MIO-400KF
ALL-IN-ONE
EXPANSION BOARD
USER'S MANUAL

- D11400813 -

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FCC STATEMENT ON CLASS B

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual may cause harmful interference to radio communications. However, there is no guarantee that harmful interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

* *Reorient or relocate the receiving antenna.*
* *Increase the separation between the equipment and receiver.*
* *Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.*
* *Consult the dealer or an experienced radio TV technician for help.*

NOTICE

(1) The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

(2) Shielded interface cables and AC power cord, if any, must be used in order to comply with the emission limits.

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INTRODUCTION

DFI's MIO-400KF all-in-one expansion board is your Input/Output(I/O), game port and FDD/HDD controller cards in a single board. It eliminates the need to buy separate cards for your parallel and serial ports, game port and disk drive interface.

Setting up the board is easy. The MIO-400KF expansion board is equipped with a simple and clearly marked jumpers onboard and can be installed into any 16-bit slot of an IBM PC/AT or 100% compatible system.

The game port is a standard feature of the MIO-400KF all-in-one expansion board. Some of the boards may not be equipped with a game port as we have given our OEM customers the option of not having it installed.

FEATURES AND SPECIFICATIONS

SERIAL PORT

* Two RS-232C serial ports
* Supports COM1, COM2, COM3 and COM4 ports addressed at 3F8-3FF, 2F8-2FF, 3E8-3EF and 2E8-2EF
* Interrupt channel from IRQ2-IRQ5, jumper selectable
* Supports DTE/DCE operation
* Equipped with enable/disable function
* Includes a 9-pin connector with individual cable
* Configuration:

Primary	Secondary
COM1	COM2
COM2	COM3
COM3	COM4
COM1	COM4
disable	disable

PARALLEL PRINTER PORT

* One parallel printer port (25-pin female connector)
* Supports LPT1, LPT2 and LPT3 ports addressed at 3BC-3BE, 378-37A and 278-27A HEX
* Supports IRQ5 and IRQ7 Interrupt Request Lines
* Equipped with enable/disable function

FLOPPY DISK CONTROLLER

* Supports up to two standard type floppy disk drives
* Supports 360KB, 720KB, 1.2MB and 1.44MB 5.25/3.5-inch floppy disk drives
* Equipped with enable/disable function

IDE HARD DISK INTERFACE

* Interfaces up to two Conner and/or Miniscribe IDE hard disk drives or compatibles
* Provides an interface for IDE (Integrated Device Electronics) hard disk drives
* Equipped with enable/disable function

GAME PORT

* One game port
* Includes a 15-pin game port cable
* Equipped with enable/disable function

ONE METAL BRACKET TO MOUNT THE 9-PIN SERIAL PORT AND THE 15-PIN GAME PORT CONNECTORS

TWO-LAYER P.C.B.

ONE YEAR WARRANTY

PACKAGE CHECKLIST

Check and make sure that your MIO-400KF package contains the following items:

[ ] MIO-400KF all-in-one expansion board
[ ] One 9-pin serial port cable
[ ] One 15-pin game port cable*
[ ] One metal bracket to mount the 9-pin and the 15-pin cables
[ ] MIO-400KF User's Manual
[ ] One 34-pin floppy disk drive cable (optional)
[ ] One 40-pin IDE hard disk drive cable (optional)

If anything is missing, consult your dealer.

* If your MIO-400KF all-in-one expansion board is not equipped with a game port interface, the 15-pin game port cable will not be included.

BRIEF DESCRIPTION OF THE BUILT-IN FEATURES

The MIO-400KF board is equipped with two RS-232C serial ports, one parallel port, one FDD controller, one IDE hard disk interface and one game port. This board can be installed in any 16-bit open expansion slot for the IBM PC/AT or any 100% compatible computer. This chapter provides an overview for each built-in feature onboard.

