time kit

OPERATING MANUAL

Micro-Watch and Electronic Diary

Glanmire Electronics Limited

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INTRODUCTION

TIME KIT is a real time clock/calander card with applications software for the Apple II computer.

It consists of two basic components, MICRO WATCH and ELECTRONIC DIARY.

MICRO WATCH is the hardware element. It is an amazingly compact module which utilises the game socket, without interferance to the use of the game paddle features. It provides the computer with the Date and Time.

ELECTRONIC DIARY is a suite of Applesoft and Binary programs, which are primarily a demonstration of the application capabilities. It includes displays, stopwatch, and an updateable diary of alarms. This software also enables immediate and practical usage of the clock.

The sequence of this manual, is designed to bring the user thro' the basic installation and operation of TIME KIT. A section is included to assist in the programming of custom applications.

INSTALLATION

1. TURN OFF THE APPLE.

2. Remove the MICRO WATCH card from the packing material.

3. Remove the top cover from the Apple.

4. Locate the games socket on the rear right hand side of the Apple's main logic board. (Look up the Apple reference manual if you have any difficulty)

5. You may, if you wish, insert the game paddles into the socket on the MICRO WATCH.

6. Gently insert the MICRO-WATCH into the game socket making sure that the board is to the right side of the game socket.

7. Ensure that the card is seated correctly.

8. The card may be left resting in a vertical or horizontal position on the apple logic board. Note : The base of the card is insulated with insulating varnish .

9. Replace the top cover on the Apple.

SET UP

This chapter will show you how to set the correct time and set an alarm event when you use TIME KIT for the very first time. These step by step procedures will help to familiarise you with the system.

1.To bring the TIME KIT system up and running, you will need to boot the ELECTRONIC DIARY diskette, by inserting it into drive 1 and turning the power switch on.
If the correct time is displayed, you may if you wish, skip to page eight, 'Setting the Alarm'.

SETTING THE TIME

Note:- Check that the black 'Write Enable Jumper' on the MICRO WATCH card is on both pins.

2.Press "SPACEBAR" to move from the opening display to ELECTRONIC DIARY's main menu.

3.Press the right arrow '->' key repeatedly, until "Set the Time" appears in the lower white bar. Then press the 'RETURN' key.

4.Type in the month number, i.e. 1 for January, 2 for February etc., and press the 'RETURN' key.

5.Type in the DAY number, (reference the table on the screen), and press the 'RETURN' key.

6.Type in todays DATE and press 'RETURN'.

7.Type in the HOURS portion of the time in 24 hour format, i.e. 16 if it is half past four, and press 'RETURN'.

8.Type in the MINUTES portion of the time,
i.e. 30 if it is half past four, and press 'RETURN'.

9.Type in the SECONDS portion of the time and press 'RETURN'.

10.Enter 'Y' if all of the above answers are correct.
If not enter 'N' and go back to step 4.

11.Press 'SPACEBAR' at the exact instant that you want the above time to be set. A bell will ring.

12.Once the time has been set you can, if you want to, remove the write enable jumper, to prevent accidental corruption of the time. BUT DONT DO IT NOW. Reference the general chapter when you want to do this.

13.As thirteen is an unlucky number we will skip it.

14.Verify the details on the screen and press 'SPACEBAR'.

15.If the details are incorrect then return to step 3.

SETTING THE ALARM

16.Press right arrow '->' until "Diary" appears in the lower white bar and then press 'RETURN'.

17.Select "Write in Diary" by pressing right arrow '->' and "RETURN".

18.Press right arrow '->' until "Set up a new Events File" appears in the lower white bar and then press 'RETURN'.

19.Press 'Y' as this is the first time we are doing it. Ordinarily we would say 'N' as we don't wish to erase the file containing the events list.

20.Select "Add an event" by pressing right arrow '->' and 'RETURN'.

21.Select "a Single event" by pressing right arrow '->' and 'RETURN'.

22.Press right arrow '->' until the current month is displayed and then press 'RETURN'.

