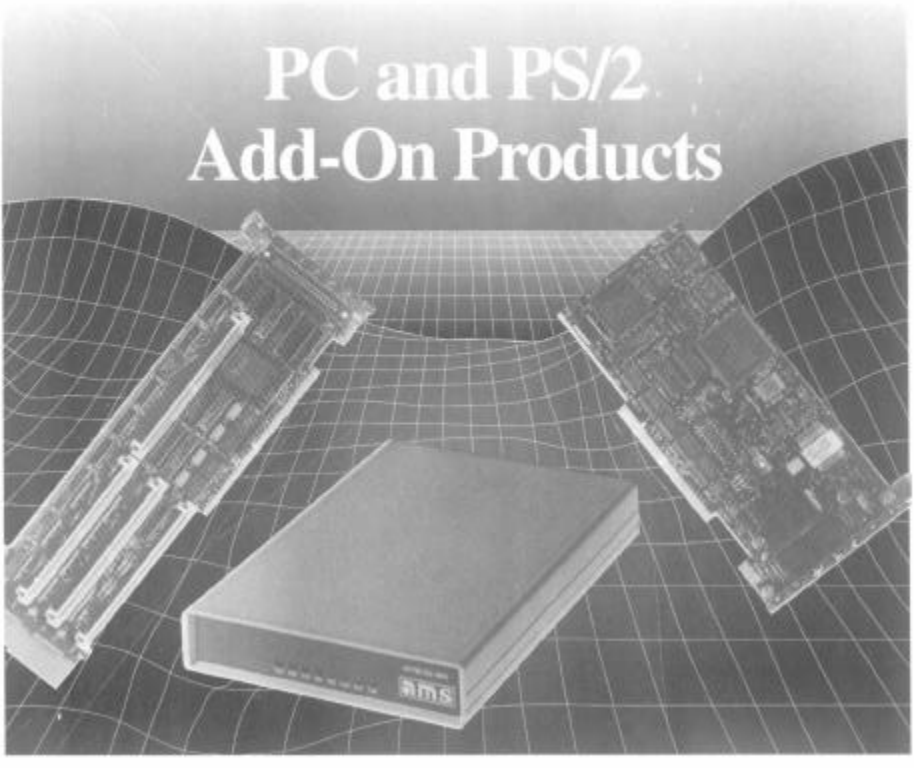

USER'S MANUAL

Multi I/O
Adapter Card

For

PS/2 Models 50, 50Z, 55SX,
60, 65, 65SX, 70, P70,
80, 90 and 95

ams Advanced Microcomputer Systems, Inc.

MULTI I/O ADAPTER CARD

FOR

PS/2 MODELS 50, 55SX, 50Z, 60, 65SX, 70 P70, 80, 90, and 95

ADVANCED MICROCOMPUTER SYSTEMS, INC.
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ACKNOWLEDGEMENTS

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1 INTRODUCTION

This manual describes the use and operation of the MULTI-I/O card for PS/2 Models 50, 55SX, 50Z, 60, 65SX, 70, P70 ,80, 90 and 95. It provides a maximum of two serial interface ports and one bidirectional parallel interface port.

The MULTI-I/O card comes with the following options:

MULTI-I/O-10 - 1 Serial
MULTI-I/O-20 - 2 Serial
MULTI-I/O-11 - 1 Serial - 1 Parallel
MULTI-I/O-21 - 2 Serial - 1 Parallel

1.1 MANUAL SYNTAX

The following notation is used throughout this manual:

<...> Press the single key enclosed between the brackets.

For example, <ENTER> means press the return (or enter) key.

2 INSTALLATION

2.1 COPYING THE ADAPTER DESCRIPTION FILE

1. Before you install the MULTI-I/O card in your PS/2 system, you will have to copy the ***ADAPTER DESCRIPTION FILE (ADF)*** from the disk supplied by AMS onto the IBM Reference Disk (preferrably your BACKUP copy).

2. Insert the IBM Reference Disk into drive A and turn the machine on.

3. The screen will display the IBM logo and message to press <ENTER>. Press the <ENTER> key.

4. The screen will display the following menu:

   1. Learn about the computer.
   2. Backup the Reference Diskette.
   3. Set configuration.
   4. Set features.
   5. Copy an option diskette.
   6. Move the computer.
   7. Test the computer.

5. Select item number 5 (Copy an option diskette) which updates the ADF files.

   The screen will display:

   Remove your (backup) copy of the Reference Diskette and insert your Option Diskette in drive A.

   Press <ENTER> to continue.