Caution: *Computer components are easily damaged by static electricity. Be careful to handle the MIO-400KF all-in-one expansion board only by its edges. Do not touch any of the metal circuitry, especially the gold contacts, with your hands.*

SERIAL PORT

The built-in serial port interface is an RS-232C asynchronous serial communication port that can be used with modems, serial printers, remote display terminals and other serial devices for asynchronous communication software. You can select the interrupt channel IRQ2 to IRQ5 through jumper configuration. Included in the package is a 9-pin connector attached to a 9-pin cable and a metal bracket to mount the connector.

The serial ports on your MIO-400KF board uses the following system I/O ports:

PORT CONFIGURATION	I/O PORTS
COM1	3F8-3FF HEX
COM2	2F8-2FF HEX
COM3	3E8-3EF HEX
COM4	2E8-2EF HEX

The MIO-400KF board adheres to the RS-232C engineering standards. The serial ports can be configured as DTE (Data Terminal Equipment) or as DCE (Data Communication Equipment) signal. You can set the serial port to run in either one of these two Modem Handshake signals: normal or forced true. The default setting is set at normal configuration.

CONNECTING THE SERIAL PORT CABLE

The primary serial port (COMA) is already installed on the board. Install the secondary serial port into COMB. Make sure that the colored edge of the cable is aligned to pin 1 of the COMB connector. Refer to the figure below for the location of the COMA and COMB connectors onboard.

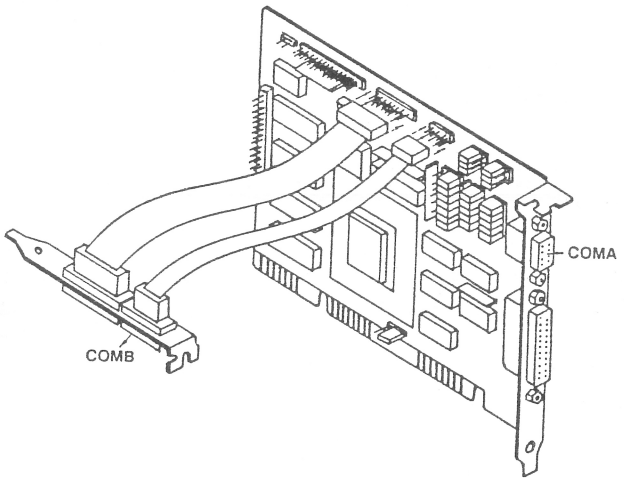


FIGURE 2-1. COMA AND COMB CONNECTORS ON THE MIO-400KF BOARD

PARALLEL PORT

The MIO-400KF board has a standard feature for interfacing your PC to a parallel printer such as the IBM/EPSON MX-80. This port is completely compatible with the IBM PC/AT and uses the same female DB25 connector as an IBM port.

The parallel printer port on your MIO-400KF board uses the following system I/O ports:

PORT CONFIGURATION	I/O PORTS
LPT1	3BC-3BE HEX
LPT2	378-37A HEX
LPT3	278-27A HEX

FLOPPY DISK DRIVE CONTROLLER

The MIO-400KF board is equipped with a built-in floppy disk controller that supports up to two standard type floppy disk drives. You can install any 360KB, 720KB, 1.2MB and 1.44MB 5.25/3.5-inch floppy disk drives.

CONNECTING THE FLOPPY DISK CONTROLLER CABLE

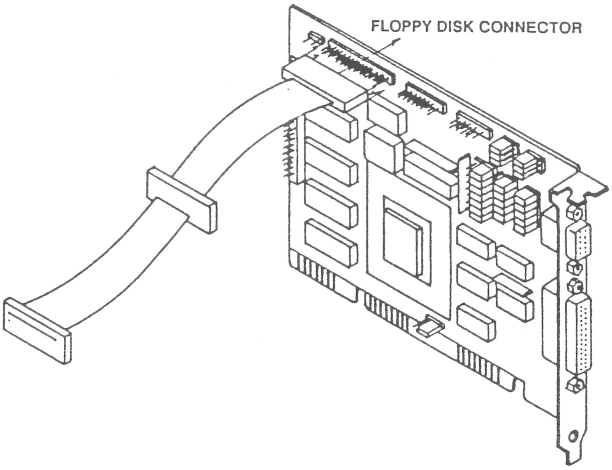


FIGURE 2-2. FLOPPY DISK CONNECTOR ON THE MIO-400KF BOARD

Step 1

Install the 34-pin header connector into the floppy disk connector on the MIO-400KF board with the colored edge of the ribbon aligned to pin 1.

