

**TCRSync Professional**  
**Time Synchronization**  
**for**  
**Windows**



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## TABLE OF CONTENTS

Instruction Book Warranty .....	A
Software License Agreement .....	A
License Title/Ownership .....	A
Grant of License .....	A
Copyright .....	A
Other Restrictions .....	B
U.S. Government Restricted Rights .....	B
General.....	B
Preparing To Install TCRSync Professional.....	1
Time Synchronization Service for Windows 95, 98, and Me (Millennium) .....	1
Time Synchronization Service for Windows NT and 2000.....	1
Differences between Windows 2000 and Windows NT.....	1
Installing TCRSync Professional.....	1
Beginning The Installation.....	1
Opening Dialog .....	1
Installation Phase 1.....	2
Installation Phase 2.....	2
Time Code Source.....	2
GPS100/200/200A Time Code Options.....	2
Incoming Time Code Configuration.....	2
Installation Phase 3.....	3
Removing an Old TCRSync Installation.....	3
The TCRSync Configuration Applet .....	3
The TCRSync Monitor Utility.....	3
The Time Code Viewer Program.....	3
Windows 2000 AND W32Time Services.....	4
Windows 2000 Workstation/Server.....	4
Windows 2000 Domain Controller.....	4
More W32Time Information.....	4
Troubleshooting Your TCRSync Installation.....	4
Error and Warning Messages .....	5
Time Synchronization Service Messages .....	5
Limited Software Warranty.....	8
30 Day Satisfaction Guarantee .....	8
Limited Warranty For Next 60 Days .....	8
Limitation Of Remedies .....	8
Exclusive Remedies.....	9

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## **PREPARING TO INSTALL TCRSYNC PROFESSIONAL**

For the remainder of this manual the abbreviation *TCR* will refer to any time code reader/adaptor card that TCRSync Professional supports. Where discussion of a particular time code reader product is relevant, the full product name will be used.

Before starting TCRSync installation, please perform the following steps:

- Review the manual included with your TCR card. The manual discusses in detail issues regarding physically installing the hardware into your computer, connecting a time code signal, diagnosing decoding problems, installing card drivers, etc.
- Verify that you have a 3.5" floppy diskette entitled "TCRSync Professional", included in the packaging with this manual.

### **Time Synchronization Service for Windows 95, 98, and Me (Millennium)**

All three platforms are fully supported by the TCRSync service, and the software installation is identical across the three.

### **Time Synchronization Service for Windows NT and 2000**

Both the Windows NT 3.51 and 4.0 operating systems are fully supported and the software installation procedures for both are identical. For the remainder of this manual both operating system versions will be referred to as "Windows NT".

### **Differences between Windows 2000 and Windows NT**

Windows 2000 is the next generation of Microsoft's Windows NT (New Technology) platform. Where appropriate, this manual will discuss installation issues specific to users of the Windows 2000 or Windows NT platform.

A new feature to Windows 2000 networking is the Win32 Time ("*W32Time*") native computer-to-computer time synchronization mechanism. For TCRSync to operate properly *W32Time* must be configured in specific ways depending on the network environment. A more detailed discussion of this topic is found in the section entitled *Windows 2000 and W32Time Services*. TCRSync-Pro installation will assist you in configuring *W32Time* services appropriately.

## **INSTALLING TCRSYNC PROFESSIONAL**

### **Pre-Installation Notes**

Drivers for your TCR card must be installed and operating correctly before proceeding with a TCRSync Professional installation. Consult the manual that shipped with your TCR card for details.

For a Windows NT/2000 installation you must be logged into the server or workstation as the local system administrator, or as a user with equivalent privilege. Attempting to install this software without the appropriate security privilege will fail.

### **Beginning The Installation**

Insert the TCRSync Professional diskette into a floppy drive. From the **Start Menu** choose **Run** (or, for Windows NT 3.51, from the Program Manager's **File** Menu choose **Run**.) In the edit box enter the drive in which you inserted the installation diskette followed by *install.exe*. For example, if you inserted the installation diskette in drive A: you would enter: *a:install.exe*. Select the **OK** button to begin the installation.

Installation is separated into three logical phases each represented with a series of its own dialog windows. When available, you may use the *Next* or *Previous* buttons to switch between the dialogs. At any time you may abort the installation by choosing the *Abort* button.

### **Opening Dialog**

The opening dialog prompts you to *Begin a New Installation* or *Remove an Old Installation*. If you current have or previously had an installation of TCRSync (any version) on this system it is recommended that you execute *Remove an Old Installation* before beginning a new installation.