6. Insert the disk supplied by AMS (Option Diskette) and follow the computer instructions.

2.2 HARDWARE INSTALLATION

1. Turn off the power on switch. Disconnect the power cord for additional safety.

2. Loosen the two black screws located on rear of your system; slide the top cover off for Models 50, 50Z and 70; or loosen the two silver screws located on top cover for Models 60 and 80 and lift the top cover.

3. Remove the expansion slot bracket where you want to install the AMS adapter card. The adapter card will work in any of the 16 bit or 32 bit expansion slots.

4. Insert the AMS adapter card into one of the expansion slots. Make sure the goldfinger connector of the card is positioned straight with the expansion slot connector on the mother board. Tighten the bracket screw.

5. Replace the top cover of the machine and tighten the screws.

6. Reconnect the power cord. You are now ready to power on your PS/2 again.

2.3 SOFTWARE INSTALLATION:

The software installation for the AMS adapter card is easier than the hardware installation. You will require the IBM Reference Diskette supplied by IBM along with your machine. The ADF files supplied by AMS should already be on the IBM Reference Disk (or preferably the backup of the IBM Reference Disk).

The following is the step-by-step procedure to configure the AMS MULTI-I/O card for your system. You will have to run the CONFIGURATION PROGRAM from the IBM Reference Diskette in order to configure the AMS card.

1. Insert the IBM Reference Diskette into drive A and turn on your machine.

2. Since the AMS MULTI-I/O card is not configured for the system, the ADAPTER CONFIGURATION ERROR 165 will be displayed as the system boots up. Once the AMS MULTI-I/O card is properly configured, the machine will not display the error.

3. The screen will display the IBM logo and the message to press <ENTER>. Press the <ENTER> key on your keyboard.

4. The screen will explain the ***ADAPTER CONFIGURATION ERROR 165.*** You may press <PgDn> key on your keyboard to continue.

5. The message on the screen will include the following question:

   "Automatically configure the system? (Y/N)"

   If you wish the default, press <Y>. Press <N> for NO, if you do not.

   AMS ADF files are constructed on the premise that you are adding ports to LPT1 and COM1. Thus, the next logical choices are made as the defaults. e.g. The MULTI-I/O-21 (2 Serial - 1 Parallel) would have COM2, COM3, and LPT2 as the default choice.

If <Y> is pressed:

The system will automatically configure the AMS adapter card and the screen will display the following message:

Automatic configuration complete. When <ENTER> is pressed, the computer restarts itself.

Press ENTER to continue."

If <N> is pressed:

The screen will display a menu with ***"CHANGE CONFIGURATION"*** as one of the selections. Make this selection. The screen will display the adapters installed in each slot. Select the slot with the AMS card and follow the instructions on how to make changes.

6. Take the IBM Reference Diskette out of drive A; put it in a safe place. Press <ENTER>.

7. The system will reboot itself from drive C without any error message, or, if you placed a bootable DOS diskette in drive A, the system will reboot from the A drive.

2.4 PROGRAMMABLE OPTION SELECTIONS

The PS/2 system and all the adapter cards from AMS have a unique feature where I/O selection and other feature selections are done completely by software. Each card from AMS comes with an Adapter Description File. Information contained in this file is used to configure the adapter.

The software for the power-on self test identifies the adapter through a special identification number assigned by IBM. Once the adapter is identified, the contents of the associated ADF file are down loaded to the adapter thus making I/O address selections, interrupt assignments and enabling the adapter.

Each of the MULTI-I/O cards from AMS has a unique identification number which is embedded in its logic. An application program can utilize this information to verify the existence and operation of the adapter. The number, for your information, is given below for each MULTI-I/O card:

	ID# (in Hex)
MULTI-I/O - 10	5075h
MULTI-I/O - 20	507Eh
MULTI-I/O - 11	5078h
MULTI-I/O - 21	507Fh

2.5 ADAPTER DESCRIPTION FILE EXAMPLE

The following file is for the ***MULTI-I/O-21*** which provides two serial and one parallel port.