23.Enter today's date, i.e. 24 if it is the 24th April.

24.Enter the time for the alarm, let us say five minutes from now), i.e. 1305 if it is now one o'clock.

25.Press right arrow '->' until "Minutes" is displayed and then press 'RETURN'.

26.Enter '01' for 1 minutes warning and press 'RETURN'.

27.Type in any description, e.g. "WAKE UP JOE", and press 'RETURN'.

28.Press 'Y' if all is OK.

29.Press right arrow '->' until "Diary Menu" is displayed and then press 'RETURN'.

30.Press right arrow '->' until "Read Todays Diary & Alarm" is displayed, and press 'RETURN'.

31.Press 'D' and then 'T' to show today's live events. Then press 'SPACEBAR' to get back to alarm monitoring mode.

32.Wait ... (if nothing happens at the set time check the above steps) A bell will ring giving a warning one minute ahead of the event.

33.Press 'SPACEBAR' to reset the screen.

34.Wait ....
At the appointed time the bell will start ringing, and the event details will be shown on the screen.

35.Press 'SPACEBAR' and then press 'ESC'.

36.Press right arrow '->' until "Return to main menu" is displayed and then press 'RETURN'.

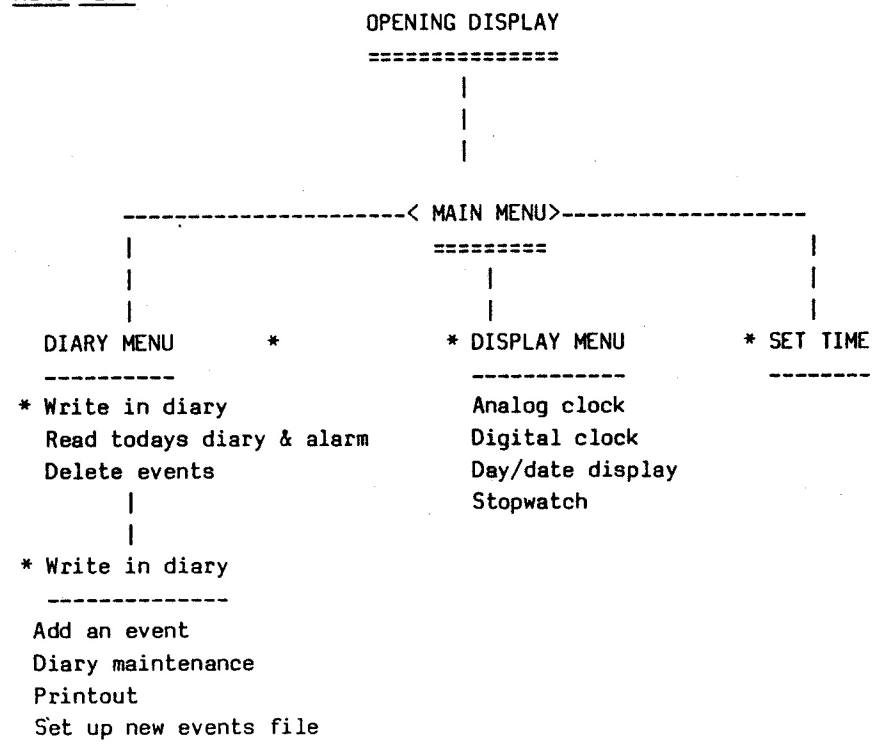
37.Press right arrow '->' until "Exit" is displayed and then press 'RETURN'.

And that, ladies and gentlemen, completes the familiarisation tour of the TIME KIT system.

Descriptions of all the other features of ELECTRONIC DIARY and MICRO WATCH are listed in the following chapters. As each function within ELECTRONIC DIARY tells you exactly what type of input it expects, this manual won't re-iterate these specifications.

We suggest that you reference the MENU FLOW at this stage and try out all of these features.

