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CLOCK/RS-232C CARD

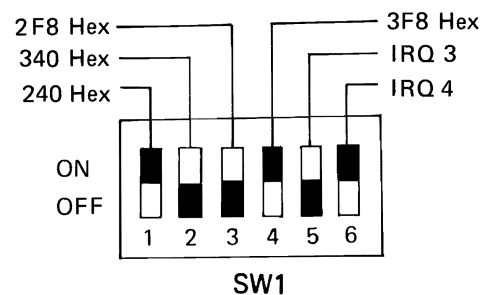
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COLOCK / RS - 232C CARD

Example : (1) R. T. C. ADDRESS 240 Hex
 (2) RS232 PORT ADDRESS 3F8 Hex
 INTERRUPT IRQ 4

1. SW1 - 1 & SW1 - 2 CONTROL R. T. C. ADDRESS

	SW 1- 1	SW 1- 2
(1) 240 Hex	ON	OFF
(2) 340 Hex	OFF	ON

2. SW1 - 3 & SW1 - 4 CONTROL RS232C PORT ADDRESS.
 SW1 - 5 & CONTROL RS232C IRQ

(1)	SW1 - 3	SW1 - 4	SW1 - 5	SW1 - 6
COM1 :	OFF	ON	OFF	ON

(* Address : 03 F8)
 IRQ4

(2) COM2 :	ON	OFF	ON	OFF
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(* Address : 02 F8)
 IRQ3

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Section 1. General Description

The RS232C & Real Time Clock Adapter is an expansion board for IBM PC/XT or compatible computers.

The Asynchronous Communications Interface is RS232C standard serial port. The Real Time Clock is battery powered and set/retrieve by software. The set/retrieve time software is included in the attached diskette.

It is completely software and hardware compatible with the IBM PC/XT and was designed for performance and reliability. It has been constructed of high quality components and designed for minimum power consumption. Each board has been "burned-in" for at least 48 hours continuously and thoroughly tested to ensure many years of reliable service.

Section 2. Installation

2.1 Tool Requirements

To install this adapter, you need a medium size flat blade screwdriver, a 3/16" nutdriver, or a 3/16" wrench. A medium size screwstarter will be useful.

2.2 Preliminary Steps

1. Turn off all peripheral devices connected to the computer.
2. Turn off the computer.
3. Disconnect all cables from the rear of the computer. Be sure to write down the proper connections first to prevent mistakes when you connect later.
4. Put the computer on a suitable work place.

2.3 Opening The Computer

5. Turn the computer so that its back faces you.

6. Loosen the 5 cover mounting screws with the screwdriver or nutdriver, as show in the figure below.

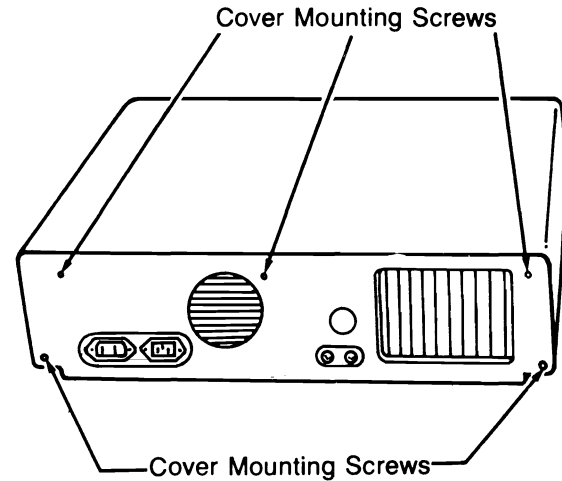


Figure 1.

7. Carefully slide the computer cover forward. When the cover goes to the end, tilt it up as shown in the figure below and lift it away from the computer.

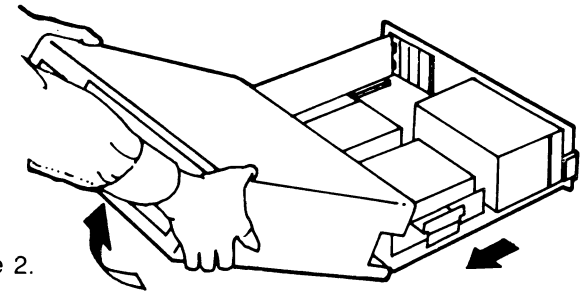


Figure 2.

2.4 Making Room For The RS232C & Real Time Clock Adapter

8. System expansion slots are located on the left side of the computer system board. You can refer the situation of other add-on boards to know the correct place.