AdapterID 0507Fh

AdapterName "AMS MULTI-IO-21 Adapter"

NumBytes 1

NamedItem

```
Prompt "AMS MULTI-IO-21.  2-Serial 1-Parallel"

choice "COM-2,3  LPT-2  IRQ-3,3,5"
        pos[0] = 10001111b
        io 2F8h-2FFh 3220h-3227h 378h-37Ah  int 3 5

choice "COM-2,3  LPT-2  IRQ-3,3,7"
        pos[0] = 10010111b
        io 2F8h-2FFh 3220h-3227h 378h-37Ah int 3 7
```

```
choice "COM-2,3  LPT-2  IRQ-3,3,NONE"
        pos[0] = 10000111b
        io 2F8h-2FFh 3220h-3227h 378h-37Ah int 3

choice "COM-1,2  LPT-1  IRQ-4,3,7"
        pos[0] = 10110101b
        io 3F8h-3FFh 2F8h-2FFh 3BCh-3BEh int 4 3 7

choice "COM-1,2  LPT-1  IRQ-4,3,5"
        pos[0] = 10101101b
        io 3F8h-3FFh 2F8h-2FFh 3BCh-3BEh int 4 3 5

choice "COM-1,2  LPT-1  IRQ-4,3,NONE"
        pos[0] = 10100101b
        io 3F8h-3FFh 2F8h-2FFh 3BCh-3BEh int 4 3

choice "COM-2,3  LPT-3  IRQ-3,3,7"
        pos[0] = 11010111b
        io 2F8h-2FFh 3220h-3227h 278h-27Ah int 3 7

choice "COM-2,3  LPT-3  IRQ-3,3,5"
        pos[0] = 11001111b
        io 2F8h-2FFh 3220h-3227h 278h-27Ah int 3 5

choice "COM-2,3  LPT-3  IRQ-3,3,NONE"
        pos[0] = 11000111b
        io 2F8h-2FFh 3220h-3227h 278h-27Ah int 3

choice "COM-3,4  LPT-3  IRQ-3,3,7"
        pos[0] = 11110111b
        io 3220h-3227h 3228h-322Fh 278h-27Ah int 3 7

choice "COM-3,4  LPT-3  IRQ-3,3,5"
        pos[0] = 11101111b
        io 3220h-3227h 3228h-322Fh 278h-27Ah int 3 5
```

```
choice "COM-3,4  LPT-3  IRQ-3,3,NONE"
        pos[0] = 11100111b
        io 3220h-3227h 3228h-322Fh 278h-27Ah int 3

choice "COM-2,3  LPT-2  IRQ-3,3,5 B"
        pos[0] = 00001111b
        io 2F8h-2FFh 3220h-3227h 378h-37Ah  int 3 5

choice "COM-2,3  LPT-2  IRQ-3,3,7 B"
        pos[0] = 00010111b
        io 2F8h-2FFh 3220h-3227h 378h-37Ah int 3 7

choice "COM-2,3  LPT-2  IRQ-3,3,NONE B"
        pos[0] = 00000111b
        io 2F8h-2FFh 3220h-3227h 378h-37Ah int 3

choice "COM-1,2  LPT-1  IRQ-4,3,7 B"
        pos[0] = 00110101b
        io 3F8h-3FFh 2F8h-2FFh 3BCh-3BEh int 4 3 7

choice "COM-1,2  LPT-1  IRQ-4,3,5 B"
        pos[0] = 00101101b
        io 3F8h-3FFh 2F8h-2FFh 3BCh-3BEh int 4 3 5

choice "COM-1,2  LPT-1  IRQ-4,3,NONE B"
        pos[0] = 00100101b
        io 3F8h-3FFh 2F8h-2FFh 3BCh-3BEh int 4 3

choice "COM-2,3  LPT-3  IRQ-3,3,7 B"
        pos[0] = 01010111b
        io 2F8h-2FFh 3220h-3227h 278h-27Ah int 3 7

choice "COM-2,3  LPT-3  IRQ-3,3,5 B"
        pos[0] = 01001111b
        io 2F8h-2FFh 3220h-3227h 278h-27Ah int 3 5

choice "COM-2,3  LPT-3  IRQ-3,3,NONE B"
        pos[0] = 01000111b
        io 2F8h-2FFh 3220h-3227h 278h-27Ah int 3
```

```
    choice "COM-3,4  LPT-3  IRQ-3,3,7 B"
           pos[0] = 01110111b
           io 3220h-3227h 3228h-322Fh 278h-27Ah int 3 7

    choice "COM-3,4  LPT-3  IRQ-3,3,5 B"
           pos[0] = 01101111b
           io 3220h-3227h 3228h-322Fh 278h-27Ah int 3 5

    choice "COM-3,4  LPT-3  IRQ-3,3,NONE B"
           pos[0] = 01100111b
           io 3220h-3227h 3228h-322Fh 278h-27Ah int 3

    choice "SetUp for IBM DIAGS.."
           pos[0] = 11100010b

  choice "Disable MULTI-IO-21 Card"
           pos[0] = 10000010b

Help
 " LPT implies Parallel Port, COM implies Serial Port, and IRQ
   implies interrupt used. Example: COM-2,3  LPT-2  IRQ-3,3,5 B.
   If this choice is selected the MULTI-IO-21 adapter card will
   be configured for COM Ports 2 & 3 and LPT Port 2. Also, COM-2
   will use interrupt 3, COM-3 will use interrupt 3, and LPT-2
   will use interrupt 5.  If a 'B' is present at the end of the
   selection, like in the example,then the parallel port is
   configured for Bidirectional Mode (Extended Mode). Absence of
   the 'B' indicates that the parallel port is configured for
   output only. NOTE: If the Operating System you are using is
   OS/2 then it is required that all the parallel port be
   configured to use IRQ-7. If the IBM Diagnostics are going to
   be run then the MULTI-IO-21 card must be configured to the
   'SetUp for IBM DIAGS' selection.
   Use  F5 = previous choice  F6 = next. "
```

