PMS8232/PMS4232
921,600 bps Highspeed RS-232
Multip-IO Card

User's Guide

First Edition

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Introduction

Overview

The PANACOM **PMS8232** provides the PC with eight RS-232 asynchronous ports. The **PMS8232** allows for connection to any device utilizing the RS-232 electrical interface, such as modems, data-entry terminals, and plotters.

What's Included

The **PMS8232** is shipped with the following items. If any of these items is missing or damaged, contact the supplier.

- **PMS8232** Serial I/O Adapter
- DB-68 to eight DB-9 'Spider Cable'
- Serial Utility Software
- User Manual

Card Setup

Clock Modes

The **PMS8232** employs a unique clocking option that allows the end user to select from divide by 4 and divide by 1 clocking modes. This mode is selected at J2,J3.

To select the Baud rates commonly associated with COM: ports (i.e. 2400, 4800, 9600, 19.2, … 115.2K Bps) place the jumper in the divide by 4 mode (silk-screen DIV4).

Figure 1 - Clocking Mode 'Divide By 4'

To select the maximum data rate (921.6K bps) place the jumper in the divide by 1 (silk-screen DIV1) position.

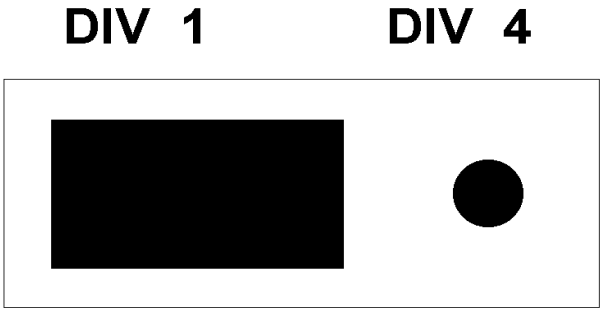


Figure 2 - Clocking Mode 'Divide By 1'

Baud Rates and Divisors for the 'Div1' mode

The following table shows some common data rates and the rates you should choose to match them if using the adapter in the 'Div1' mode.

For this Data Rate	Choose this Data Rate
9600 bps	150 bps
19.2K bps	300 bps
38.4K bps	600 bps
57.6 K bps	1200 bps
115.2 K bps	2400 bps
230.4K bps	4800 bps
460.8K bps	9600 bps
921.6K bps	115.2K bps

If your communications package allows the use of Baud rate divisors, choose the appropriate divisor from the following table:

For this Data Rate	Choose this Divisor
9600 bps	96
19.2K bps	48
38.4K bps	24
57.6K bps	12
115.2K bps	8
230.4K bps	4
460.8K bps	2
921.6K bps	1

Address and IRQ selection

The **PMS8232** is automatically assigned I/O addresses and IRQs by your motherboard BIOS. Only the I/O address may be modified by the user.

Adding or removing other hardware may change the assignment of I/O addresses and IRQs.

Installation

Operating System Installation

Windows 95/98/NT

Run Setup on Disk 2 of the Serial Utilities Software.

Windows 3.1x

Refer to the Win3x.hlp file in the \Win31 directory on Disk 1 of the Serial Utilities Software.

DOS

Refer to the Readme.txt file found in the \DOS directory on Disk 1 of the Serial Utilities Software.

Other Operating Systems

Refer to the appropriate directory on Disk 1 of the Serial Utilities Software.

System Installation

The **PMS8232** can be installed in any of the PCI expansion slots and contains a single jumper strap that must be set for proper operation. Please see the Card Setup section of the manual for information on this jumper.

1. Turn off PC power. Disconnect the power cord.
2. Remove the PC case cover.
3. Locate an available PCI slot and remove the blank metal slot cover.
4. Gently insert the **PMS8232** into the slot. Make sure that the adapter is seated properly.
5. Replace the screw.
6. Replace the cover.
7. Connect the power cord.

Installation is complete.

Technical Description

The **PMS8232** utilizes the 16C554 UART. This chip features programmable baud rate, data format, interrupt control and a 16-byte input and output FIFO, and is functionally 4 16C550 UARTs. The 16C654 UART is also available on this card, which has a 64-byte FIFO as opposed to the 16-byte FIFO available in the 16C554 and the 16C854 which has a 128-byte FIFO.