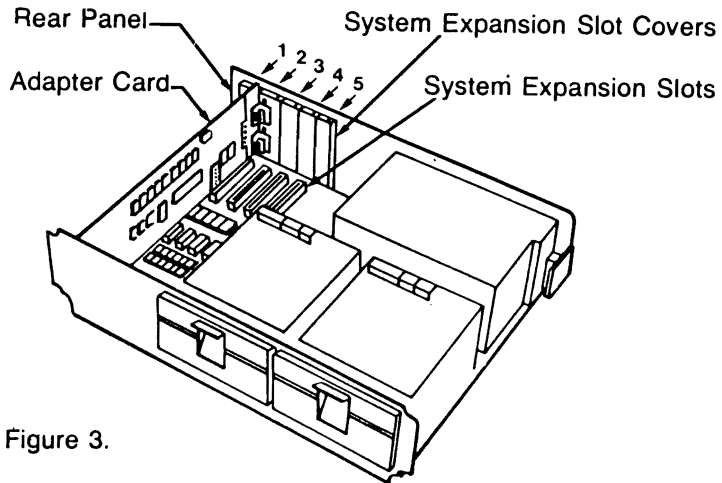


Figure 3.

9. Remove the screw that holds the system expansion slot cover to the rear panel and set it aside. Store the cover for possible later use. Please refer Figure 3. to see the place of covers.

10. Select an unused expansion slot to hold this adapter. Any slot will work.

2.5 Installing The RS232C & Real Time Clock Adapter

11. Hold the adapter by its top corners and slide it into the computer.

12. Firmly press the card's expansion slot connector into the system expansion edge connector.

13. Align the hole on the top of the card's retaining bracket with the threaded hole on the lip of the computer system rear panel. Insert the screw that you removed with the system expansion slot cover and tighten it.

2.6 RS232C Cable Connection

14. Use the D-type connector to connect the RS232C cable.

2.7 Jumper Settings

15. Set the jumper at COM1 or COM2 according to your system status. Set the jumper at COM2 if you already have one installed and it was set at COM1.

2.8 Set The Real Time Clock

16. You can use the files in the attached diskette to set the Real Time clock after the installation is completed. Please refer the related topics in Section 3 to get detailed information.

2.9 Closing The Computer

17. Hold the computer cover so that it tilts down in back. Slip upper rear edge of the cover over the top of the computer chassis front panel.

18. Lower the cover to the horizontal position.

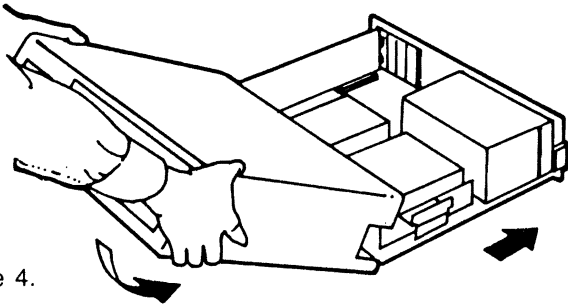


Figure 4.

19. Carefully slide the cover back over the computer. Be sure that the tracks along the bottom of the cover engage the rails on each side of the computer chassis.

20. Tighten the 5 mounting screws that hold the cover onto the computer chassis.

21. Reconnect the keyboard and peripheral cables to the computer.

22. Reconnect all power cables to the wall socket.

Section 3. Operation

3.1. Asynchronous Communications Interface (RS232C)

The Asynchronous Communications Interface (Serial Interface) is a standard EIA-RS232-C interface that is fully programmable and supports IBM Asynchronous Communications. The baud rate is programmable from 50 to 9600 bauds. An NS8250 Asynchronous Communications controller controls all the serial operations.

Communications protocol is a function of system code and must be loaded before the adapter is operational. System software is required to handle all interface and control signal status. The software is provided when using DOS or Advanced BASIC.

The serial interface is implemented as Data Terminal Equipment and uses a 25 pin D-type connector. The connector is mounted at the rear of one blank back panel and connected through the socket number 30.

The 20 milliampere current loop interface option is not implemented in this board. BASIC and DOS 1.1, 2.0, 2.1, 3.0 and 3.1 provide simple commands to set the serial prot's programmable features. Additionally, a programmer can program the serial interface IC, NS8250, to meet any special need. All listed signals are connected to the serial interface IC and may be read or controlled through this IC.

TABLE
SERIAL PORT CONNECTOR SIGNALS

PIN NUMBER RS-232-SIGNAL	RS-232-SIGNAL
1	PROTECTIVE GROUND
2 from Board	TRANSMITTED DATA (TXD)
3 to Board	RECEIVED DATA (RXD)
4 from Board	REQUEST TO DATA (RTS)
5 to Board	CLEAR TO SEND (CTS)
6 to Board	DATA SET READY (DSR)
7	SIGNAL GROUND
8 to Board	CARRIER DETECT (CD)
20 from Board	DATA TERMINAL READY (DTR)
22 to Board	RING INDICATE (RL)

The serial interface is implemented as a terminal device.

If you have trouble getting the RS-232 interface to work when connected to another RS-232 device, the following notes may help to get it working.

- 1) IF CTS (pin 5) is not used, wire it to RTS (pin 4).
- 2) IF DSR (pin 6) is not used, wire to DTR (pin 20).
- 3) Some RS-232 devices may already have a signal on pin 22 that may conflict with the RI output signal of the Triboard. If this true for your system, pin 22 will have to be disconnected between this board and the RS-232 device.