The following table shows the port number and its respective HEX address. Serial ports are chosen from this set:

COM1 - 03F8, COM2 - 02F8, COM3 - 3220, COM4 - 3228,
COM5 - 4220, COM6 - 4228, COM7 - 5220, COM8 - 5228.

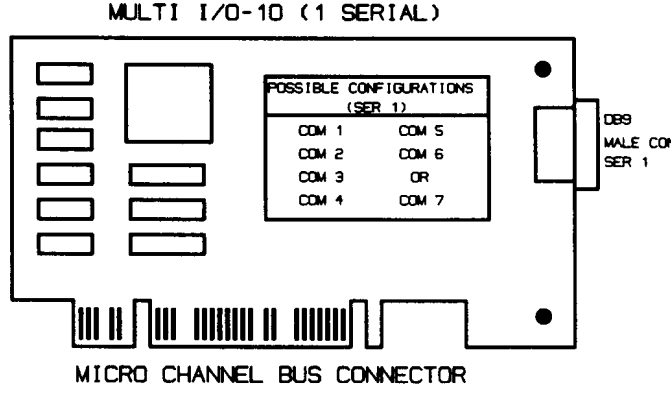
Parallel ports are chosen from this set:

LPT1 - 03BC, LPT2 - 0378, LPT3 - 0278, and LPT4 - 1378

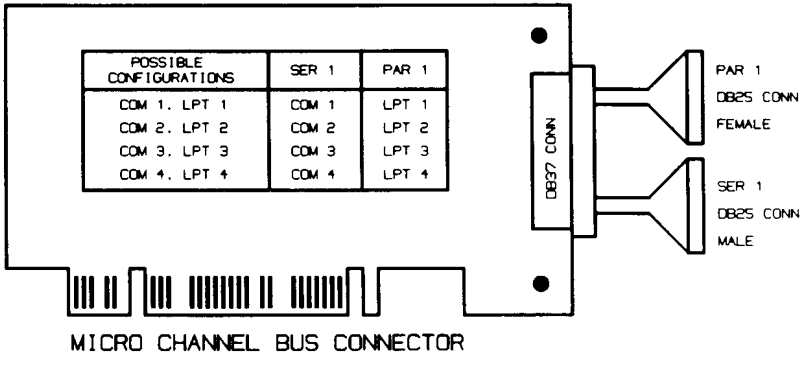
3 I/O PORTS

3.1 MULTI-I/O ADAPTER CARD

The MULTI-I/O adapter card is easy to install and very flexible to configure for your system. The maximum configuration of the MULTI-I/O card (MULTI-I/O-21) consists of two serial input-output ports which are also known as asynchronous communications interface. It is also equipped with one parallel port connection to the centronic type interface, typically found in printers and plotters. The MULTI-I/O card is a half-size card which will also fit into the Portable Model 70 (P70). It is designed in such a way that even the MULTI-I/O-21 card (maximum configuration) takes up just one slot.

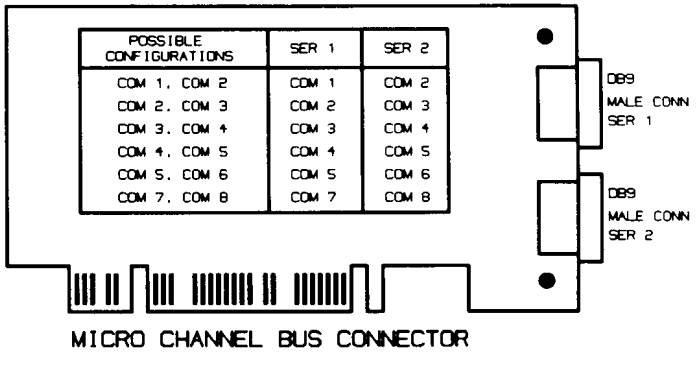


MULTI I/O-11 (1 SERIAL, 1 PARALLEL)

