ClockCard®

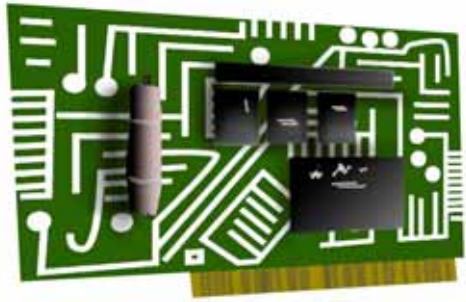## Real Time ClockCard

User's Guide
Version 3.1.1

PCI Models
CCPINT
CCPCILock
CCPCISRV
CCPCIGPS

ISA Models
CC
CC98
CCSRV

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beagle software
www.beaglesoft.com

Table of Contents

1.0 Introduction

All PCs come with a Real Time Clock (RTC) to keep track of the date and time, but many of these perform poorly. ClockCard is Beagle Software's hardware solution to the problem of a PC with an inaccurate clock. ClockCard is a PC card with its own built-in clock and lithium battery. When installed in your PC, ClockCard replaces the computer's RTC with its own. The computer's operating system takes its time from ClockCard on boot-up.

1.1 ClockCard Features

- On-board Real Time Clock; takes the place of the existing motherboard clock and works with most PC hardware.

- PCI version has a temperature compensated crystal oscillator.

- Battery life of the Real Time Clock guaranteed to last at least five years.

- Provides correct date and time at boot up.

- Corrects system that loses date or time when powered off.

- Maintains correct date and time with CMOS battery failure.

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1.2 How ClockCard Works

1.2.1 PCI Card Version

The ClockCard PCI includes a temperature compensated 32KHz oscillator. The DS32KHz is a highly accurate replacement for standard 32.768-kHz crystals commonly used in real time clocks (RTC). Inside the ClockCard PCI oscillator package are a quartz crystal and a temperature compensation IC (integrated circuit). The compensation IC employs low current oscillator technology and thermal-sensing technology. It is this temperature compensation that gives the overall precision of the PCI ClockCard in the 2 PPM range. A separate ClockCard process keeps the operating system maintained at the ClockCard time, refreshing it every 10 seconds.

1.2.2 ISA Card Version

The ClockCard board resets the motherboard RTC (Real Time Clock) chip with the correct time and date each time the PC is booted. This process occurs automatically before DOS or Windows has been loaded, and cannot be disabled or bypassed by the user. No software needs to be loaded or installed for this process to happen.

2.0 PCI ClockCard Installation

Complete installation involves installing the physical card in the computer, installing the card driver software for Windows, and installing the ClockWatch application software. The PCI version of ClockCard is "plug and play" compatible—nothing needs to be configured on the board. Insert ClockCard into an available PCI Bus Slot in your PC:

1. Unplug computer from AC outlet.
2. Remove the cover of your computer's case.
3. Place the PCI Real Time Clock into an empty PCI slot.
4. Replace your computer's cover.
5. Continue to Driver Installation (next step).

2.1 Driver Installation

Follow the instructions based on your computer's operating system.

2.1.1 Driver Installation—Windows 98/Me

1. Turn your computer on and allow Windows to load.
2. The Windows *New Hardware Wizard* will detect the PCI Real Time Clock as a "PCI System Peripheral" or a "Base System Device". Select the "Search for the best driver for your device" option. Make sure the CD-ROM drive option is checked.
3. Place the provided CD-ROM in the drive. When prompted by the *New*

Hardware Wizard for the driver location, select your CD-ROM drive.

4. Check "Specify a location" and press the 'Browse' button to browse for the driver. The driver is usually at D:\ClkCard\Drivers\Drivers\Win98 on the ClockWatch CD.

5. Windows will then install the driver: RTC WinRT WDM Device. This is the device driver for the PCI ClockCard.

6. You can verify driver installation in the Device Manager:

7. Open the Device Manager (**Control Panel>System**) and select the "Hardware" tab. The device will be listed as **WinRT Devices>RTC WinRT WDM Device.**

8. Verify that the device is working properly by selecting the device and viewing its properties.

2.1.2 Driver Installation—Windows NT 4.0

1. Turn your computer on and allow Windows NT to load.

2. When prompted to log in, you must log in with either the machine administrator account or a Windows NT domain administrator account.

3. Install the ClockWatch Software. Answer "Yes" when asked when installing a ClockCard.

4. The ClockCard installer should install the software. To do so manually, go to the ClockCard\Drivers\Setup.exe file on the CD-ROM.

5. Restart the computer.

6. **Starting the Device.** Check in Control Panel>Devices. There should be a WinRT device that is started. If not started, attempt to start it manually.