Note that install can not overwrite a currently active installation of TCRSync with a new installation. You must remove the currently active installation first. See the section entitled [Removing an Old TCRSync Installation](#) for more information on removing old installations.

### **Installation Phase 1**

This phase of the installation process will check to see if TCR card drivers are loaded and operating properly. At this time, the version number of the driver will be displayed if it is loaded. Install will terminate here if the driver is not detected.

### **Installation Phase 2**

This phase of the installation process prompts you for information regarding your source of time code and various clock synchronization operating parameters.

#### **Time Code Source**

- *Masterclock, Inc. GPS100 master clock* - choose this option if your time code source is the GPS100 master clock. When you choose this time code source options normally presented in the [Incoming Time Code Configuration](#) dialog are automatically determined.
- *Masterclock, Inc. GPS200/200A master clock* - choose this option if your time code is being applied to the computer by one of these master clocks.
- *Masterclock, Inc. TCI232/TCI232A/TCI500* - choose this option if your time code is being applied to the computer by one of these MC time code converter products.
- *Other* - choose this option if your time code source is not listed.

#### **GPS100/200/200A Time Code Options**

This dialog appears only if you have selected the GPS100/200/200A as your time code source.

- *Allow time synchronization during freewheeling* - check this option if you want to allow time synchronization if the GPS100/200 is “freewheel” generating time code. See the GPS100/200 manual for more information on freewheel time code generation.
- *Display warning during freewheeling* - check this option if you want a message to be logged when the GPS100/200 enters and leaves freewheel time code generation mode.

#### **Incoming Time Code Configuration**

This dialog appears unless you select the GPS100 as your time code source.

- *Date information encoded in time code* - check this option if the time code source encodes date information. For SMPTE-type time codes, the date must be encoded to the Leitch™ specification. For IRIG-B time code, the date must be encoded within the IEEE 1344 specification. [Note: date support for IRIG-B under IEEE 1344 requires TCR500 time code reader firmware version 1.6 or later, or TCR500-PCI card. Consult TCR500 manual for information on determining firmware version.]
- *Time/Date in time code is adjusted for daylight savings time (during DST)* - check this option if your time code time/date information is adjusted for daylight savings time (during DST) to some time zone standard. This option is available only if the selected time zone reference defines daylight savings time and the *Date information encoded in time code* option is checked.
- *Select time zone* - check *UTC* if your incoming time code is referenced to UTC/GMT, select *Other* if it is not. If *Other* is selected a time zone must be chosen from the time zone list box. Select the time zone that matches the reference of your time code source. This is not necessarily your local time zone. If the selected time zone defines daylight savings time, the start and end of daylight savings time will be displayed below the time zone selection list box. You may select a time zone that defines daylight savings time even if your time code source does not adjust for daylight savings time.

If an error made during this installation phase is not discovered until after installation has completed the installation program does not have to be re-run to change the configuration. Run the TCRSync applet in the Control Panel to reconfigure for the correct parameters. See the section entitled [The TCRSync Configuration Applet](#) for more information.

### Installation Phase 3

This phase of the installation process prompts for the destination disk drive/path where you want the TCRSync files installed. Install will recommend a destination disk drive/path. This may be changed as desired. The destination disk drive should have at least two megabytes of free disk space. After choosing a destination directory the TCRSync files will be installed to your Windows system.

### **REMOVING AN OLD TCRSYNC INSTALLATION**

A mechanism for removing a TCRSync Professional installation has been provided to assist the administrator in removing all TCRSync components from the Windows system. Attempts to manually remove a TCRSync installation from a Windows system should be avoided unless recommended/supervised by technical support. The software may be removed through the Add/Remove Programs applet in the Control Panel (excluding NT 3.51) and/or the *Uninstall* entry in the TCRSync Professional program group.

It is required that an old TCRSync installation be removed prior to re-installing/upgrading TCRSync. Attempting to re-install over an already active TCRSync installation will fail! Install may recommend executing the remove old installation procedure if it fails one of the installation steps.

### **THE TCRSYNC CONFIGURATION APPLLET**

The TCRSync Configuration applet is installed into the Control Panel by TCRSync installation utility. This applet can be used to reconfigure TCRSync parameters. When configuration is changed, you may be prompted to restart the Windows system for the changes to take effect.

### **THE TCRSYNC MONITOR UTILITY**

The *TCRSync Monitor* program is provided to help troubleshoot a TCRSync installation as well as display general information about time synchronization activity.

