 x 363 mm)
Weight	14.0 lb (6.35 kg) Modem Only 18.0 lb (8.2 kg) Modem and Trunion
Power Supply	13.8 VDC \pm 20%; Negative Ground
Standby/Receive Current (A) @13.8V	1.26 A
Transmit Current (A) @ Rated Power	9.0 A
Ignition Sense	For connection to ignition key
Front Panel Control	On/Off pushbutton
Front Panel Indicators	4 LEDs which indicate Power-up/modem status; RX/TX status; GPS status
Front Panel Connectors	Ethernet, GPS antenna
Antenna Connector	Mini-UHF for RX and TX antennas
Number of Channels	70 channels

TRANSMITTER

TX Operating Frequencies HPD (Half & Full Duplex)	794-797 MHz
	799-806 MHz
	806-824 MHz
TX Operating Frequencies P25 Integrated Data 12.5 kHz, 9.6 k Data	764-767 MHz
	769-776 MHz
	794-797 MHz
	799-824 MHz 851-870 MHz
Power Output (W)	
HAI* 25 kHz	10W average slot power
P25 12.5 kHz, 9.6K data	30W CW 764-806 MHz 20% duty cycle
	35W 806-825 MHz 20% duty cycle
	30W 851-870 MHz 20% duty cycle
Modulation BW	HAI 25 kHz APCO 12.5 KHz 9.6K data
Adjacent Channel Coupled Power	
HAI 25 kHz	-55 dBc
P25 12.5 kHz 9.6K data	-67 dBc
AFC	
HAI 25 kHz	<10Hz step size
P25 12.5 kHz 9.6K data	<100Hz step size
Output Impedance	50 ohms
Spurious & Harmonics (EIA)	-75 dBc 700 MHz GNSS -40 dBm
Frequency Stability within assigned center frequency -30° to +60°C ambient	\pm 1.5 ppm (not locked to Base Station)
Modulation (Authorized Emission)	HAI: 17K7D7D; APCO: 8K10F1D

* HPD Air Interface (HAI)

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RECEIVER

RX Operating Frequencies	764-767 MHz
HPD (Half & Full Duplex)	769-776 MHz 851-869 MHz
RX Operating Frequencies	764-767 MHz
P25 Integrated Data	769-776 MHz
12.5KHz. 9.6K Data	851-870 MHz
Operating Temperature	-30 to +60°C (-22 to +140°F)
Modulation BW	HAI 25 kHz APCO 12.5 KHz 9.6K data
Reference Sensitivity	
HAI 25 kHz (1% BER)	-111 dBm Static (QPSK)
P25 9.6K Data (5% BER)	-116 dBm Static
Adjacent Channel Selectivity	
HAI 25 kHz	50 dB Static
P25 12.5 kHz	60 dB Static
AFC	
HAI 25 kHz	<10Hz step size
P25 12.5 kHz	<100Hz step size
Channel Spacing	12.5 kHz and 25 kHz
Data Sensitivity Static	
HAI 25 kHz (1% BER)	-111 dBm Static (QPSK)
P25 9.6K Data (5% BER)	-116 dBm Static
Data Sensitivity Faded	
(1% BER; QPSK HAI)	-101 dBm (typical urban profile 50 km/hr) -98 dBm (hilly terrain profile 200 km/hr)
Input Impedance	50 ohms
Frequency Stability within assigned center frequency -30° to +60° C ambient	±1.5 ppm (not locked to Base Station)
Intermodulation (EIA)	-67 dB (HAI QPSK)
Spurious & Image Rejection (EIA)	-70 dB (HAI QPSK)

ENVIRONMENTAL

Operating Temperature	-30 to 60°C
Storage Temperature	-55 to 85°C
Humidity	95% RH @ 8 Hr
Vibration	SINE 10-60 Hz 30 min/axis

DTE INTERFACE PORT

Connector Type	IP based connections. USB using PPP and/or Ethernet using PPPoE
Signal Levels	Standard workstation levels
Signals	Standard workstation signals
Data Rate (default) bps	USB Full Rate. 10 MBPS Ethernet. (HPD 1000 to workstation)
Data Format	Supports IP based application formats
Max. Message Size	1484 bytes as an IP datagram including IP headers
Message Buffers	10 messages

RADIO DATA SYSTEM

Frequency Bands	700 MHz and 800 MHz bands
Air Protocols	ASTRO 25 HPD Air Interface (HAI) for 25 kHz channels Project 25 CAI for 12.5 kHz channels (TIA-102.BAAA-A) (does not support both protocols simultaneously)
Minimum Radio Channel Spacing Requirement	12.5 kHz, 25 kHz
Data Rate	Up to 96 kbps raw channel rate
Maximum Message Size	1484 bytes as an IP datagram including IP headers

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Model	Band	RF Output Power	FCC Transmitter Type Acceptance
M26UGA9PW1AN	794-824 MHz	10W HAI	AZ492FT5850
M26UGA9PW1AN	764-776 MHz 794-806 MHz	30W P25	AZ492FT5850
M26UGA9PW1AN	806-824 MHz 851-870 MHz	35W P25	AZ492FT5850

MILITARY STANDARDS 810 C, D, E, & F

	MIL-ST D 810C		MIL-STD 810D		MIL-STD 810E		MIL-STD 810F	
	Method	Proc./Cat.	Method	Proc./Cat.	Method	Proc./Cat.	Method	Proc./Cat.
Low Pressure	500.1	I	500.2	II	500.3	II	500.4	II
High Temperature Storage	501.1	I	501.2	I/A1	501.3	I/A1	501.4	I/Hot
High Temperature Operational	501.1	II	501.2	II/A1	501.3	II/A1	501.4	II/Hot
Low Temperature Storage	502.1	I	502.2	I/C3	502.3	I/C3	502.4	I/C3
Low Temperature Operational	502.1	I	502.2	II/C1	502.3	II/C1	502.4	II/C1
Temperature Shock	503.1	–	503.2	I/A1-C3	503.3	I/A1-C3	503.4	I/Hot-C3
Solar Radiation	505.1	II	505.2	I	505.3	I	505.4	I
Rain Blowing	506.1	I	506.2	I	506.3	I	506.4	I
Rain Steady	506.1	II	506.2	II	506.3	II	506.4	III
Humidity	507.1	II	507.2	II	507.3	II	507.4	–
Salt Fog	509.1	–	509.2	–	509.3	–	509.4	–
Blowing Dust	510.1	I	510.2	I	510.3	I	510.4	I
Blowing Sand			510.2	II	510.3	II	510.4	II
Vibration Minimum Integrity	514.2	VIII/F, Curve-W	514.3	I/10	514.4	I/10	514.5	I/24
Vibration Loose Cargo			514.3	II/3	514.4	II/3	514.5	II/5
Shock Functional	516.2	I	516.3	I	516.4	I	516.5	I
Shock Crash Hazard	516.2	III	516.3	V	516.4	V	516.5	V
Shock Bench Handling	516.2	V	516.3	VI	516.4	VI	516.5	VI

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