Step 2

Install the other 34-pin header connector into the disk drive with the colored edge of the daisy chained ribbon cable aligned to pin 1 of the drive edge connector.

IDE HARD DISK INTERFACE

The MIO-400KF board is able to interface two Conner/Miniscribe IDE (Integrated Drive Electronics) hard disk drives or compatibles. An IDE drive is a hard disk drive with the controller electronics built into the disk assembly. The integration of the controller and the drive as a single unit increases both the reliability and performance by eliminating redundant circuitry.

Note: *Co-existence of non-IDE drives is not supported.*

CONNECTING THE HARD DISK INTERFACE CABLE

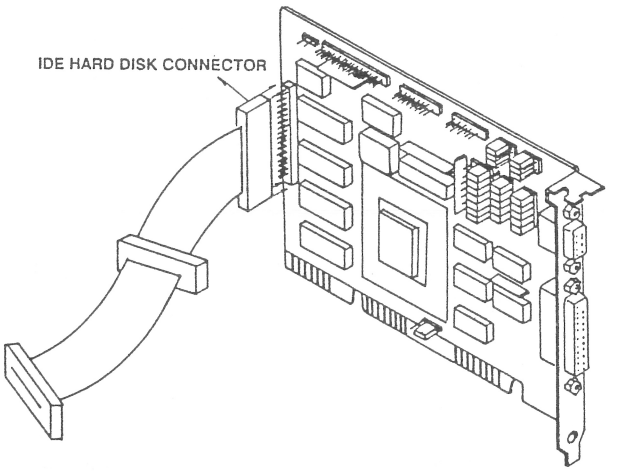


FIGURE 2-3. HARD DISK CONNECTOR ON THE MIO-400KF BOARD

Step 1

Install the 40-pin header connector into the hard disk connector on the MIO-400KF board with the colored edge of the ribbon aligned to pin 1.

Step 2

Install the other 40-pin header connector into the disk drive with the colored edge of the daisy chained ribbon cable aligned to pin 1 of the drive edge connector.

Note: *Refer to your disk drive owner's manual for information about proper drive select switch settings.*

GAME PORT

The MIO-400KF board is equipped with a game port. You can use any IBM compatible joystick. Included in the package is a 15-pin game port cable. Install the game port as shown below.

