PMDM(/V)

Pliant Environmental 12V Modem (VOICE)

Option: Voice capability (/V)

User Reference Manual

Hardware Revision B
Firmware Revision #100

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http://www.amassdata.com

TABLE OF CONTENTS

PMDM(/V)
Pliant Environmental 12V Modem (Voice)

Pliant Technology Specialists

Pliant: readily yielding to influence

1. Introduction

This user manual covers the operation and characteristics of the environmental modems (Hardware Revision B) produced by AMASS Data Technologies Inc.

There are two varieties:

- The **PMDM** Environmental Modem
- The **PMDM/V** Environmental Voice Modem

The PMDM provide safeguards against an off-hook condition with an internal timer which causes the modem to power up, go off-hook, go on-hook, then power down. This cycle takes approximately 5 seconds and occurs every 28 minutes. Proper hang-up procedures are recommended as described below.

2. Product Description

All PMDM(/V) Environmental Modems are intelligent devices specifically designed for use with AMASSER PDAS loggers. However, they may also be used with any other device that provides a HCMOS serial non-inverting interface, such as our ECQUE shaft encoder.

The PMDM and PMDM/V give the PDAS loggers communications capability like no other modem can. This added capability is provided with reliability in all foreseeable environmental conditions.

The principal characteristics of the PMDM and PMDM/V modems are as follows:

- 12 Volt Operation: Perfect for monitoring stations. Use the same +10.5 to 15 V external battery, charger or power supply as for the data logger.
- -40°C to +55°C Operating Temperature Range: Designed to meet and surpass Environment Canada's requirements.
- Low Power Consumption: The PMDM(/V) modems use an idle mode when not in use, thereby reducing their current consumption to about 1 mA.

Once connected to a power supply, a telephone line and to a PDAS logger, the PMDM is functionally just as any other modem. The default baud rate is set to 9600, but is capable of 14.4 kbaud. The PMDM/V Voice Modem provides the same functionality as the PMDM except with the added advantages described below.

3. PMDM/V: Voice Modem Advantages

The PMDM/V Voice Modem may be used in **Voice-mode or in Data-mode**, that is, it can be accessed by touch-tone telephone or by another modem. The PMDM/V operates in either mode without reconfiguration of any kind.

It does this as follows: The PMDM/V always begins by going off-hook in voice mode. Upon completion of voicing a welcoming prompt as described below, it attempts to detect a carrier and proceed with an answer handshake. If this is successful within the prescribed timeout (about 5 seconds), it goes on-line in **Data-mode**, otherwise it hangs-up.

Therefore, telephone and modem access proceed as described below:

Access By Telephone:

The PMDM/V begins by prompting the user to press a touch-tone key on your telephone to proceed with *Voice Mode.* The user is then prompted to "*Enter the Log Slot number followed by the pound (#) key*" (refer to the user manual for the PDAS loggers). The PMDM/V then transmits the appropriate 'M' command to instruct the PDAS to return the most recent sampled data (refer to the examples below). This data is then spoken using a professionally recorded voicing system. The PMDM/V can thus access the most recent sampled data of any sensor configured for logging in the *Sensor Log Table* of the PDAS-II.

Access By Modem:

As always, the PMDM/V begins by defaulting to *Voice mode* and voices the initial prompt as described above. To the user accessing by modem, this period will merely appear as a short pause. Following a short timeout of about 5 seconds, the PMDM/V will detect the carrier signal from your modem, proceed with the handshaking protocol and go on-line in Data mode. Once connected to the PMDM/V in Data mode, the operation is functionally identical to any other modem. **NOTE: ALWAYS SELECT '7-exit' FROM THE MAIN MENU OF THE PDAS-II IN ORDER TO HANG-UP THE PMDM(\V) WHEN IN DATA MODE. IMPROPER HANG-UP MAY RESULT IN THE PMDM(/V) REMAINING OFF-HOOK FOR UP TO 30 MINUTES.**

4. Voice-Mode Operation

The professionally recorded voicing system of the PMDM/V Environmental Voice Modem provides easy access to the most current sampled data of the sensors simply by calling it up with a telephone. Here are examples:

EXAMPLE 1:

A shaft encoder is assigned to slot #2 as follows:

Slot No.	Log Enable	Sensor Command	Sensor Label	Sampling Rate	Logging Rate	Min/Max Rate	Offset	Scale
0	0			00:00	00:00 - A	00:00		
1	0	1A2M0! /1	WT	01:00	00:15 - A	00:00		
2	1	1A1M0! /1	HG	01:00	00:15 - A	02:00		
3	0			00:00	00:00 - I	00:00		
.								
.								
.								
14	0			00:00	00:00 - I	00:00		
15	0			00:00	00:00 - I	00:00		

To obtain the current water level, dial-up the PMDM/V with your Touch-Tone telephone and listen…

Hello, …

Press any key for Voice Mode:
[Press a key on your Touch-Tone telephone]

Enter the Log Slot number followed by the pound key:
Press '2', then press the '#' key.

Hotel Golf equals plus two point three five eight.

Enter the Log Slot number followed by the pound key:

Press the '#' key. The PMDM/V hangs-up.

The current water level is therefore equal to '+2.358'. **NOTE: ALWAYS PRESS THE '#' KEY TO HANG-UP THE PMDM/V WHEN IN VOICE MODE. IMPROPER HANG-UP MAY RESULT IN THE PMDM/V REMAINING OFF-HOOK (BUSY SIGNAL) FOR UP TO 30 MINUTES.**

Note that the PMDM/V speaks the *Sensor Label* followed by the last sampled data of that sensor. Given that this particular sensor is set to sample at every minute, the reading of '2.358' was taken less than 60 seconds previously.