2.1.3 Driver Installation—Win 2K/XP/2003

1. Turn on computer, start Windows 2000/XP/2003.

2. When prompted to log in, login in with either a machine administrator account or a Windows domain account.

3. In most cases Windows will find the new ClockCard hardware.

4. Windows New Hardware Wizard will detect the PCI Real Time Clock as a "Base System Device". Select the "Search for the best driver for your device" (2k) or "Install from a list or specified location" (XP) option. Make sure the CD-ROM drive option is checked.

5. Place the provided ClockWatch CD-ROM in the drive. When prompted by the New Hardware Wizard for the driver location, select your CD-ROM drive.

6. Wizard will give listing of four drivers. If asked to choose the driver for

the RTC WinRT WDM Device, select the **BSQUARE** Win2k driver located in the ..\drivers**win2k** directory on the CD-ROM. *Do not install the Windows 98 driver from the* **Win98** *directory or either of the OUTSOURCE drivers unless instructed to do so.*

7. If practical, restart the computer.

2.2 Verifying Driver Installation

1. You can verify driver installation in the Device Manager

2. Open the Device Manager: (Control Panel>System>Hardware) or (My Computer>Properties>Hardware>Device Manager).

3. The device will be listed as WinRT Devices-RTC WinRT WDM Device.

4. Verify that the device is working properly by selecting the device and viewing its properties. Under the General tab verify that the manufacturer is listed as "BSQUARE" and not "OUTSOURCE".

2.3 Reinstalling Driver

If Windows fails to find device:
1. Open the Device Manager, which lists ClockCard as: Other Devices>Base System Device.

2. Click the "Properties" on the Base System Device.

3. Press "Reinstall Driver".

4. Place ClockWatch CD in CD-ROM and chose "Install Software Automatically".

5. Wizard then installs the driver and finishes.

2.4 RTC Service Installation

Normally the Outsource Real Time Clock service is installed in sequence with the ClockCard installation script. If already installed, there will be a entry under 'Outsource Real Time Clock' under the Windows Start menu.

If the RTC Service is not installed:
1. Choose **Setup.exe** from the ClkCard\Drivers Directory on the CD.

2. This will start the "OutSource Real Time Clock" Service Installation.

3. This will install the service and necessary support files.

4. Reboot the computer at the conclusion of the installation.

2.4.1 RTC Service Initialization

The RTC service must be initialized before using the PCI ClockCard for the first time:

1. In the taskbar, note a small clock face with a red ring.

2. If the clock is not present then, start manually: Select the **Outsource Real Time Clock> Real Time Clock Setup** from the Start menu.

3. Open the RTC service configuration by double clicking on the red clock face in the task bar.

4. Set the **local** date, time and the offset from UTC (UTC is the same as Greenwich Mean Time or GMT)

> For **EST** set UTC to **+5**
> For **CST** set UTC to **+6**
> For **MST** set UTC to **+7**
> For **PST** set UTC to **+8**

   Subtract an hour to the offset for Daylight savings time (i.e., EDT is +4)

5. Press 'OK'. The Service should now be initialized and should maintain the time, even when changed from the Windows Date/Time applet (except on Windows 2003 systems)

6. If the initialization fails, you may need to manually stop the ClockWatch Service and start the RTC service to set the local date/time and offset. After initialization, you can restart the ClockWatch service.

2.4.2 Starting and Stopping RTC Service

To manually start and stop the RTC Service:

1. Start or stop the service under the Windows Service Manager (Admin Tasks>Services).

2. Open the "RTC Service" to turn off or on service.

3. Changes to time zone must be done from the system tray (see section 2.4.1)

3.0 ISA ClockCard Installation

Important note: ClockCard is a low level hardware device. It is NOT "plug and play" compatible and needs to be configured manually. Failure to do so may cause problems with booting the computer.

If the default jumper settings are correct, installing the ClockCard card is merely a matter of plugging in the card. No other special actions have to be taken for ClockCard to work properly. When booting the system, a Millenium YIIK-RTC banner message should appear; this is evidence that ClockCard is active in the PC.

To ensure proper operation, no other add-on cards must be installed on the same memory area. Also, make sure that the BIOS shadow memory is turned off on this area and that memory managers like EMM386 do not re-map this area with RAM.

3.1 Checking Default Jumper Settings

ClockCard has already been preconfigured so that it will work on most PCs without requiring any changes to the jumper settings. You can check the jumper settings to make sure that the jumpers are set correctly for the default settings. See Section 3.3, Changing The Default Jumper Settings, for information.