CONNECTING THE GAME PORT CABLE

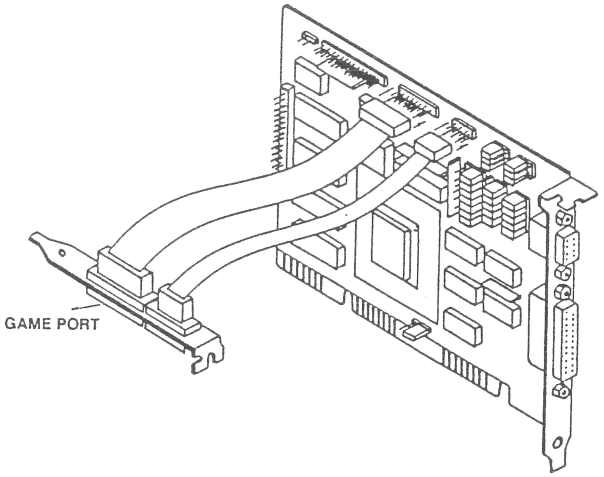


FIGURE 2-4. GAME PORT CONNECTOR ON THE MIO-400KF BOARD

THE MIO-400KF BOARD LAYOUT

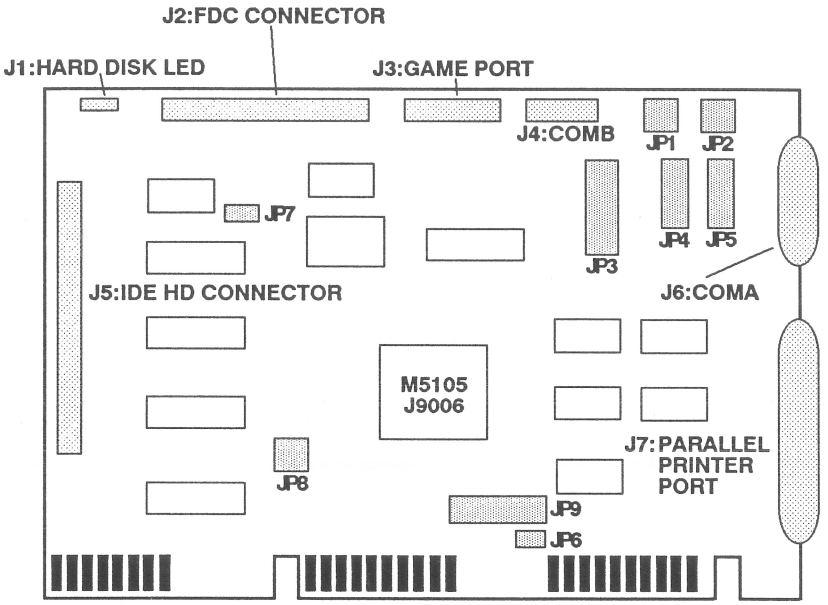
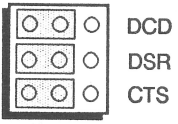


FIGURE 3-1. THE MIO-400KF BOARD

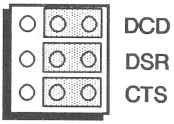
JUMPER SETTINGS

PRIMARY SERIAL PORT

JUMPER JP1
NORMAL/FORCED TRUE SETTING

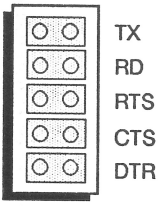


NORMAL
(DEFAULT)

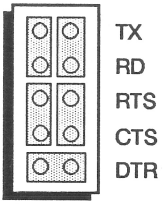


FORCED TRUE

JUMPER JP5
DTE/DCE SETTING



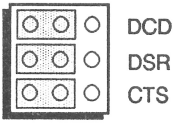
DTE
(DEFAULT)



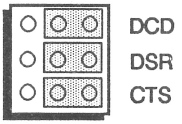
DCE

SECONDARY SERIAL PORT

JUMPER JP2
NORMAL/FORCED TRUE SETTING

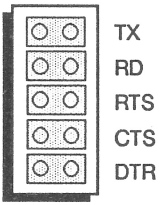


NORMAL (DEFAULT)

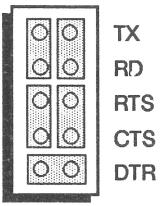


FORCED TRUE

JUMPER JP4
DTE/DCE SETTING



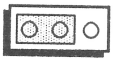
DTE (DEFAULT)



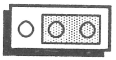
DCE

PARALLEL PRINTER PORT

JUMPER JP6
IRQ5/IRQ7 SETTING



IRQ5(278)

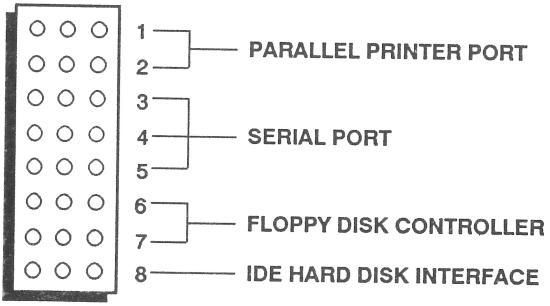


IRQ7(3BC, 378)
(DEFAULT)

Note: *To avoid any conflict, set LPT1/LPT2 to IRQ7 and set LPT3 to IRQ5.*

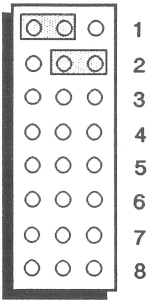
CONFIGURATION SETTINGS

JP3 is the jumper that allows you to configure the built-in features of your MIO-400KF board. This will give you the option to address your ports/ connectors in such a way as to avoid conflicts when using your MIO-400KF board. This is also used to disable the individual ports/connectors in case you want to use a separate board. This jumper consists of 3 columns and 8 rows of pins with each row having a specific function. Please refer to the figure below.