MENU FLOW



FEATURES

This chapter describes the features of the ELECTRONIC DIARY software supplied with the TIME KIT.
To bring the system up you will need to boot the ELECTRONIC DIARY diskette.
We will assume that you have gone thro' the previous chapters and are familiar with the right arrow '->' and 'RETURN' method of selection for menu's and suchlike. Instead we will use the word "SELECT".

1.Opening Display

The opening display will show the date and time (both analog and digital). Press <ESC> to exit or "SPACEBAR" for the main menu.

2.Main menu

This allows selection of any one of the three main areas of the TIME KIT system, as follows :-

a.Diary

This function allows you to set up and maintain a diary of alarm events. Reference section 3 thro' 5 for more details.

b.Display the Time

The display menu allows you to select time displays in analog, digital, and day/date formats, as well as having a stopwatch facility. Reference section 6 thro' 9 for more details.

c.Set the Time

This function does what it says (surprisingly enough!), and has already been described in detail in the SET UP chapter.

3.Write in diary

This function allows you to add events, perform diary maintenance, produce a printout of events, and initialise a new events file.

a.Add an event.

In the SET UP section, the procedures for setting up a single event was covered. This option also enables the user to set up regular events on a daily, weekly, monthly and yearly basis.

b.Diary maintenance.

You can call up and examine events previously entered, and mark them for deletion if no longer required. The relevant commands will be displayed on the screen.

c.Printout.

Select this when you want a hard copy list of events. The title should be done first and then press 'P'. Note that the system expects the printer to be in slot 1 of the Apple.

d.Set up new events file.
You will first be asked if you are sure that you want to do this, so answer 'Y' or 'N' as applicable. This function deletes ALL events on file, so be careful. Use it initially to clear off any demonstration events, and subsequently as required.

4.Read Todays Diary & Alarm.
Selection of this feature will put you in "alarm monitoring" mode, i.e. bells will ring and messages displayed at the appointed time. The facility to list the current days events 'D', on the terminal or printer, has also been included. Simply follow the commands shown if this is required.

5.Delete Events.

Again, this is another one of those funny options which does what it says. Events are marked for deletion during diary maintenance and/or after they occur (single events). The ACTUAL deletion from the events file is done here, and the relevant DOS commands will be displayed as this is happening.
This function should be carried out regularly, to clean down the events file.

6.Analog clock.
You will be asked whether you want a ticking sound or not. The clock will then be loaded and displayed. Although the display is identical to a watch, we dont reccommend strapping the Apple to your wrist.

7.Digital clock.
You also have a "ticking" option here. The current time is displayed as digital numbers, including seconds, and is continually updated.

8.Day / Date display.
This shows the time in digital format, as well as the date. Please note that you will not be in "alarm monitoring" mode during any of these displays.

9.Stopwatch
This feature has been included to facilitate those who want to do time and motion studies in offices, factory floor operations, sports or indeed any place that a stopwatch may be used. You can press 'RETURN' to start the count up, 'L' at any time to record lap times or the equivalent, and 'SPACEBAR' to stop the clock.
Full instructions are given on the screen.

GENERAL

1.System requirements.

Apple II with 16k of memory and one disk II drive. This amount of memory will allow you to utilise the "WATCH" machine code routine and some of the utilities and samples on the diskette. The ELECTRONIC DIARY system requires 48k of memory.

2.Time protection.

The black jumper inserted across the two pins on the MICRO WATCH card is the write-enable jumper.
When the jumper is positioned across both pins, you can write the time to the clock using the routines described in the SET UP section.
However, some peculiar types of bugs (of the programme variety) can also inadvertentley corrupt the time stored in the MICRO WATCH. To avoid this simply place the jumper on one pin only.

3.Utilities.

There are several other programs on the diskette that may be helpful to the programmer, but are not listed in this manual. These are described in a seperate program.
To review these, exit ELECTRONIC DIARY and "RUN UTILITIES".

HIGHER TEXT

The HIGHER TEXT package from Synergistic Software, has been utilised to a great extent by ELECTRONIC DIARY. A table of the main commands, which are embedded in "PRINT" statements, are shown here.