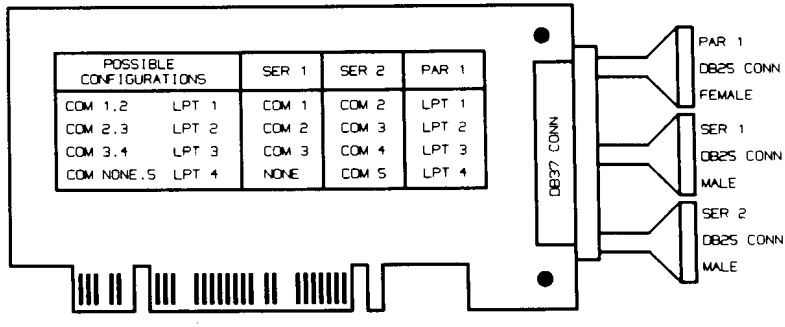


Note: PAR 1 and SER 1 are independently configurable.

MULTI I/O-20 (2 SERIAL)



MULTI I/O-21 (2 SERIAL, 1 PARALLEL)



POSSIBLE CONFIGURATIONS		SER 1	SER 2	PAR 1
COM 1.2	LPT 1	COM 1	COM 2	LPT 1
COM 2.3	LPT 2	COM 2	COM 3	LPT 2
COM 3.4	LPT 3	COM 3	COM 4	LPT 3
COM NONE.5	LPT 4	NONE	COM 5	LPT 4

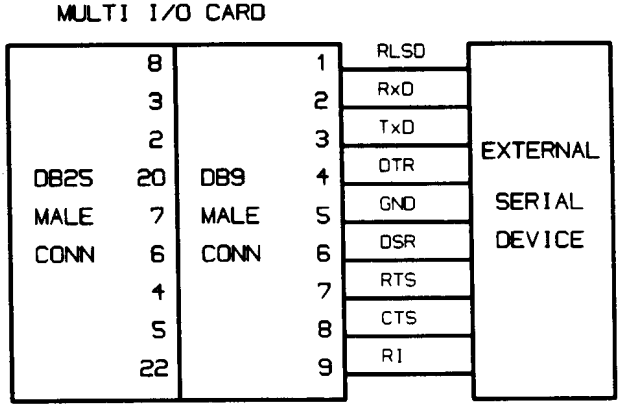
Note: PAR 1, SER 1 and SER 2 are independently configurable

3.2 SERIAL COMMUNICATION PORTS

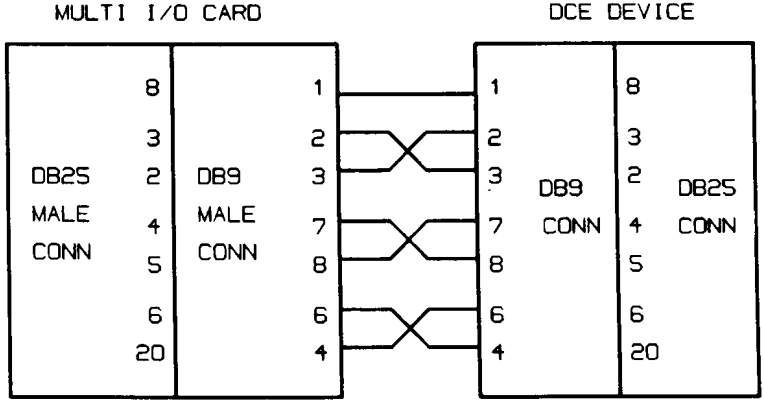
The serial portion of the adapter, which is a standard EIA RS-232C interface, contains serial communication controllers which are compatible with National INS16450 and INS16550 and are fully programmable. The serial communication ports can be assigned COM1 through COM8. The assignments are done through software. The system board has one serial port which is normally configured as COM1.