Connector Pin Assignments

DB-9 (EIA-574 DTE)

Signal	Name	Pin #	Mode
GND	Ground	5	
TD	Transmit Data	3	Output
RTS	Request To Send	7	Output
DTR	Data Terminal Ready	4	Output
RD	Receive Data	2	Input
CTS	Clear To Send	8	Input
DSR	Data Set Ready	6	Input
DCD	Data Carrier Detect	1	Input
RI	Ring Indicator	9	Input

DB-68 Connector Pin Assignments

Port #	1	2	3	4	5	6	7	8
TD	60	52	26	18	44	36	10	2
RD	61	53	27	19	45	37	11	3
RTS	62	54	28	20	46	38	12	4
CTS	63	55	29	21	47	39	13	5
DTR	64	56	30	22	48	40	14	6
DSR	65	57	31	23	49	41	15	7
DCD	66	58	32	24	50	42	16	8
RI	67	59	33	25	51	43	17	9
GND	68	68	34	34	35	35	1	1

Specifications

Environmental Specifications

Specification	Operating	Storage
Temperature Range	0º to 50º C (32º to 122º F)	-20º to 70º C (-4º to 158º F)
Humidity Range	10 to 90% R.H. Non-Condensing	10 to 90% R.H. Non-Condensing

Power Consumption

Supply line	+12 VDC	-12 VDC	+5 VDC
Rating	60 mA	100 mA	295 mA

Mean Time Between Failures (MTBF)

Greater than 150,000 hours. (Calculated)

Physical Dimensions

Board length	5.300 inches	(13.460 cm.)
Board Height including Goldfingers	3.8 inches	(9.652 cm.)
Board Height excluding Goldfingers	3.475 inches	(8.827 cm.)

Appendix A - Troubleshooting

A Serial Utility Diskette is supplied with the PANACOM Technology adapter and will be used in the troubleshooting procedures. By using this diskette and following these simple steps, most common problems can be eliminated without the need to call Technical Support.

1. Identify all I/O adapters currently installed in your system. This includes your on-board serial ports, controller cards, sound cards etc. The I/O addresses used by these adapters, as well as the IRQ (if any) should be identified.

2. Configure your PANACOM Technology adapter so that there is no conflict with currently installed adapters. No two adapters can occupy the same I/O address.

3. Make sure the PANACOM Technology adapter is using a unique IRQ. While the PANACOM Technology adapter does allow the sharing of IRQs, many other adapters (i.e. SCSI adapters & on-board serial ports) do not. The IRQ is typically selected via an on-board header block. Refer to the section on Card Setup for help in choosing an I/O address and IRQ.

4. Make sure the PANACOM Technology adapter is securely installed in a motherboard slot.

5. When running DOS, Windows 3.x or other operating systems refer to the Serial Utilities Disk 1 and the User Manual to verify that the PANACOM Technology adapter is configured correctly. The supplied software contains a diagnostic program 'SDOS' that runs under DOS and will verify if an adapter is configured properly. This diagnostic program is written with the user in mind and is easy to use. Refer to the README.txt file on the supplied diskette for detailed instructions on using 'SDOS'.

6. For Windows 95/98 and Windows NT, the diagnostic tool 'WinSSD' is installed in the PANACOM folder on the Start Menu during the setup process. First find the ports using the Device Manager, then use 'WinSSD' to verify that the ports are functional.

Always use the PANACOM Technology diagnostic software when troubleshooting a problem. This will help eliminate any software issues and identify any hardware conflicts

Appendix B - How To Get Assistance

Please refer to Troubleshooting Guide prior to calling Technical Support.

1. Read this manual thoroughly before attempting to install the adapter in your system.
2. When calling for technical assistance, please have your user manual and current adapter settings. If possible, please have the adapter installed in a computer ready to run diagnostics.
3. PANACOM Technology maintains a Home page on the Internet. Our home page address is www.panacom.com.tw The latest software updates, and newest manuals are available via our FTP site that can be accessed from our home page.
4. Technical support is available Monday to Friday from 8:00 a.m. to 5:00 p.m. eastern time. Technical support can be reached at (886)-2-25310678.