Command	CHR$	Description
Ctrl Q	17	Select large font
Ctrl W	23	Select wide small font
Ctrl E	5	Select expanded small font
Ctrl R	18	Select regular small font
Ctrl T	20	Select tall small font
Ctrl Y	25	Select bold face mode
Ctrl Z	26	Deselect bold face mode
Ctrl C+	3+	Colour assignment prefix
Ctrl BO	2+0	Assign current colour to background
Ctrl H,I,J,K,L		Cursor left, right, down, up, clear screen
Ctrl N	14	Clear to end of line
Ctrl O	15	Clear to end of page
Ctrl F	6	Scroll text up one line
Ctrl P&`	16&0	Select & deselect smooth scroll mode.
Ctrl A&S		Upper & Lower case shift locks in immediate mode

PROGRAMMING

This chapter is for the experienced programmer. You should initially reference the Block Diagram to familiarise yourself with the structure of MICRO WATCH and how it interfaces with your Apple.

For those who are not so familiar with game I/O addressing, you should look up the Apple II Reference Manual before reading this part.

The following tables will serve as a useful reference.

Table A - Signal pins

PIN	Description	MICRO WATCH Function	Apple Address
PB2	Paddle no. 2	Serial Data Out	49251
AN0	Annunciator 0	Data clock	49240 & 49241
AN1	Annunciator 1	Control 1	49242 & 49243
AN2	Annunciator 2	Control 0	49244 & 49245
AN3	Annunciator 3	Serial Data In	49246 & 49247

Note:- In normal operation (Read mode) AN2 and AN3 are not required and may be used for other purposes. These annunciators are only used on the very odd occasion when it is nescessary to set the time.

Table B - Control Modes

AN1	AN2	Mode	Description
0	0	HOLD	Disables Shift Register movement. 1Hz pulse available at PB2.
0	1	SHIFT	Enables pulsing of bit data in and out of the Shift Register
1	0	WRITE	Moves Shift Register contents to the Time Counter. Time Counter will stop incrementing.
1	1	READ	Moves Time Counter contents to the Shift Register.

Note:- AN2 will be held at 1 when the write enable jumper is out.

Table C - Shift Register

LSB	MSB	Description	Type	Range
0	3	Seconds/Units	BCD	0->9
4	7	Seconds/Tens	BCD	0->5
8	11	Minutes/Units	BCD	0->9
12	15	Minutes/Tens	BCD	0->5
16	19	Hours /Units	BCD	0->9
20	23	Hours /Tens	BCD	0->2
24	27	Date /Units	BCD	0->9
28	31	Date /Tens	BCD	0->3
32	35	Day	BCD	0->6
36	39	Month	HEX	1->C

Note :- Bits 7, 15, 22, 23, 30, 31 and 35 will always be 0.
Two sample applesoft programs are supplied on your TIME KIT diskette, "SAMPLE READ 1" and "SAMPLE READ2", which we will reference.

The first describes the "long" way of reading the time in Applesoft, but serves as a good example of the detailed steps involved.

Reading the time consists of three stages,

1.Set READ mode to move the time from T/C into the Shift Register.

2.Set SHIFT mode to enable reading the S/R.

3.Pulse out the data, one bit at a time.

The program performs steps 1 and 2 at lines 35 and 36, and step 3 is the FOR loop at lines 37 thro' 38.

Unless you are familiar with hardware, you might find the coding difficult to follow.

For your convenience, a machine code routine, called "WATCH" (suprisingly enough), resides on the diskette and can be loaded and called from within an Applesoft program. "SAMPLE READ 2" demonstrates this routine as well as the "HIGHER TEXT" routine.

Let us have a closer look at "SAMPLE READ 2".

Line 100 : Higher text needs an amount of memory to store various fonts. The "LOMEM:" routine, if required, shunts up the Applesoft program higher in memory.
No variables should be defined before this routine.

Line 110 : Will check to see if "HIGHER TEXT" is present, and will initiate it if required.