When executed *TCRSync Monitor* will, by default, attempt to establish communication with TCRSync time synchronization on the local computer. If Monitor cannot communicate with a local installation of TCRSync you will be prompted to specify a remote computer on which TCRSync time synchronization has been installed. See the troubleshooting tips section if Monitor is unexpectedly failing to communicate with a local installation of TCRSync. [Note: Monitor may only remotely monitor a TCRSync installation if that installation is running on Windows NT/2000.]

By clicking the ? icon on the Monitor title bar then clicking on an item in the dialog you can obtain on-line help information about a particular item in the dialog.

### **THE TIME CODE VIEWER PROGRAM**

*Time Code Viewer* displays raw time as decoded by your TCR card. You can use this program to easily determine if SMPTE time code contains the date encoded to the Leitch™ specification by checking the Leitch Date Decode option. If a valid date appears in the date decode box then you have date information available that TCRSync can use to synchronize your Windows system.

*Time Code Viewer* might display the one of the following indications instead of time code:

- No Time Code – Time code is not available (but was available at some previous time).
- Calibration In Progress – Time code has not been available since the computer was started and the card is currently searching for it. You will also receive this message temporarily if the “Recalibrate” option is selected during normal operation.

Either of the above statuses indicate that there is a problem with the time code source.

Time Code Viewer can also display IRIG-B time code if TCRSync has been installed to decode that type of time code. If your IRIG-B time code source implements IEEE 1344 encoding extensions this information can also be displayed by checking the appropriate box. Note: do not use this function to attempt to empirically determine if your IRIG-B contains IEEE 1344 encoding. This is not reliable due to the composition of the standard. Instead, refer to documentation for your IRIG-B master clock system.

Time Code Viewer cannot run if the TCR device driver failed to load. Time Code Viewer utility does not monitor time synchronization. Use *TCRSync Monitor* for that task.

## **WINDOWS 2000 AND W32TIME SERVICES**

W32Time is a time synchronization service, which is installed and operational by default on Windows 2000 computers. Depending on the network role for a Windows 2000 computer, which is running TCRSync Professional, it may be necessary to reconfigure the W32Time service. There are two primary scenarios of interest:

### **Windows 2000 Workstation/Server**

In this environment W32Time will act as a client and attempt to synchronize time to a Windows 2000 domain controller, if one is available. When TCRSync Professional is installed in this environment it will not be able to keep time synchronized properly if W32Time is also attempting to synchronize time. In this scenario, W32Time must be disabled. TCRSync Professional installation will prompt to disable W32Time during installation.

### **Windows 2000 Domain Controller**

By default, W32Time acts as a time “master” when operating on a Windows 2000 server in the role of domain controller. In this scenario it is OK to disable the W32Time service but it is recommended that that W32Time be reconfigured such that the time on the domain controller is “trusted time”. The time is trusted because it is being provided by TCRSync from a stable and accurate external time code reference. TCRSync Professional installation will offer to reconfigure W32Time on a domain controller such that it can then offer this trusted time to other computers on the network.

### **More W32Time Information**

The following Microsoft knowledge base articles discuss various configuration options and behavioral aspects of the W32Time time synchronization mechanism: Q223184, Q245129, Q216734, Q240365, Q224799, and Q232209.

## **TROUBLESHOOTING YOUR TCRSYNC INSTALLATION**

**“After installing TCRSync and restarting my system I get the operating system message ‘At least one driver or service failed during startup’.”**

The TCRSync time synchronization service failed to start. The likely cause is that the TCR card driver failed to load. Consult the TCR card manual for driver troubleshooting tips.

**“The TCRSync Monitor utility will not allow me to monitor time synchronization on the system on which TCRSync was installed.”**

The TCRSync time synchronization service failed to start due to a configuration problem. The reason(s) for the failure will be written to the log.

**“I’ve installed TCRSync, the software appears to be working and the Time Code Viewer even displays time code, but my system clock is not being synchronized.”**

Since TCRSync synchronizes the Windows clock on one minute intervals it may take up to two minutes from the time you brought up the system for the clock to initially synchronize. Run the TCRSync Monitor utility and the synchronization status should revert from *Never synchronized* to *Healthy* within two minutes.

TCRSync performs some analysis on time code to verify validity. In situations where the time code signal is highly intermittent, TCRSync may refuse to synchronize the computer’s time, or may synchronize very infrequently.

**“TCRSync has set the system clock but the time/date is incorrect.”**

There are three potential failure points: 1) your time code source, 2) the TCRSync Professional configuration, or 3) the Windows local time zone configuration.

Verify that the time code source is generating the time and date that you expect, and that an encoded time zone offset (if present) is also what you expect. The *Time Code Viewer* utility is useful in making these determinations.