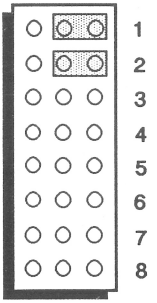


JUMPER JP3: CONFIGURATION SETTINGS

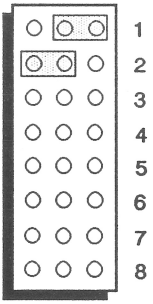
JP3: PRINTER PORT CONFIGURATION



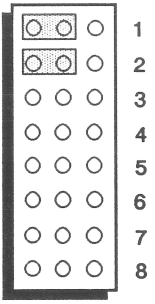
LPT1(3BC)



LPT2(378)
(DEFAULT)



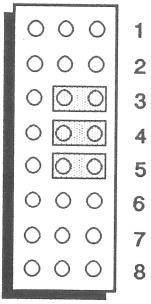
LPT3(278)

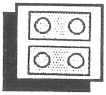


DISABLED

JP3: SERIAL PORT CONFIGURATION

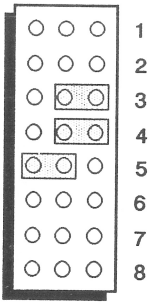
Note: *Jumpers JP3 and JP8 should be configured to its proper setting in order to set the COM ports to the desired addresses.*

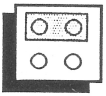




COMA: COM1
COMB: COM2
(DEFAULT)

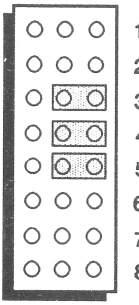
JUMPER JP8



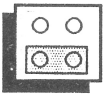


COMA: COM2
COMB: COM3

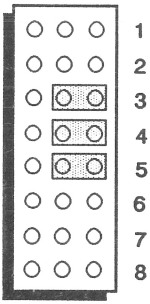
JUMPER JP8



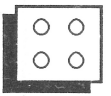
COMA: COM1
COMB: COM4



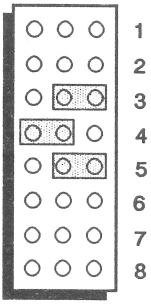
JUMPER JP8



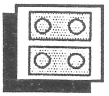
COMA: COM3
COMB: COM4



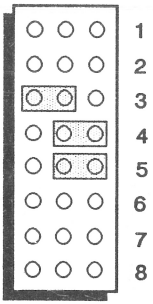
JUMPER JP8



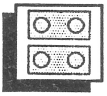
COMA: COM1
COMB: DISABLED



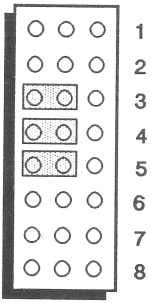
JUMPER JP8



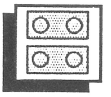
COMA: DISABLED
COMB: COM2



JUMPER JP8

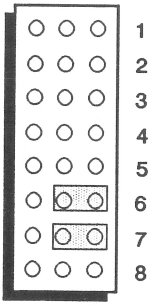


COMA: DISABLED
COMB: DISABLED

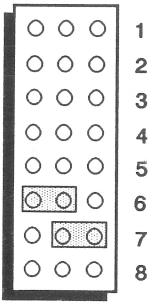


JUMPER JP8

JP3: FLOPPY DISK CONTROLLER ENABLE/DISABLE

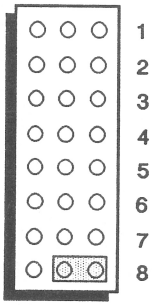


ENABLE
(DEFAULT)

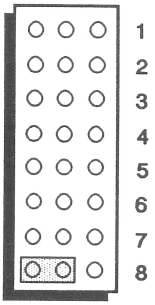


DISABLE

JP3: IDE HARD DISK INTERFACE ENABLE/DISABLE



ENABLE (DEFAULT)