3.2 Inserting ClockCard into an Available ISA Slot

1. The Beagle Software ISA ClockCard is an 8-BIT adapter card that may be installed into the 8-bit portion of any ISA, EISA or VLB (Vesa Local Bus) bus slot.

2. Turn off the computer power and unplug the AC cord. Remove the PC case cover so that the ClockCard card can be installed in the machine.

3. Insert the edge connector of the card fully and evenly into any available bus slot. After securing the adapter bracket, confirm that the card remains evenly inserted into the bus slot to ensure its proper functioning.

4. Always verify that the card is seated fully by visually inspecting the gold edge connectors to ensure correct and firm placement of the card. If needed, the adapter bracket can be removed from the card to ensure firm seating in the bus slot.

5. Optionally, you can connect one of the LEDs (for example the Turbo LED) on the chassis. To do this, take the wire from the LED and connect it to the pins marked "JP3" on the ClockCard. Note that you must connect the LED the right way around. If in step 7 the LED on the card starts to flash, but the external LED does not flash, then you have connected the LED the wrong way around. Reverse the LED cable.

6. Plug the AC cord into an outlet and turn the computer on. You should hear a beep as the computer starts and a message on the screen which reads:

Millennium YIIK-RTC.

7. The LED on the ClockCard should start flashing. If you connected one of the LED's from the chassis to the card, it too should start to flash. Turn the computer off and reinstall the computer cover.

8. Your computer is functioning properly and the ISA ClockCard is now active.

3.3 Changing The Default Jumper Settings

The ClockCard occupies a single 4 Kb upper memory area (UMA), between C800h and DC00h. When looking at the ClockCard card with its edge connector pointing down you can see the following arrangement of jumper pins:

> Position JP4:   ClockCard ROM address in UMA
> UMA Address
> ------------------
> C800- CC00
> CC00-D000
> D000-D400 (default)
> D400-D800
> D800-DC00
> DC00-E000

3.3.1 Determining Free Memory in UMA to Resolve a Conflict

There are two approaches that can be taken to resolve installation conflicts depending on your level of knowledge and the Diagnostic software available to you.

1. **Trial and error:**   In total there are only 6 different jumper settings. Start with the default address setting and then test it. If this doesn't work, try the next address setting, and so on.

2. **Checking the Device Manager** in Windows or using the the DOS utility, MSD.EXE which can be found in the DOS directory data can be obtained to help resolve the conflict. With Microsoft's MSD you cannot find out what I/O ports are in use. You can find out what memory is free in the UMA by selecting the MEMORY menu option.

4.0 ClockWatch Software

ClockWatch is Beagle's Software time synchronization software utility that allows you to set your computer's clock to the Atomic Clock over the Internet or by modem.

ClockWatch also allows the user to set how often the Operating System time clock is updated from the ClockCard RTC. Updating the O/S clock from the ClockCard RTC is a good way to stabilize a system with erratic time keeping, and is useful to keep time between settings with external timeservers.

ClockCard functionality within ClockWatch is independent of the other ClockWatch time setting functions. When used by itself, ClockCard can be the primary time source. When used in conjunction with external time setting sources, ClockCard can serve as a secondary time source.

4.1 Installing ClockWatch Software

1. Place the ClockWatch CD-ROM in the drive and wait for the installation wizard to start. If the CD does not start automatically, select "Setup.exe" on the CD root directory.
2. Select the ClockWatch Group, then the appropriate edition per your order (Pro, Sentry or Server). Continue using the default options. Enter the keycode from the back of the CD envelope when prompted.
3. Verify the version of the Windows Operating System in use.
4. Select "**Yes**" when asked if installing a ClockCard. This will start the ClockCard support files installation wizard.
5. When asked the type of ClockCard choose, **PCI** or **ISA** depending on the ClockCard purchased.
6. At the conclusion of the ClockCard support file installation, the **ClockCardsetup** program should run. This installs the Outsource RTC service files.
7. After the ClockCard installation is complete, the ClockWatch Installation will resume. Select any default installation options.
8. *After installation is completed* **you must restart the computer**.
9. After rebooting, you can verify that the RTC service is running by the presence of a red-ringed clock face in the system tray.
10. You must initialize ClockCard (see 2.4.1) before placing it in service.

4.2 Using ClockCard with ClockWatch

With ClockCard and ClockWatch installed you can have a two-level approach to maintaining the correct time.
1. ClockWatch makes periodic checks to make sure that the computer's clock is correct. If a time change is necessary it sets both the operating system and the ClockCard clocks. This method is the most accurate but involves communicating to outside timeservers (via Internet or modem).
2. ClockCard maintains the correct time. ClockWatch can be set to periodically update the operating system with the time from ClockCard. While not as accurate as the external synchronization, it can be done as often as necessary.