4) A loopback plug can be used for testing the serial interface.

Connect the following pairs of pins together:

Pin 2 to Pin 3

Pin 4 to Pin 5

Pin 6 to Pin 20

3.2 Real Time Clock

The Real Time Clock is battery powered, crystal controlled date and time keeping circuit. It is used to set the computer's own internal Real Time Clock whenever DOS is booted from a diskette. A battery provides power for the Real time clock when the computer is turned off. An adjustment is provided for setting the accuracy of the circuit. Software for set time and automatically retrieve time is included in the accompanying diskette.

3.3 GETTING START

There are 2 ways to start the timer program:

- 1) Type are TC command and input number:1.
- 2) Create an AUTOEXEC.BAT file, this file will auto execute once you reboot your system.
 - a) If you haven't an AUTOEXEC.BAT file on your diskette, create it; first type in

```
COPY CON:AUTOEXEC.BAT
```

Press ENTER key.

Then type in

```
RTC /1 [Ctrl+Z] (or key in the F6 function key) Press  
ENTER key
```

The A > prompt redisplay again and you have created an AUTOEXEC.BAT file.

The screen's displaying:

```
A>COPY CON:AUTOEXEC.BAT  
RTC /1 >Z  
1 File(s)Copied  
A>
```

In the above commands, the first command line tells DOS to copy the information entered on the keyboard into the AUTOEXEC.BAT file. The second command line enter the RTC/IBAT file the RTC (Real-Time-Clock) will set current date & time to system automatically. The [Ctrl+Z] or F6 means that you can press the Ctrl key and Z key together or you only press F6 key. This causes the system that additional keyboard information is not go into the file and causes the information to be written into the file. formation to be written into the file.

Once you have created the AUTOEXEC.BAT file, when you reset your system, the RTC/1 in the AUTOEXEC.BAT file will transfer the time in the CLOCK/CALENDAR into the system. The screen will display:


```

A>RTC/1
Real-Time-Clock Ver 1.0
(1)Set current date & time to system!

Real Time Clock!
Current date(##-##-##): XXX.XX-XX-XX
Current time(##:##:##.##): XX:XX:XX.XX

Good-bye!

A>

```

(b) If the AUTOEXEC.BAT file already exists on your diskette, you will need to add one line to the file. You must have the line editor EDLIN program on your diskette.

Type in
EDLIN AUTOEXEC.BAT
Press ENTER key
Type in
i
Press ENTER key
Type in
RTC/1
Press ENTER key
Type in
[Ctrl + C]
Type in
E
Press ENTER key

The A > prompt redisplay again. You have created an AUTOEXEC.BAT file with the RTC program in it.

The screen displays as follow:

```

A>EDLIN AUTOEXEC.BAT
*i
1: *RTC /1
2: *^C
*E
A>

```

4.RTC COMMAND

Anytime you type in RTC command and type in <ENTER>the screen display:

```

A>RTC
Real-Time-Clock Ver 1.0
(1)Set current date & time to system?
(2)Initialize clock/calendar and set current date & time
to system?
(3)Read current date & time?
Please input:—

```

1) Type in 1 the screen displays as follow:

```
Real Time Clock!
Current date(##-##-##):XXX XX-XX-XX
Current time(##:##:##.##):XX:XX:XX.XX
Good-bye!
A >
```

And now current date & time of CLOCK/CALENDAR have been transferred into the system.

2) Type in 2 the screen display:

```
Insert Date:month(##):-
```

type in number(1-12)and<ENTER>
then the screen will display:

```
day(##):-
```

type in number(1-31)and<ENTER>
then the screen will display:

```
year(##):-
```

if you type in number(0-79)and<ENTER>
the program will consider it as(2000-2079)
when you type in(80-99)and<ENTER>
the program considers it as(1980-1999)

```
NOTE:Don't use alphabet
```

After date setting, the screen will display:

```
Insert Time: hour(##):-
```

type in number(0-23)and<ENTER>
the screen will display:

```
minutes(##):-
```

type in number(0-59)and<ENTER>
the screen will display:

```
second(##):-
```

type in number(0-59)and<ENTER>

The screen will display the following messages
and terminate the process

```
Real Time Clock!
Current date(##-##-##): XXX XX-XX-XX
Current time(##:##:##.##): XX:XX:XX.XX
Good-bye!
A >
```

So far, initializing the CLOCK/CALENDAR and setting current date & time to system have been done.

If you had entered the invalid format of time or date the screen will display the following message.

```
Invalid format please try again!  
A>
```

You have to try again

3) Type in 3 the screen display:

```
Real Time Clock!  
Current date(##-##-##): XXX XX-XX-XX  
Current time(##:##:##.##): XX:XX:XX.XX  
Good-bye!  
A>
```

Current date & time in the CLOCK/CALENDAR was displayed above.