3.2.1 Serial Port Operation

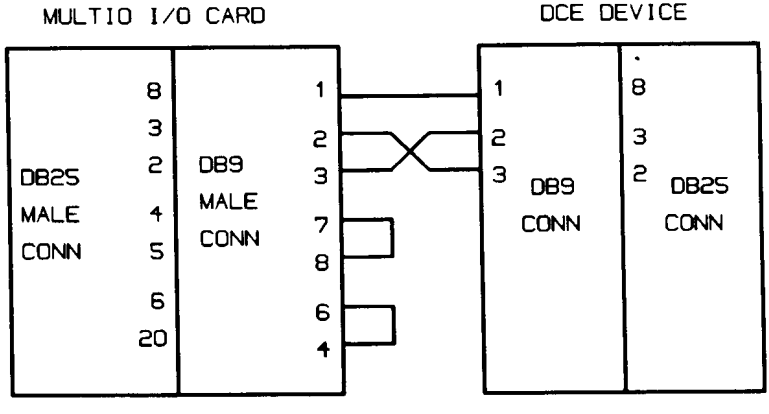
The serial port(s) on the MULTI-I/O adapter are implemented as a Data Terminal Equipment (DTE). The pin assignments of the DB9 and DB25 serial connectors are as follows:



If the external serial device in the application is a Data Terminal Equipment (DTE) device such as a terminal or another computer, use a reverser module between the two devices, or use a crossover cable wired as follows:



If the external serial device does not use Clear to Send (CTS) and Data Set Ready (DSR), wire the cable as follows:



3.2.2 Serial Controller

The Asynchronous Communications Controller selected for your MULTI-I/O card is compatible with INS16450 and INS16550 serial controller from National Semiconductor. The following pages give a brief description of these controller functions. For a more detailed description, please refer to the data book from National Semiconductor.

3.2.3 Controller Registers

The following table explains the function of each register and its corresponding address. It assumes that the card is selected as COM2 (base I/O address is HEX address 2F8).

I/O ADDRESS	REGISTER DESCRIPTION	DLAB STATE
2F8	TX Buffer	0 (write)
2F8	RX Buffer	0 (read)
2F8	Divisor Latch LSB	1
2F9	Divisor Latch MSB	1
2F9	Interrupt Enable Register	0
2FA	Interrupt Identification Register	NA
2FB	Line Control Register	NA
2FC	Modem Control Register	NA
2FD	Line Status Register	NA
2FE	Modem Status Register	NA
2FF	Reserved	NA

3.2.4 Interrupt Level

The serial ports normally use IRQ3 and IRQ4. Normally COM1 uses IRQ4 and all others use IRQ3.

If any other configurations are required, please contact AMS.

3.3 PARALLEL PORT

The parallel port on the MULTI-I/O adapter card (if included) is bidirectional. Therefore, it can be used to communicate with a printer as well as a scanner.

The parallel port can be assigned LPT1 through LPT4. The assignments are done through software. The System board has one parallel port which is normally configured as LPT1.

If the MULTI-I/O parallel port is configured as LPT2, it occupies the following addresses:

I/O REGISTER	FUNCTION
378	Data Register
379	Status Register
37A	Control Register

The following two tables provide a description of each bit of the status and control registers.

3.3.1 Status Register

BIT	FUNCTION
0	**Not Used**
1	**Not Used**
2	**IRQ Status** 0 - Interrupt pending 1 - No interrupt pending
3	**ERROR** 0 - Error 1 - Normal Operation
4	**SLCT** 0 - Not Selected 1 - Selected
5	**PE** 0 - Normal Operation 1 - Out of Paper
6	**ACK** 1 - Not Ready 0 - Ready for more data
7	**BUSY** 0 - Busy 1 - Normal Operation

3.3.2 Control Register

BIT	FUNCTION
0	**STROBE** 1 - Strobe the printer to accept the data latched. 0 - Release the strobe.
1	**AUTO FEED** 1 - Auto line feed 0 - Remote line feed control.
2	**INITIALIZE** 0 - Initialize the printer. 1 - Release the printer for normal operation.
3	**SELECT IN** 0 - Deselect the printer. 1 - Select the printer.
4	**INTERRUPT ENABLE IRQ7 OR IRQ5** 0 - Mask off IRQ. 1 - Enable IRQ when the printer is ready for data.
5	**DIRECTION BIT** 0 - Write operation. 1 - Read Operation.
6	**Not Used**
7	**Not Used**

3.3.3 Parallel Port Connector (DB25 Female Connector)

PIN NUMBER	FUNCTION
1	-Strobe
2	Data bit 0
3	Data bit 1
4	Data bit 2
5	Data bit 3
6	Data bit 4
7	Data bit 5
8	Data bit 6
9	Data bit 7
10	-Acknowledge
11	Busy
12	P.End (Out of Paper)
13	Select
14	-Auto Feed
15	-Error
16	-Initialize Printer
17	-Select Input
18 - 25	Ground

3.3.4 Parallel Port Interrupt

The parallel ports normally use IRQ5 and IRQ7. Normally LPT1 and LPT3 use IRQ7, and LPT2 uses IRQ5. AMS supplies other interrupt configurations in the ADF file for users with special needs. If any other configuration is required, please contact AMS.