ClockWatch can be set to use either or both approaches.

4.2.1 ClockWatch Main Screen

ClockWatch queries a timeserver you specify, which returns the exact time. ClockWatch then converts the standard time to local time, compares it to the system time on the computer, and adjusts the system clock if necessary. Settings can be made on demand, on a regularly scheduled basis or automatically based on the specific need of the local system. You can also set the computer to ClockCard time by selecting the Set Time> ClockCard menu.

4.3 Time Sync Options

This section offers a brief guide to understanding the Options available in ClockWatch. A complete ClockWatch guide is available for PDF download at: http://www.beaglesoft.com/Manual/CWUserDoc.pdf.

4.3.1 Settings

Use this window to establish how you want to sync time using the Internet.

Manual: On-demand settings, useful when you want to manually make a single setting.

Once: Single-time setting at a future specified time.

Daily: Once-daily setting at the same time every day.

Periodic: Schedule settings at specific, fixed timed intervals.

Auto: Settings made automatically by ClockWatch when the clock is outside of a designated range of accuracy. This is best used when time drift is relatively constant. It is available only for Internet connection, not by modem.

Check time at startup: When enabled, ClockWatch will automatically start and run a time setting upon startup.
Check time once and then exit: When enabled, ClockWatch will check the time once using the Internet and then exit.

Force all time settings: When enabled, ClockWatch will force a time setting every time the clock is checked. This overrides the "time setting too small. No setting made" result.

Warn me when time has not been checked every...: ClockWatch will monitor the last time a time check was made. If the last check exceeds the interval limit selected, then a warning will be shown in the Log Window and in the system tray icon. Note: Warning must be enabled to activate outside timeserver verification for ClockCard.

4.3.2 Display

The Display window allows you to customize the options for time display and format. You can also set ClockWatch to startup automatically.

Startup Automatically—Configuring for Auto Startup

ClockWatch can be operated in an unattended mode from the System Tray. When this option is checked, ClockWatch automatically loads and operates in whichever mode it was last configured and then runs in the background. The ClockWatch icon will be available in the System Tray after ClockWatch is loaded. When you use "Startup Automatically" with the ClockWatch service running, the ClockWatch system tray monitor applet will be started instead of the full ClockWatch application when you first log in. This applet monitors time setting status and shows seconds in the system tray.

Usage Notes

- On Windows 9xMe machines ClockWatch starts on system boot-up.

- On Windows NT/2000/XP/2003 machines ClockWatch is started when the local user logs in to Windows.

- Windows NT/2000/XP/2003 users should consider using the service option.

4.3.3 Timeserver

The Timeserver window offers a choice for the Internet timeserver used and type of connection you are using. You have options for a variety of timeservers using the major protocols available: NIST, NTP, Time or Daytime. You can also connect directly to the server over the Internet or through a proxy server. If an Internet connection is not available, you can call the NIST directly using the computer's modem.

Connection Frame options

> **Internet/LAN:** Communicates directly to the specified timeserver over the Internet, using the protocol and port specified.

> **Internet/Dial-up:** Will first dial your ISP to make a connection to the Internet and then sync the clock using the timeserver specified. For configuration options click **Setup**.

Internet Connection Setup

Click the **Setup** button to configure how ClockWatch will make connection with the Internet. ClockWatch offers several connection options:

> **Manual Connection:** If you establish the connection to the Internet manually, or you normally are connected to the Internet over a LAN or on demand methods such as DSL or cable modems, you should choose the manual connection option.

> **Have ClockWatch wait for Internet connection:** Use this option if you want ClockWatch to wait for the next time you make a connection to the Internet.

> **Have ClockWatch Automatically Dial my ISP:** You can have ClockWatch

dial your ISP to make an Internet connection when needed.

Direct modem connection: When selected, uses the modem to call the NIST directly and sync up time signals over the phone line. When selected, ignores the other options in this frame.

Source Frame options

Address of timeserver: Shows the name of the timeserver currently in use. This can be changed by clicking the **Directory** button and choosing another timeserver.

Timeserver Directory: The Timeserver Directory screen allows you choose a timeserver. You can also test, edit or add individual timeservers. The directory includes a list of over 100 verified timeservers located throughout the world, with information on server location and primary protocol.

Timeserver Test: The timeserver test lets you check both the connection and the capability of local or remote timeservers. Compatibility and connection problems can be diagnosed using the built-in 8 point connection test. This form is the main test screen for conducting timeserver communication tests.