Line 120 : This is the routine which reads MICRO WATCH. It slots into memory where "LOMEM;" was, as it is no longer required. You can execute this routine with the "CALL 816" command and it will insert the time into the string T$, assuming that T$ is the first variable defined in the program.

In order to set the time,(which you need not nescessarily worry about, as the ELECTRONIC DIARY will do it for you) the following stages are involved, (ref the SET TIME program on the diskette)

1.Set SHIFT mode

2.Pulse in serial data

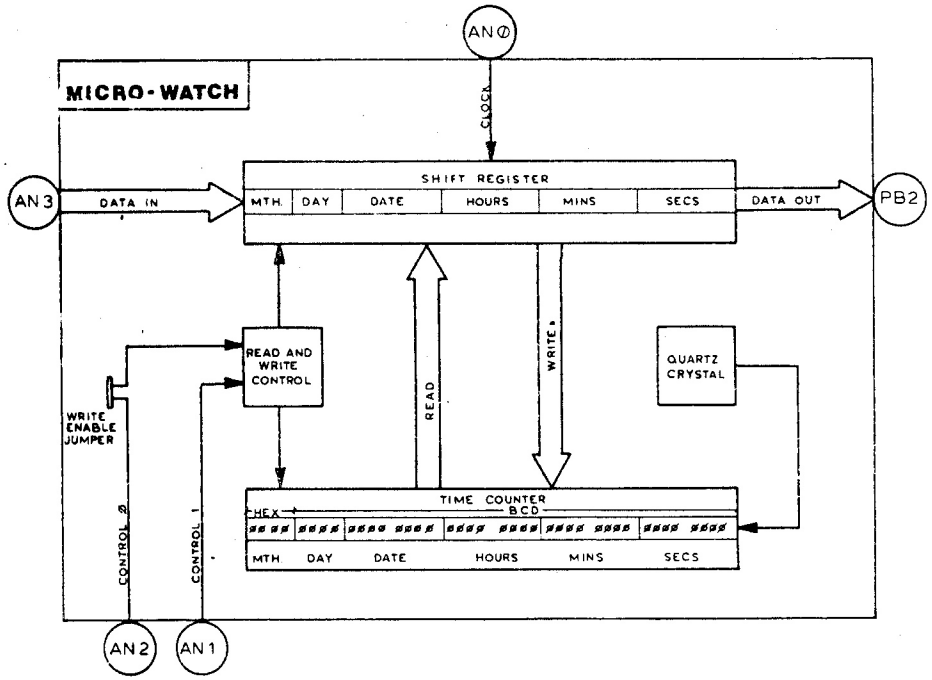
3.Set WRITE mode

4.Set SHIFT mode.

BLOCK DIAGRAM

HARDWARE

Please refer to the programming section for the operational control tables. These show the detailed programming requirements to read and write with MICRO WATCH.



The following is a functional description of each of the elements in the MICRO WATCH card, and how they interface with the Apple computer.

1.QUARTZ CRYSTAL.

This is MICRO WATCH's time reference. The oscillating frequency is 32.768 KHz and is divided down to a 1Hz pulse which increments the time counter.

2.TIME COUNTER

Month, day, date, hours, minutes and seconds are maintained here. This data is transferred to and from the shift register based on the condition of the control inputs. The counter does not increment in the "WRITE" mode of operation.

3.READ/WRITE CONTROL

This element of the logic uses annunciators 1 and 2 as direct inputs. The table of relevant states is given in the programming section.

4.WRITE ENABLE JUMPER

This jumper is inserted across the two pins on the MICRO WATCH card to enable writing to the clock, and removed to prevent accidental corruption of the time.

5.SHIFT REGISTER

The shift register is a 40 bit buffer (if you will pardon the expression). The input and output are connected to AN3 and PB2 respectively and the data is pulsed in or out by a clock pulse on AN0, dependant on the state of the read/write control logic.

6.BATTERY

The Battery is a Nickel Cadium type which is automatically recharged from the Apple. The Micro-Watch will continue to run for up to one year when removed from the Apple.

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