If you have enabled TCRSync date decoding, be sure that your time code actually contains encoded date information. For SMPTE-type time codes the date must be encoded to the Leitch™ specification and, for IRIG-B time code, the IEEE 1344 specification. Verify through your master clock's documentation that date encoding is both supported and enabled.

Verify that the time zone reference in the TCRSync software configuration matches the reference of your time code source. For example, if your source is generating time code encoded to the Central Standard Time time zone ensure sure that (*GMT-06:00*) *Central Time (US & Canada)* is selected as the time zone reference in the TCRSync software configuration.

If your time code source is making daylight savings time adjustments (during DST) be sure that this option is enabled in TCRSync. This is configured through the Software Configuration selection in the *TCRSync* Control Panel applet.

Verify that the Windows system is configured correctly for the local time zone and daylight savings time. This is configured through the Date/Time applet in the Control Panel.

### **Error and Warning Messages**

The TCRSync service interacts with the desktop (user) very infrequently. It is designed to be an always-running, unobtrusive, background application. TCRSync logs errors and warnings as they occur. In Windows NT/2000, the entries are placed into the Application event log. This log can be viewed with the Event Viewer program, which is located in Administrative tools. In Windows 95/98/Me, errors/warnings are placed into the 'tersync.log' file which will be located in the folder in which TCRSync was installed.

Common errors/warnings, their explanations, and resolutions are documented here.

#### **Time Synchronization Service Messages**

##### **Message:**

“TCRSync: initialization process failed”

##### **Problem:**

The service failed to initialize.

##### **Resolution:**

Consult other error messages for details.

##### **Message:**

“TCRSync: service configuration information missing from registry”

##### **Problem:**

Required values are missing from the registry.

##### **Resolution:**

Remove the current TCRSync installation using the Install utility then re-install the TCRSync Professional package.

##### **Message:**

“TCRSync: no time code detected at time of initialization”

##### **Problem:**

A warning indicating that time synchronization will probably not occur because no time code is present.

##### **Resolution:**

Determine why the TCR is not decoding time code. Consult the TCR manual for more information on troubleshooting time code decoding problems.

Message:

“TCRSync: service not registered or registration corrupt. Re-install TCRSync from distribution floppy.”

Problem:

Required registration information is missing from program files.

Resolution:

Remove the current TCRSync installation using the Install utility then re-install the TCRSync Professional package. TCRSync Professional is licensed on a per-computer basis.

Message:

“TCRSync: time synchronization failure (time code lost or hardware failure)”

Problem:

A warning occurring during operation that indicates time code loss.

Resolution:

Determine why the TCR is not receiving a time code signal.

Message:

“TCRSync: detected time code regained from lost state”

Problem:

An informational message indicating that time code was regained from a lost state.

Resolution:

Determine why the TCR was not receiving a time code signal during the periods beginning with time code loss notification and ending with time code regain notification.

Message:

“TCRSync: time synchronization failure warning dialog box dismissed by console operator.”

Problem:

An informational message indicating that the console operator was presented with a time code loss notification alarm, and that the console operator dismissed the alarm.

Message:

“TCRSync: the GPS100/200 entered the freewheel time code generation mode”

Problem:

When time code source is a Masterclock, Inc. GPS100/200/200A master clock, indicates that the unit has lost GPS satellite fix. This is not usually a serious problem unless it occurs very frequently or over long periods of time.

Resolution:

Consult your GPS100/200/200A documentation for more information on diagnosing and correcting this problem.

Message:

“TCRSync: the GPS100/200 exited the freewheel time code generation mode”

Problem:

When time code source is a Masterclock, Inc. GPS100/200/200A master clock, indicates that GPS satellite fix has been re-acquired from a lost state.

Resolution:

Determine why the master clock was not receiving a valid GPS satellite signal during the periods beginning with freewheel start and end notifications.

Message:

“TCRSync: the GPS100/200 has been freewheeling for too long. The unit, antenna cable, antenna, and antenna location should be checked for correct operation.”

Problem:

When time code source is a Masterclock, Inc. GPS100/200/200A master clock, indicates that a serious problem has occurred with respect to the master clock and GPS satellite acquisition.

Resolution:

Consult your GPS100/200/200A documentation for more information on diagnosing and correcting this problem.

Message:

“TCRSync: GPS100/200 freewheeling warning dialog box dismissed by console operator.”

Problem:

An informational message indicating that the console operator was presented with a GPS100/200/200A master clock freewheel notification alarm, and that the console operator dismissed the alarm.

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