4.3.4 Logs tab

The Clock Setting log provides a record of all the settings made by ClockWatch. Once a log file is specified, ClockWatch will add data to the log file each time the program is activated and a setting is made. The log file will record every "0" setting where the clocks were in sync but will not record setting attempts when the connection failed. Old data from previous sessions will be preserved as the recent data is appended.

Interpreting the ClockWatch Log
This section explains how to interpret the ClockWatch log. If logging is enabled in the **Options>Logs** tab, this log is updated each time a setting is made.

A sample of the log is:
```
Synchronization Log            9/14/98 11:43:12 AM
Date      Time      Difference Accuracy  Status Server
-----     ----      ---------- --------  ------ ------
98-09-14 11:42:37  2          10.0       5      time-a.nist.gov
98-09-14 11:52:28  0          0.0        5      time-a.nist.gov
```

The first line is the title and includes the date and time the log was first used. The second line contains the column header. These include:

Date: The date the setting was made.

Time: The local time the setting was made.

Difference: The difference (in seconds) in the local time from the

adjusted timeserver time. May be a positive or negative number.

Accuracy: The rate of clock drift in time in terms of seconds per day.

Status: The results of the setting. See Status Result Codes, below.

Server: The name of the timeserver used to make the setting. Direct modem connections will show the phone number dialed.

Setting Status Result Codes

The status result code, found in the Clock Setting log, shows the result of a time setting attempt.

CodeResult		Description
0	SETTING OK	Setting made.
1	DATE TIME ERROR	Date/time is invalid: date or time invalid.
2	TIME ZONE ERROR	Time zone is missing: time zone error.
3	DATE DIFFERENCE	Dates don't match: date match error. ClockWatch will attempt to reset clocks that in two separate steps (date then time).
4	TIME DIFF TOO LARGE	Time difference was too great, time difference exceeds maximum allowable to make a setting. ClockWatch will confirm before making setting.
5	TIME DIFF TOO SMALL	Time difference is too small; time difference was too small to make a setting. No need to set clock.
9	TIME CONVERSION ERROR	Error occurred during time conversion. Verify that the timeserver format (NTP, Time, Daytime or NIST) is set correctly.
14	TIME CHANGE EXCEEDS AV	Time difference exceeded 3 sigma value, ClockWatch will confirm value before setting clock.
33	INCOMPATIBLE SERVER	Timeserver protocol setting was incompatible.
99	UNKNOWN_FORMAT	Unknown time server format.
100	SERVER_ERROR	Timeserver not currently available: Internal timeserver error.
200	PARSE ERROR	Parsing return failed: format setting was wrong or time string was corrupt.

Action Log

The Action Log is a summary view of all current time setting activity. Data is displayed in a list on the main screen and actions are added as they occur. Entries include the origination of the action and the result. Upon starting, the list shows the five most recent events (if available). After the program closes, the action detail can be found in the individual logs.

Columns:
Date: Identifying source icon and date and time in yy-mm-dd hh:nn:ss format.

Source: Internet time setting, ClockCard setting (Option), BIOS clock setting and clock locking activity are all included in the log.

Status: Result of the action.

Time Difference (seconds): If clock was changed shows the number of seconds time setting. For clock locking shows the attempted time change.

Accuracy (sec/day): For clock setting, shows the accuracy in terms of seconds/day.

Tip: You can resort by any column by clicking the column header.

Event Logging

Event logging allows you to write selected action to a text file and/or the NT/2000/XP/2003 event log. This log captures major time setting activities as well as warnings for when there may be a system or time setting problem.

4.3.5 Graphs Tab

The **Graphs** tab offers options for graph display and data charting of computer clock performance when using the Internet.   ClockWatch has three graphs: Current Settings, Clock Drift, and Previous Settings.

Clock Drift: Used to turn Clock Drift graph on/off.

Current Settings: Used to turn Current Settings graph on/off.

Previous Settings: Used to turn Previous Settings graph on/off. This graph shows the settings made on previous ClockWatch sessions.

Ignore Zero Differences: If checked, displays only the settings when the internal clock was changed. If not selected, shows all settings, including those when the clock was not changed (zero difference), in the Previous Settings graph.

4.3.6 ClockCard

The ClockCard Options tab in ClockWatch allows the user to set how often the Computer's clock is updated from the ClockCard. ClockWatch allows you synchronize the operating system clock with the ClockCard. Computers experiencing significant daily time loss will find this an effective way to stabilize their clocks between external time settings.

Check ClockCard every *xxx* **minutes**: Number of minutes between ClockCard readings. This field can be edited to specify the frequency.

Maximum allowable time change without verification – Largest value you will let the clock be changed from the ClockCard without first verifying.