RETURN AUTHORIZATION MUST BE OBTAINED FROM PANACOM TECHNOLOGY BEFORE RETURNED MERCHANDISE WILL BE ACCEPTED. AUTHORIZATION CAN BE OBTAINED BY CALLING PANACOM TECHNOLOGY AND REQUESTING A RETURN MERCHANDISE AUTHORIZATION (RMA) NUMBER.

Appendix C - Electrical Interface

RS-232

Quite possibly the most widely used communication standard is RS-232. This implementation has been defined and revised several times and is often referred to as RS-232-C/D/E or EIA/TIA-232-C/D/E. It is defined as "*Interface between Data Terminal Equipment and Data Circuit- Terminating Equipment Employing Serial Binary Data Interchange*". The mechanical implementation of RS-232 is on a 25-pin D sub connector. The IBM PC computer defined the RS-232 port on a 9 pin D sub connector and subsequently the EIA/TIA approved this implementation as the EIA/TIA-574 standard. This standard has defined as the "*9-Position Non-Synchronous Interface between Data Terminal Equipment and Data Circuit-Terminating Equipment Employing Serial Binary Data Interchange"*. Both implementations are in wide spread use and will be referred to as RS-232 in this document. RS-232 is capable of operating at data rates up to 20K bps / 50 ft. The absolute maximum data rate may vary due to line conditions and cable lengths. RS-232 often operates at 38.4K bps over very short distances. The voltage levels defined by RS-232 range from -12 to +12 volts. RS-232 is a single ended or unbalanced interface, meaning that a single electrical signal is compared to a common signal (ground) to determine binary logic states. A voltage of +12 volts (usually +3 to +10 volts) represents a binary 0 (space) and -12 volts (-3 to -10 volts) denote a binary 1 (mark). The RS-232 and the EIA/TIA-574 specification define two types of interface circuits **D**ata **T**erminal **E**quipment (**DTE**) and **D**ata **C**ircuit-Terminating **E**quipment (**DCE***)*. The PANACOM Technology Adapter is a DTE interface.

Appendix D - Asynchronous Communications

Serial data communications implies that individual bits of a character are transmitted consecutively to a receiver that assembles the bits back into a character. Data rate, error checking, handshaking, and character framing (start/stop bits) are pre-defined and must correspond at both the transmitting and receiving ends.

Asynchronous communications is the standard means of serial data communication for PC compatibles and PS/2 computers. The original PC was equipped with a communication or COM: port that was designed around an 8250 Universal Asynchronous Receiver Transmitter (UART). This device allows asynchronous serial data to be transferred through a simple and straightforward programming interface. A starting bit followed by a pre-defined number of data bits (5, 6, 7, or 8) defines character boundaries for asynchronous communications. The end of the character is defined by the transmission of a pre-defined number of stop bits (usual 1, 1.5 or 2). An extra bit used for error detection is often appended before the stop bits.