Note: If the Operating System you are using is OS/2 then it is required that all the parallel ports be configured to use IRQ7. Please refer to the section titled "Using the Multi-IO Card with OS/2."

3.3.5 Extended Operation of Parallel Port

In the extended mode, the parallel port operates as both an input and an output port. This is achieved through the Programmable Option Select register and the control register of the parallel port.

The following table shows the relationship between POS register 2, and the parallel port control register.

Port Mode	Port Direction	Bit 7 of POS Reg 2	Bit 5 of Control Reg	Power On Default
Extend	Write	0	0	1
Extend	Write	0	0	0
Extend	Read	0	1	0
Normal	Write	1	N/A	0

Parallel ports can be configured for extended mode (bidirectional) or for output only through the ADF file provided by AMS. If a ***"B"*** is present at the end of the selection made when configuring the card, then the parallel port is set for extended mode. Absence of the ***"B"*** indicates that the parallel port is set for output only. If automatic configuration is run, the parallel port of the MULTI-I/O card (if included) will be configured for output only.

3.3.6 Using the Multi-IO Card with OS/2

If the operating system that you are using is OS/2, then it is required that all the parallel ports be configured to use IRQ7. In this application you can not use the automatic configuration. Please use the appropriate LPT port but select interrupt level at IRQ7.

OPERATING SYSTEM	INTERRUPT LEVEL			
	LPT1	LPT2	LPT3	LPT4
PCDOS(MSDOS)	----	----	----	----
OS/2	IRQ7	IRQ7	IRQ7	IRQ7

---- = don't care

4 OTHER AMS PRODUCTS

AMS has a large selection of Adapter Cards for PS/2 as well as PC XT/AT and compatible computers.

MICRO CHANNEL COMPATIBLE MODELS 50, 50Z, 60, 65SX, 70, P70, 80, 90 and 95.

IOSIX - 1 - 4 Serial, 2 Parallel
IOSIX - 2 - 4 Serial
IOSIX - 6 - 1 Serial, 2 Parallel
IOSIX - 9 - 2 Serial, 2 Parallel
MULTI-I/O 10 - 1 Serial
MULTI-I/O 11 - 1 Serial, 1 Parallel
MULTI-I/O 20 - 2 Serial
MULTI-I/O 21 - 2 Serial, 1 Parallel
MULTIPARALLEL-2 - 2 Parallel
MULTIPARALLEL-1 - 1 Parallel
MEMORY 16 (Expanded/Extended Memory for Models 50 and 60)
MEMORY 32 (Expanded/Extended Memory for Model 80)
MEMORY 1632SP (Memory expansion and two serial, one parallel port for Models 50 trough 95)

XPRESS 24 (Internal 2400 Baud Modem)
FAXPAK 2 (9600 Fax and 2400 Baud Modem)
XPRESS 96MC (Internal 9600 Baud Modem with MNP 5 error correction)

PC XT/AT COMPATIBLE

EISA PROTO (Prototype card for EISA bus)
EISA EXTEND (Extender card for EISA bus)
XPRESS 24I (2400 Baud Modem)
FAXPAK 1 (9600 Fax and 2400 Baud Modem)
XPRESS 96PC (Internal 9600 Baud Modem with MNP 5 error correction)

XPRESS 96S (Stand-alone 9600 Baud Modem with MNP 5 error correction)

note: add /FX on modems for Facsimile option.

5 WARRANTY

AMS, INC., warrants to the original owner of this product that the product shall be free of defects resulting from faulty manufacturing of the product or of its components for a period of TWO (2) YEARS from date of purchase. AMS makes no warranties regarding the satisfactory performance, merchantability or fitness for any particular purpose, of the product or its associated software.

During the warranty period, AMS will, at its option, repair or replace, at no charge, any defective components, provided that a RETURN AUTHORIZATION NUMBER is obtained from AMS CUSTOMER SERVICE at (305) 784-0900, and that the defective board is returned freight prepaid in a properly padded container.

There are no warranties express or implied, including but not limited to those of merchantability or fitness for a particular purpose and duration set forth herein.

AMS's sole obligation under this warranty is limited to the repair or replacement of a defective product and AMS shall not, in any event, be liable for any incidental or consequential damages of any kind resulting from use or possession of this product.

Unless the warranty has been registered with AMS, a dated proof of purchase must be included with the defective board. This warranty does not cover damage caused by accident, misuse, misapplication or unauthorized service or modification of the board.