Note: If you are using a change value smaller than 2 seconds and you're using an External Timeserver for verification, you should check the *Force all time settings* option on the Settings tab (sec 4.3.1).

Verification

External Timeserver – use the Internet (or directly connected modem) to check ClockCard against an external timeserver.

Retry – Specify the number of verifications before setting O/S clock from ClockCard.

Logging of settings: Logging allows you to create a permanent record of all settings made from ClockCard.

To file / Off options: To turn on/off ClockCard logging. When selected, time settings are logged to the named file. Only settings where the clock is changed are logged. When logging is enabled, the status of each attempt is also shown in the NIST log window (bottom of 3 windows) on the main ClockWatch screen.

Browse: To find an existing file on your computer.

**View**: To view the ClockCard setting log file using Windows Notepad.

Log File Name: Enter the file name (with path) for the ClockCard settings log. This is the text file where all resettings of the Operating System clock will be logged. Default value:
   C:\Program Files\Beagle Software\ClockWatch\CClogfile.txt

4.3.6.1 ClockCard Test Screen (PCI and ISA)

Pressing the 'Test' button allow you to view and set the time on both ClockCard and in Windows.

The two digital clocks on the ClockCard Reading window show the time on the ClockCard clock and the time as kept by the Windows operating system. When the two times differ, the utility can be used to synchronize Windows with ClockCard. You can also use the utility to set ClockCard's clock to the Windows' clock, useful when first setting up ClockCard. *Note that the times shown on the PCI card are in UTC.*
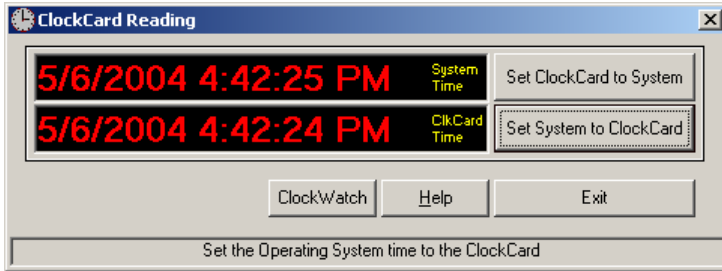
Set System to ClockCard: Set the operating system time to the time on ClockCard manually. Use this setting to manually synchronize the operating system with the time on ClockCard.

Set ClockCard to System: Set the clock on ClockCard to the operating system time. Use this setting to manually set the time in ClockCard.

4.3.7 Service (Windows NT/2000/XP or 2003)

The Service option shows status of the ClockWatch Service and allows you to stop and start the service. In Windows, a service is a separate process that runs independently of any application and that is normally active whenever the computer is running.

When enabled, the ClockWatch Service runs whenever the computer is running. It functions identically to the ClockWatch application in checking the clock and keeping the time correctly set.

5.0 Utilities

5.1 Command Line Utility (PCI version)

The ClockCard Utility, ClockCard.exe, can be used from the command line to:

1. Set ClockCard from system time,
2. Set System time from ClockCard, or
3. Set ClockCard to a given date and/or time.

Note: These commands will not work with the ISA ClockCard.

Syntax

```
ClockCard.exe [Set2CC][Set2Time][Set2Date ddmmyy][Set2time
hhmmss[.sss]] [Set2DateTime ddmmyyhhmmss[.sss]]
```

Where

ClockCard.exe	Name of the ClockCard utility. Generally found in: C:\Program Files\Beagle Software\ClockCard directory.
Set2CC	Sets system time to ClockCard time.
Set2Sys	Sets ClockCard time to current operating system time.
Set2Date ddmmyy	Sets date to the date passed. Keeps current time. Date format: dd Day of month (00-31) mm Number of month (01-12) yy Year (00-99; 2 digit only) Note: days, months and years must be 2 digits, pad with '0' if necessary.
Set2Time hhmmss[.sss]	Sets ClockCard time passed. Keeps current date. Time format: Hh hours (00-23; 24 hour format) Mm minutes (00-59) Ss seconds (00-59 or 00.000 - 59.999) Note: for ClockCard PCI the time must be in UTC. Hours and minutes must be 2 digits; pad with '0' if necessary.
Set2DateTime	ddmmyyhhmmss[.sss] Set to date and time (see date and time formats, above). Note that the date/time string must be 12 digits long (16 characters with milliseconds)

Examples

```
ClockCard.exe Set2Date 311203
    sets ClockCard to Dec 31, 2003 at current time

ClockCard.exe Set2Time 153559.123
    sets ClockCard to 3:35:59.123 PM (UTC) at current date

ClockCard.exe Set2DateTime 311203153559
    sets ClockCard to 3:35:59 PM (UTC) on Dec 31, 2003
```

6.0 Troubleshooting

6.1 Troubleshooting—PCI version

After installing ClockCard, the system fails to start.