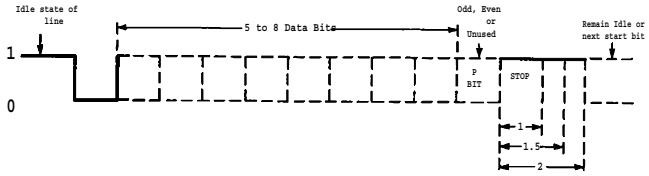
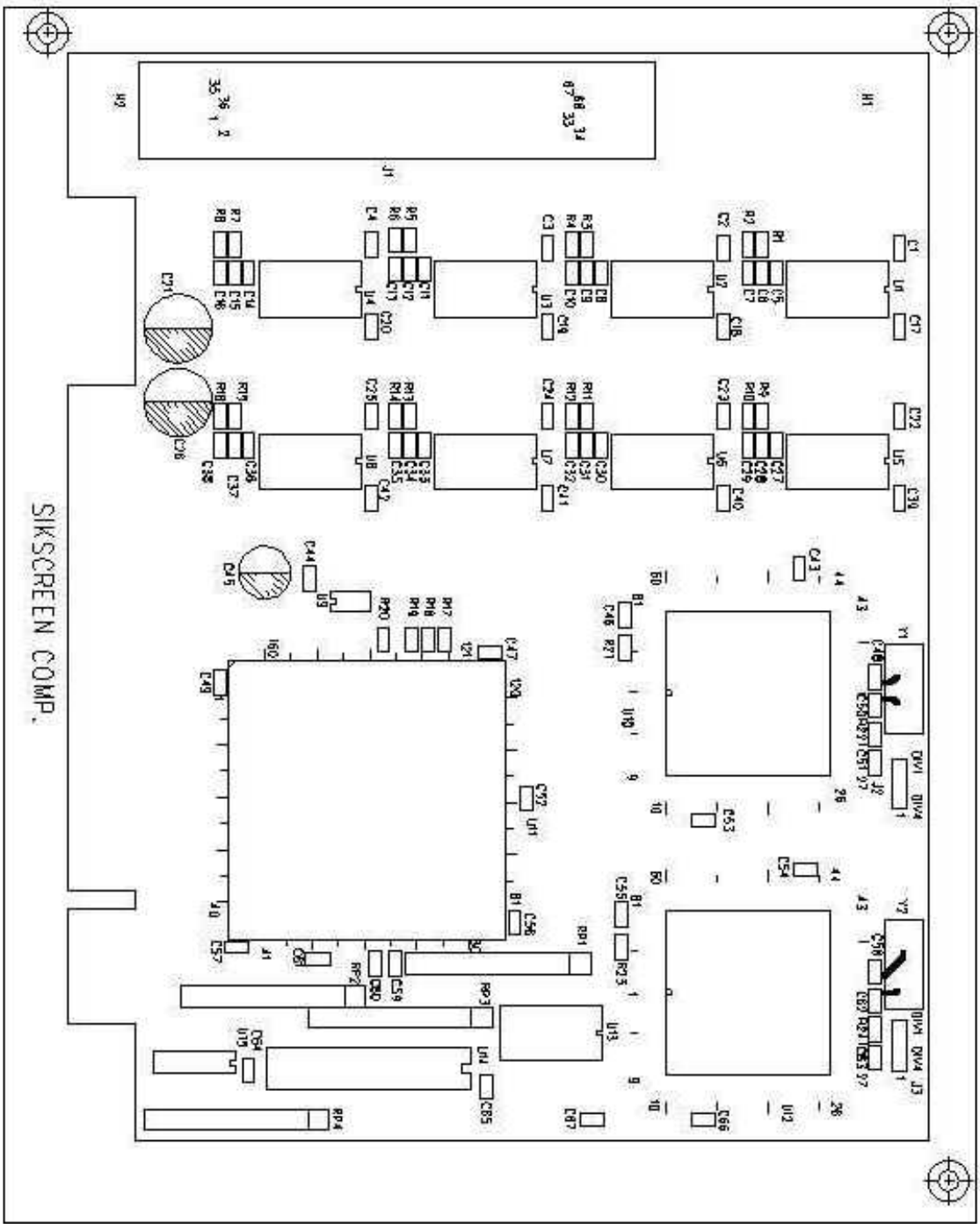


Figure 3 - Asynchronous Communications Bit Diagram

This special bit is called the parity bit. Parity is a simple method of determining if a data bit has been lost or corrupted during transmission. There are several methods for implementing a parity check to guard against data corruption. Common methods are called (E)ven Parity or (O)dd Parity. Sometimes parity is not used to detect errors on the data stream. This is refereed to as (N)o parity. Because each bit in asynchronous communications is sent consecutively, it is easy to generalize asynchronous communications by stating that each character is wrapped (framed) by pre-defined bits to mark the beginning and end of the serial transmission of the character. The data rate and communication parameters for asynchronous communications have to be the same at both the transmitting and receiving ends. The communication parameters are baud rate, parity, number of data bits per character, and stop bits (i.e. 9600,N,8,1).

Appendix E - Silk-Screen



Warranty

PANACOM Techonoly, Inc. warrants this product to be in good working order for a period of one year from the date of purchase. Should this product fail to be in good working order at any time during this period, PANACOM Techonoly will, at it's option, replace or repair it at no additional charge except as set forth in the following terms. This warranty does not apply to products damaged by misuse, modifications, accident or disaster.

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Technical Support is available from 8 a.m. to 5 p.m. Eastern time.
Monday - Friday

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