

TCRSync
Time Synchronization
Kernel Mode Driver
for
Windows NT®



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BEGINNING THE TCRSYNC INSTALLATION

Before beginning TCRSync installation verify that you have a TCRSync for Windows NT 4.0/3.51 installation diskette containing the following files:

install.exe
tcrsync.exe
tcrcfg.cpl
syncmon.exe
syncmon.hlp
tcview.exe
tcrdrv.sys
readme.wri
license

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

You must have installed into your Windows NT server or workstation the TCR card and have configured the IRQ (interrupt) and I/O port jumpers for settings that do not conflict with other devices in the system. If you are unsure of the IRQ or I/O port setting of the TCR verify them before beginning the TCRSync installation. See the TCR manual for instructions on installing the card into your PC. Note: the TCR-500PCI time code reader will not require interrupt or I/O port configuration. These settings will be configured by your system BIOS at boot-up and automatically detected by the software drivers.

You must be logged into your Windows NT server or workstation as the local system Administrator. Attempting to install TCRSync logged in as a user other than the local system Administrator will fail.

EXECUTING THE TCRSYNC INSTALLATION

Insert the TCRSync for Windows NT 4.0/3.51 installation 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 boxes. When available, you may use the *Next* or *Previous* buttons to switch between the dialog windows. 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 for Windows NT 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 prompts for the destination disk drive/path where you want the TCRSync driver and utility files installed. Install will recommend a destination disk drive/path for the TCRSync driver and utility files. 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 NT system.

INSTALLATION PHASE 2

This phase of the installation process prompts you for information regarding the type of time code decoding hardware (TCR) installed in your computer and its configuration (jumper settings, etc.). If you are unsure which TCR product is installed in your Windows NT system or what its jumper settings are about the configuration, determine the TCR product and jumper configuration, then restart the installation process.

TCR Type Selections

- *TCR-200 SMPTE time code reader* - choose this option if you have a Masterclock TCR-200 time code reader card.
- *TCR-200E EBU time code reader* - choose this option if you have a Masterclock TCR-200E time code reader card.
- *TCR-200I IRIG-B time code reader* - choose this option if you have a Masterclock TCR-200I time code reader card.
- *TCR-500 time code reader* - choose this option if you have a Masterclock TCR-500 time code reader card.
- *TCR-500PCI time code reader* - choose this option if you have a Masterclock TCR-500PCI time code reader card.

TCR-200/500 Adapter Configuration Selection

Interrupt select must be one of *5, 7, 10, 11, 12, or 15*. You must choose the interrupt that the TCR-200/500 has been jumpered for. See the TCR-200/500 manual for more information on jumpering for an interrupt.

Port select must be one of *300, 310, 320, or 330*. You must choose the I/O port that the TCR-200/500 has been jumpered for. See the TCR-200/500 manual for more information on jumpering for an I/O port.

Note: the TCR-500PCI time code reader will not require interrupt or I/O port configuration. These settings will be configured by your system BIOS at boot-up and automatically detected by the software drivers.

Time Code Type

Type of time code must be one of *SMPTE* or *IRIG-B(1)*. You must choose the time code type that the TC reader board has been jumpered for. See the TCR-500/500PCI manual for more information on jumpering for a time code type. This dialog will only appear if the TCR-500/500PCI was selected as the time code reader.

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 you for information regarding your source of time code and various TCRSync clock synchronization operating parameters.

Time Code Source

- *Masterclock GPS-100 master clock* - choose this option if your time code source is the GPS-100 master clock. When you choose this time code source options normally presented in the Incoming Time Code Configuration dialog are automatically determined.
- *Masterclock GPS-200/200A master clock* - choose this option if your time code is being applied to the Windows NT computer by one of these MC master clocks.
- *Masterclock. TCI-232/TCI-232A/TCI-500* - choose this option if your time code is being applied to the Windows NT computer by a these MC time code converter products.
- *Other* - choose this option if your time code source is not listed.

Incoming Time Code Configuration

This dialog appears unless you select the GPS-100 as your time code source.

- *Date information encoded in time code* - check this option if your 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 TCR-500 time code reader firmware version 1.6 or later, or TCR-500PCI card. Consult TCR-500 manual for information on determining firmware version.]
- *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.