- Check to be sure the card is installed and is seated firmly in the slot.
- Check to see that the PCI card shows up in the PCI device listing of the BIOS (see below).
- Try installing card in a different slot.
- Try removing other cards to see if conflict disappears
- Try changing plug and play settings in BIOS.
- Try disabling integrated PCI devices on motherboard.

After starting the computer and installing the software the ClockCard Real time Clock Service (RTC) fails to start.

- Check that the device is in the running property in the Device Manager.
- Check that the RTC service is running from the Windows Service applet.
- Check that the RTC service has been properly initialized.
- Verify that the RTC service is active by manually changing the time from the Date/Time Control Panel applet and check that the time is changed back by the service within 10 seconds.

The RTC is running, but system shows the wrong time.

- RTC must be initialized with local date, time and time zone before using (see 2.4.1).
- If the system shows the wrong time note that time must first be set from ClockWatch.
- If the system shows the right minute but the wrong hour then check the time zone setting in the RTC service (see 2.4.1)
- If ClockWatch fails to update ClockCard make sure that ClockCard is enabled as a time base in ClockWatch. (Options>ClockCard)

Confirming BIOS Listing

- The card should be in the BIOS listing of PCI devices. This scrolls by very fast so you may have to boot the computer on a blank floppy disk to stop it. A typical list includes several PCI devices. The Real-time clock looks like this.

  PCI device listing...

```
Vendor Id      Device ID      Device Class            IRQ
1439   9050    Base System Peripherals                 NA
```

- If you can't find this listing or if the computer fails to start:
- Try installing the card in a different PCI slot.
- Remove or replace other cards to isolate the conflict.

Checking Device Driver Installation

- Verify that when the software was installed, the installer was logged in with an Administrator account. If not, it is possible that the correct registry settings were not made.

- **Device Check:** Go to Control Panel>Devices; there should be a WinRT device that is started. If not started, attempt to start it manually. The device should be listed as "working properly". Verify the device manufacturer is listed as "BSQUARE" and not "OUTSOURCE"

- There should also be a WinNT\System32\WinRT.sys file on your system. If neither of these things are installed, you must install the drivers again. This can be done from the ClkCard\Drivers\Drivers\WinNT directory of the original installation CD.

Confirming Software Installation

- **Service Check:** In Control Panel>Services for the RTC Service and try manually starting it and see if that corrects anything.

- Verify that inside the WinNT\System32\ directory there is a file called rtc.exe

- If manually starting the RTC Service fails, try going to a command prompt and starting this file with the *-debug* switch.

- **Supporting DLLs:** Confirm that mfc42.dll and mfc42u.dll have been installed.

6.2 Troubleshooting—ISA Version

After installing ClockCard, the system starts up with an incorrect date.

- Enter the correct date and time using DOS, or Windows Date and Time commands. When the PC is restarted, it will now come up with the date and time that was entered.

The card does not activate and the LED on the card does not flash.

- Try another memory selection on the card.
- Disable shadow memory in your BIOS setup.
- Try another ISA slot and check the card placement.

The LED on the card flashes, but the time and date does not change when set with the operating system's time and date functions.

- Check your memory manager in *CONFIG.SYS* and exclude the memory area that the ClockCard uses when using EMM386 or QEMM386. (For example: X=C800-C900)

The date in the BIOS setup is always different or corrupt.

- The ClockCard activates after the BIOS setup has been executed and the BIOS date will only be corrected when the LED on the ClockCard start flashing. Ignore the BIOS time/ date settings and use the DOS/Windows time/date functions to set the real time clock.

7.0 Glossary

BIOS: This stands for Basic Input/Output System. This is used by the operating system to handle the communications between the computer and the peripheral devices attached to the computer.

BUS: This is the common highway along which data travels inside the computer connecting the CPU and the components on the motherboard. The bus is not only the highway but also includes the methods whereby the flow of data is managed and controlled (the traffic cops). The number of bits that can travel down the bus at the same time establishes the width of the bus. The first personal computers had an 8-bit bus.

CMOS: Short for Complementary Metal Oxide Semiconductor (a type of chip that requires very little electricity from a battery to hold information when the computer is turned off). This is where the system settings - mainly date, time and information about the hard drive - are stored. The CMOS settings are usually set up once, when the computer is first assembled, then changed again only as needed.

CONFIGURATION: This is how something is arranged or set-up. It describes the parts that make up a computer or defines how a part on the computer is going to work.