Note that the *Sensor Label* of "HG" was spoken using the military phonetic alphabet because these two letters are capitalized. Refer to Appendix A for the voice repertoire of the PMDM/V. Note that the military phonetic alphabet is used to differentiate capital letters from lower case letters.

EXAMPLE 2:

A sensor measuring the internal temperature is assigned to slot #3 of the PDAS *Sensor Log Table* as follows:

Slot No.	Log Enable	Sensor Command	Sensor Label	Sampling Rate	Logging Rate	Min/Max Rate	Offset	Scale
0	0			00:00	00:00 – I	00:00		
1	0			00:00	00:00 – I	00:00		
2	0			00:00	00:00 – I	00:00		
3	1	08	ITemp	04:00	00:30 – A	24:00		
.								
.								
.								
14	0			00:00	00:00 - I	00:00		
15	0			00:00	00:00 - I	00:00		

To obtain the current temperature, simply dial-up the PMDM/V with your Touch Tone telephone and listen…

Hello, …

Press any key for Voice Mode:
[Press a key on your Touch-Tone telephone within 3 seconds]

Enter the Log Slot number followed by the pound key:
Press '3', then press the '#' key.

India Tango e m p equals plus two zero point three.

Enter the Log Slot number followed by the pound key:
Press the '#' key. The PMDM/V hangs-up.

Therefore the temperature is '+20.3'. Given that the *Sample Rate* is set to 4 minutes, the reading of '+20.3' was taken within 240 seconds.

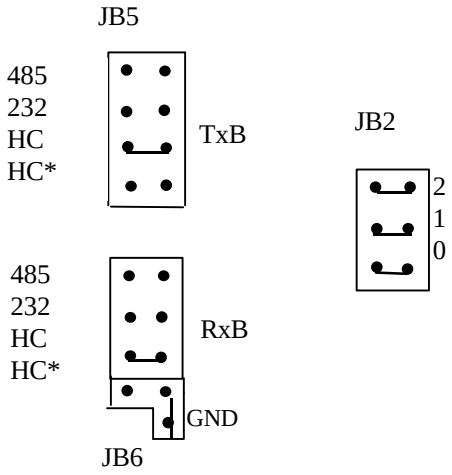
NOTE: ALWAYS PRESS THE '#' KEY TO HANG-UP THE PMDM/V WHEN IN VOICE MODE. IMPROPER HANG-UP MAY RESULT IN THE PMDM/V REMAINING OFF-HOOK (BUSY SIGNAL) FOR UP TO 30 MINUTES.

5. PDAS-II Jumper Configuration

As explained in the user manuals for the PDAS series data loggers, its auxiliary communications port is fully configurable to your needs via the proper jumper installations. Also, jumpers are used to select the desired program that is stored in one of the eight memory slots of the EEPROM.

The proper jumper configuration of the PDAS in use with a PMDM (or PMDM/V) is as follows:

- Jumper 2 for selecting the desired program in the EEPROM: **Select program 0 (modem) as shown below**
- Jumpers 5 and 6 for configuring the auxiliary communications port: **Select HCMOS for transmit and receive as shown below**



6. Installation

6.1. Connectors

The PMDM modem consists of two connectors as follows:

1 RJ11C Jack for your telephone line
1 15 pin DB15P Connector for +12V input and connection to the PDAS (or other device) as follows:

DB15P Pin Assignments:

PIN	SIGNAL
1	Ground to PDAS (or other device)
6	TxB Out to PDAS (or other device)
7	+5V to PDAS (or other device)
8	Ground from power supply
12	RxB In from PDAS (or other device)
15	+12V input from power supply

All other pins unassigned.

7. Specifications

Processor : Cermetek 1794

Baud Rate
9600 default
Up to 14.4 kbaud
Automated baud rate adaptability utilizing speed sensing, flow control, and data buffers

Serial Host Interface
Serial V.24, 5 volt interface

Physical Characteristics

Height - 152.0 mm. (6.0 in.)
Width - 196.0 mm. (7.75 in.)
Depth - 41.3 mm. (1.625 in.)
Weight : 1 Kg (2.2 lb.)
Mounting : One Mounting bracket, Standard
Use four #10 bolts or screws.

Connectors

- 15 pin DB15P Connector (comm., 12V input)
- RJ11C for telephone line

Power Supply
+10.5 to 15 VDC input for external battery, charger or power supply

Power Consumption
about 1 mA when idle

Environmental Characteristics

Operating : -40 to +55 C
Storage : -60 to +100C
Humidity : <= 100% non-condensing

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APPENDIX A: PMDM/V Voice Repertoire

Letter	Spoken as…		Letter	Spoken as…
A	Alpha		a	a
B	Bravo		b	b
C	Charlie		c	c
D	Delta		d	d
E	Echo		e	e
F	Foxtrot		f	f
G	Golf		g	g
H	Hotel		h	h
I	India		i	i
J	Juliet		j	j
K	Kilo		k	k
L	Lima		l	l
M	Mike		m	m
N	November		n	n
O	Oscar		o	o
P	Papa		p	p
Q	Quebec		q	q
R	Romeo		r	r
S	Sierra		s	s
T	Tango		t	t
U	Uniform		u	u
V	Victor		v	v
W	Whiskey		w	w
X	X-ray		x	x
Y	Yankee		y	y
Z	Zulu		z	z
.	Point		0	0
+	Plus		1	1
-	Minus		2	2
=	Equals		3	3
	Hello		4	4
	Invalid Entry		5	5
	Press any key for Voice Mode		6	6
	Enter the Log Slot number followed by the pound key		7	7
			8	8
			9	9