GPS-100/200 Time Code Options

This dialog appears only if you have selected the GPS-100/200 as your time code source.

- *Allow time synchronization during freewheeling* - check this option if you want to allow time synchronization if the GPS-100/200 is "freewheel" generating time code. See the GPS-100/200 manual for more information on freewheel time code generation.
- *Display warning during freewheeling* - check this option if you want a message stored in the Windows NT event log when the GPS-100/200 enters and leaves freewheel time code generation mode.

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.

REMOVING AN OLD TCRSYNC INSTALLATION

A mechanism for removing a TCRSync installation has been provided to assist the administrator in removing all TCRSync components from the Windows NT system. Attempts to manually remove a TCRSync installation from a Windows NT system should be avoided unless recommended/supervised by MC technical support.

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 hardware and software TCRSync parameters. When configuration is changed you will need to restart the Windows NT 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 the incoming time code.

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.

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.

Monitoring remote TCRSync installation

TCRSync Monitor can run on any computer hosting the Windows 95 or Windows NT 3.51/4.0 operating system. From such a machine you can monitor a remote installation of TCRSync time synchronization. The remote installation must be on the same network and in the same domain as the computer you wish to monitor from. Monitor can be started with a remote computer name on the command-line (e.g. SYNCMON \\TESTSYS) to begin remote monitoring. In this example TCRSync must have been installed previously on Windows NT computer TESTSYS for the remote monitoring to work.

THE TIME CODE VIEWER PROGRAM

Time Code Viewer displays raw time as decoded by your time code decoding hardware. 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 NT system.

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.

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.

TROUBLESHOOTING YOUR TCRSYNC INSTALLATION

“After installing the TCR card, the TCRSync software package, and restarting my system other devices in my system are malfunctioning (such as Ethernet adapters, sound boards, the mouse, etc.)”

The TCR time code reader card has been jumpered for an IRQ (interrupt) or I/O port already in use by another device in the system. Reconfigure the TCR board to use an IRQ and/or I/O port not in use by other devices. You can use the Windows NT program *Diagnostics* to assist in determining which IRQs and I/O ports are already in use in your system. This is not a fool-proof method for determining what I/O port and IRQ resources are in use by adapters in your PC. In some cases the individual adapters installed may need to be inspected to determine if conflicts exist.

For the TCR-500PCI card, your computer’s BIOS has probably mapped I/O port or interrupt resources to those used by another device in the system. This may occur when there are more devices (ISA and PCI) installed in the computer than the computer has I/O port or interrupt resources (usually interrupt) to support.

See the TCR time code reader card manual for information on installing the card into your Windows NT server or workstation.

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

TCRSync time synchronization and/or the TCR-200/500/500PCI kernel-mode driver failed to start. The likely cause is an IRQ (interrupt) or I/O port conflict. You can use the Windows NT *Event Viewer* program to view the system log and determine the reason for the failure.

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

The TCR device driver and TCRSync time synchronization service failed to start due to a configuration problem. The reason(s) for the failure will be generated to the Windows NT event log. See previous troubleshooting comment.

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

Since TCRSync synchronizes the Windows NT system 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.

If you have installed the TCR-200/500 ISA card into a computer with a PCI bus the interrupt you’ve configured for the TCR-200/500 must be reserved in the system BIOS as “legacy ISA”. This prevents the system from assigning PCI cards and peripherals the same interrupt as configured for the TCR-200/500. Alternately, the TCR-500PCI’s interrupt can get assigned to an interrupt also in use by a legacy ISA device unless that device’s interrupt(s) have been mapped as legacy in the system BIOS.

If time synchronization still doesn’t occur you have an interrupt (IRQ) conflict. An IRQ conflict can sometimes occur without warning. The Windows NT operating system and the Windows NT Diagnostics utility cannot always warn of or diagnose interrupt conflicts. Devices on the PC’s motherboard or in the bus may be asserting influence over one or more interrupts even when Windows NT has not loaded a driver for them. Such devices will be “invisible” to the Windows NT Diagnostics program. Rule out this type of conflict before calling MC technical support.

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

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

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. Use the *Time Code Viewer* program to determine if your time code source is outputting date information and in the required format.

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 *TCR Configure* program.

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

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