EISA: This standard known as Extended ISA was developed in 1988 to handle a 32-bit bus.

I/O PORT ADDRESS: The address represents a location in a specially reserved area in lower memory which is used by an input/output device to communicate directly with a program. By using a preassigned I/O port address, the program can issue commands to the device and the device can pass back data or instructions to the program. That is the function of the I/O port address. Each address acts like a mailbox in which information can be placed and picked up.

ISA: Industry Standard Architecture is a bus standard that was developed for the first PC, which had an 8-bit bus. Devices were attached to the bus by an adapter card that plugged into an expansion slot on the motherboard.

K (or KB): Is an abbreviation for Kilobyte, which represents a value of 1024 bytes.

MEGABYTE (M OR MB): This is the same as 1,024 Kilobytes or 1,048,576 bytes. Again, most people think of a megabyte as one million bytes and this is okay. However, when working directly with computer memory, you must use the exact number of 1,048,576 bytes.

PCI: Peripheral Component Interconnect. A circuit board bus connection to connect boards to memory and the CPU. Used mainly in Intel Pentiums and above, PCI is a fast connection for boards such as network interface cards, internal modems, and video cards.

PERIPHERAL DEVICE: "Peripheral" means at the edge or outside of something. A peripheral device is any device that can be connected to and run by a computer that sits outside of the computer's frame. The keyboard, printer, mouse and monitor are all peripheral devices.

RAM: Random-Access Memory. This is the memory that is used in the computer to temporarily store information. Computer programs, before they can be run, have to be stored in RAM first.

ROM: Read-Only Memory is a type of memory chip that contains information that is permanently or semi-permanently recorded in it. ROM is used to store important programs or data that must be available to the computer when it is turned on.

SERVICE: On Windows NT/2000/XP, a service is a special kind of executable program that runs in the background.

UPPER MEMORY AREA (UMA): This is the top 384K of memory in a PC's first megabyte (1024K) of RAM. It is the memory space that immediately follows Conventional (Base) memory. This memory area is for use by the different adapter cards such as the video card and other cards that are installed on the motherboard.

8.0 Warranty Information

Limited Hardware Warranty

The Manufacturer warrants to the original purchaser of this product that the hardware shall be free from defects resulting from faulty manufacture or components for a period of one (1) year from the date of sale. Defects covered by this Limited Warranty shall be corrected either by repair or, at the Manufacturer's election, by replacement. In the event of replacement, the replacement unit shall be warranted for the remainder of the original one (1) year period.

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9.0 Obtaining Technical Support

Web site: **www.beaglesoft.com**
Consult our Web site for the laatest product updates, technical information and documentation.

E-mail: **support@beaglesoft.com**
Please be as specific as possible including the program version and the steps to recreate the problem, if possible.

Phone: **612-370-1091**

Fax: 612-435-4952

Address: Beagle Software
800 Washington Ave N, Ste 418
Minneapolis MN 55401 USA

Refund Policy

In order to receive a refund on a product for the purchase price, the product must not have been damaged by the customer or by the courier chosen by the customer to return the goods. The product must be returned in complete condition, meaning that all cables, manuals, software, etc., are included. The product must be in as-new or re-saleable condition to qualify for refund. Refunds are not issued for shipping charges.

Restocking Charges

Product items returned within 30 days qualify for a full purchase price refund, assuming all qualifications listed above in Refund Policy are met. Items returned after 30 days and before 60 days of purchase will be subject to a minimum 20% restocking charge.   Additional charges may apply for damaged or missing parts.

Products returned after 60 from the date of purchase, or products that are not returned in as-new or re-saleable condition, do not qualify for refund or credit and will be returned to the customer.

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For any Guarantee or Limited Warranty return, please contact Beagle Software's Customer Service line at 1-877-845-2549 (US) or +1 612-370-1091 or support@beaglesoft.com to initiate a return.

Please note the following:

- All products returned to Beagle Software for service or credit must first obtain an RMA number and be accompanied by a copy of the original invoice.

- Freight on returned items must be prepaid by the customer, and the customer is responsible for any loss or damage caused by the courier in transit.

- Returns for Warranty must include documentation of the failure/service issue for each unit, by serial number(s).

- Include a contact name and daytime phone number for Beagle Software to call for clarifications.

- To reduce risk of damage, returns of product must be in the original packaging. If the original container has been lost or damaged, Beagle Software recommends that the customer utilize a professional shipping service to minimize risk of damage.

- ClockWatch software must be uninstalled (not applicable to product CC). Beagle Software will provide an agreement that must be signed and returned to Beagle Software. Refunds will not be processed until this agreement is received.

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