DISABLE

GAME PORT

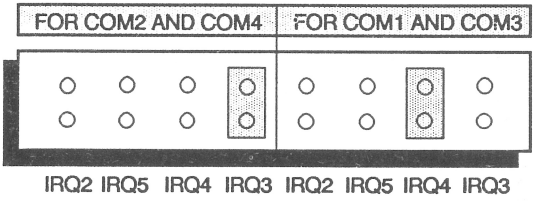
Jumper JP7
GAME PORT ENABLE/DISABLE

ENABLE (DEFAULT)

DISABLE

SERIAL PORT IRQ SETTING

Jumper JP9
SERIAL PORT INTERRUPT LINE SETTING



COM1: IRQ4
COM2: IRQ3
(DEFAULT)

CONNECTOR PIN ASSIGNMENTS

CONNECTOR J1
HARD DISK LED CONNECTOR

PIN	ASSIGNMENT
1	LED (+)
2	LED (-)

CONNECTOR J2
FLOPPY DISK CONTROLLER

PIN	ASSIGNMENT
1	GND
2	RPM
3	GND
4	RSVD
5	GND
6	RSVD
7	GND
8	INDEX
9	GND
10	MOTOR ENABLE A
11	GND
12	DRIVE SEL B
13	GND
14	DRIVE SEL A
15	GND

16	MOTOR ENABLE B
17	GND
18	DIR
19	GND
20	STEP
21	GND
22	WRITE DATA
23	GND
24	WRITE GATE
25	GND
26	TRACK 0
27	GND
28	WR PROTECT
29	GND
30	READ DATA
31	GND
32	HEAD SELECT
33	GND
34	DISK CHANGE

CONNECTOR J3
GAME PORT

PIN	ASSIGNMENT
1	+5VDC
2	+5VDC
3	BUTTON 4
4	BUTTON 6
5	POSITION 0
6	POSITION 2
7	GND

8	GND
9	GND
10	POSITION 3
11	POSITION 1
12	BUTTON 7
13	BUTTON 5
14	+5VDC
15	+5VDC

CONNECTOR J4, J6
PRIMARY AND SECONDARY SERIAL PORT

RS-232C NAME	PIN	ASSIGMENT
CF	1	DCD (DATA CARRIER DETECT)
BB	2	RX (RECEIVE DATA)
BA	3	TX (TRANSMIT DATA)
CD	4	DTR (DATA TERMINAL READY)
AB	5	GND (SIGNAL GROUND)
CC	6	DSR (DATA SET READY)
CA	7	RTS (REQUEST TO SEND)
CB	8	CTS (CLEAR TO SEND)
CE	9	RI (RING INDICATOR)

CONNECTOR J5
IDE HARD DISK INTERFACE

PIN	ASSIGNMENT
1	-RESET
2	GND
3	D7
4	D8
5	D6
6	D9
7	D5
8	D10
9	D4
10	D11
11	D3
12	D12
13	D2
14	D13
15	D1
16	D14
17	D0
18	D15
19	GND
20	KEY
21	RSVD
22	GND
23	-IOW
24	GND
25	-IOR
26	GND
27	IOCHRDY(RSVD)
28	ALE
29	RSVD
30	GND

31	IRQ14
32	-IOCS16
33	A1
34	RSVD
35	A0
36	A2
37	-CS0 (1F0-1F7)
38	-CS1 (3F6-3F7)
39	-ACTIVE
40	GND

CONNECTOR J7
PARALLEL PRINTER PORT

PIN	ASSIGNMENT
1	-STROBE
2	DATA0
3	DATA1
4	DATA2
5	DATA3
6	DATA4
7	DATA5
8	DATA6
9	DATA7
10	-ACK
11	BUSY
12	PAPER EMPTY
13	SELECT
14	-AUTO FOXT
15	-ERROR

16	-INIT
17	-SLCTIN
18	GND
19	GND
20	GND
21	GND
22	GND
23	GND
24	GND
25	GND