ADVANCED MICROCOMPUTER SYSTEMS, INC.
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Pompano Beach, FL 33069
(305) 784-0900

DECIMAL TO HEX TO ASCII CONVERTER

DEC	HEX	ASCII	DEC	HEX	ASCII	DEC	HEX	ASCII	DEC	HEX	ASCII
0	00	NUL	32	20	SP	64	40	@	96	60	`
1	01	SOH	33	21	!	65	41	A	97	61	a
2	02	STX	34	22	"	66	42	B	98	62	b
3	03	ETX	35	23	#	67	43	C	99	63	c
4	04	EOT	36	24	$	68	44	D	100	64	d
5	05	ENQ	37	25	%	69	45	E	101	65	e
6	06	ACK	38	26	&	70	46	F	102	66	f
7	07	BEL	39	27	'	71	47	G	103	67	g
8	08	BS	40	28	(	72	48	H	104	68	h
9	09	HT	41	29	)	73	49	I	105	69	i
10	0A	LF	42	2A	*	74	4A	J	106	6A	j
11	0B	VT	43	2B	+	75	4B	K	107	6B	k
12	0C	FF	44	2C	,	76	4C	L	108	6C	l
13	0D	CR	45	2D	-	77	4D	M	109	6D	m
14	0E	SO	46	2E	.	78	4E	N	110	6E	n
15	0F	SI	47	2F	/	79	4F	O	111	6F	o
16	10	DLE	48	30	0	80	50	P	112	70	p
17	11	DC1	49	31	1	81	51	Q	113	71	q
18	12	DC2	50	32	2	82	52	R	114	72	r
19	13	DC3	51	33	3	83	53	S	115	73	s
20	14	DC4	52	34	4	84	54	T	116	74	t
21	15	NAK	53	35	5	85	55	U	117	75	u
22	16	SYN	54	36	6	86	56	V	118	76	v
23	17	ETB	55	37	7	87	57	W	119	77	w
24	18	CAN	56	38	8	88	58	X	120	78	x
25	19	EM	57	39	9	89	59	Y	121	79	y
26	1A	SUB	58	3A	:	90	5A	Z	122	7A	z
27	1B	ESC	59	3B	;	91	5B	[	123	7B	{
28	1C	FS	60	3C	<	92	5C	\	124	7C	|
29	1D	GS	61	3D	=	93	5D	]	125	7D	}
30	1E	RS	62	3E	>	94	5E	^	126	7E	~
31	1F	US	63	3F	?	95	5F	_	127	7F	DEL

EIA STANDARDS

EIA-232-D		EIA-530			EIA-449			TO DTE	TO DCE
FUNCTION	PIN	FUNCTION		PIN	FUNCTION		PIN	<	>
Shield	1	Shield		1	Shield		1		
Transmitted Data	2	Transmitted Data	(A) (B)	2 14	Send Data	(A) (B)	4 22		>
Received Data	3	Received Data	(A) (B)	3 16	Receive Data	(A) (B)	6 24	<	
Request To Send	4	Request To Send	(A) (B)	4 19	Request To Send	(A) (B)	7 25		>
Clear To Send	5	Clear To Send	(A) (B)	5 13	Clear To Send	(A) (B)	9 27	<	
DCE Ready	6	DCE Ready	(A) (B)	6 22	Data Mode	(A) (B)	11 29	<	
DTE Ready	20	DTE Ready	(A) (B)	20 23	Terminal Ready	(A) (B)	12 30		>
Signal Ground	7	Signal Ground		7	Signal Ground		19		
Received Line Signal Detector	8	Received Line Signal Detector	(A) (B)	8 10	Receiver Ready	(A) (B)	13 31	<	
Transmitter Signal Element Timing (DCE Source)	15	Transmit Signal Element Timing (DCE Source)	(A) (B)	15 12	Send Timing	(A) (B)	5 23	<	
Receiver Signal Element Timing (DCE Source)	17	Receiver Signal Element Timing (DCE Source)	(A) (B)	17 9	Receive Timing	(A) (B)	8 26	<	
Local Loopback	18	Local Loopback		18	Local Loopback		10		>
Remote Loopback/Signal Quality Detector	21	Remote Loop Back		21	Remote Loopback		14		>
Transmit Signal Element Timing (DTE Source)	24	Transmit Signal Element Timing (DTE Source)	(A) (B)	24 11	Terminal Timing	(A) (B)	17 35		>
Test Mode	25	Test Mode		25	Test Mode		18	<	

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