

TCGSync
TCG-100 Generator Time Synchronization
for
Windows NT®



TABLE OF CONTENTS

INSTRUCTION BOOK WARRANTY	A
SOFTWARE LICENSE AGREEMENT	A
License Title/Ownership	A
Grant of License	A
Copyright	A
Other Restrictions	A
U.S. Government Restricted Rights	B
General	B
INTRODUCTION	1
PRE-INSTALLATION NOTES	1
TCGSYNC INSTALLATION	1
ADVANCED CONFIGURATION	1
Enable/Disable	1
Time Zone	1
Jam Threshold	2
Global Settings	2
USING THE TCG-100 DEVICE MANAGER WITH TCGSYNC	2
LIMITED SOFTWARE WARRANTY	3
30 Day Satisfaction Guarantee	3
Limited Warranty For Next 60 Days	3
Limitation of Remedies	3

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INTRODUCTION

TCGSync is a full-featured generator time synchronization application for the TCG-100 time code generator card operating in the Windows NT platform. TCGSync features:

- Jam and frequency-adjustment generator synchronization
- Operates even when a user is not logged in to the system (runs as a Windows NT service)
- Provides precision-synchronized time code output when computer's clock is locked to external reference
- Time code output support for all Windows NT-defined time zones
- Support for multiple, simultaneously operating TCG-100s in a single computer

PRE-INSTALLATION NOTES

Before installing TCGSync the base TCG-100 software package for Windows NT must already be installed. This software is located in the \WINNT folder of the floppy diskette shipped with your TCG-100 generator card. It provides drivers and utilities which TCGSync requires.

If the TCG-100 software installation is failing to operate due to resource conflicts or other problems TCGSync will also fail to operate. Correct any outstanding problems with TCG-100 for Windows NT software before installing TCGSync.

You must be logged into your Windows NT server or workstation as a user with local system administrative privilege. Attempting to install TCGSync logged in as a user without these privileges will fail.

If TCGSync software has been previously installed you should remove that installation via the Add/Remove Programs applet in the Control Panel, and restart the computer, before performing a new installation. Failure to do may prevent the new TCGSync installation from completing successfully.

TCGSYNC INSTALLATION

Insert the TCGSync for Windows NT diskette into a floppy drive. From the floppy diskette, execute the SETUP.EXE program. Follow the instructions provided by the setup program. Setup will copy TCGSync program files and default configuration to your computer. The computer will need to be restarted for the new installation to complete.

ADVANCED CONFIGURATION

You may find it necessary to adjust TCGSync's configuration after installation or to add support for more than one TCG-100 generator card. Configuration changes are performed through the TCG-100 applet located in the Control Panel.

Your TCG-100 manual describes the features of the Hardware and Software sections of the Configuration applet. The Synchronization section becomes available after TCGSync is installed and allows you to customize how TCGSync interacts with a given TCG-100 device.

Synchronization configuration is accessed on a per-device basis. Each TCG-100 card is represented as a device- *TCG0*, *TCG1*, etc. and are shown as tabs at the top of the synchronization configuration window. Select a tab for the device you wish to configure. Configuration is only available for devices that have been defined/enabled in the Hardware configuration section.

Enable/Disable

Sets the default synchronization action TCGSync will take for a given device. When disabled, TCGSync will not communicate with or alter operation on the given TCG-100 device. When enabled, TCGSync will at startup immediately begin to synchronize that TCG-100's generator clock to the PC clock.

Time Zone

TCGSync will reference the Windows NT UTC/GMT system clock to provide a time code output converted to any Windows NT-defined time zone. For example, to have time code output as Central Standard/Daylight Time select the (GMT-06:00) Central Time (US & Canada) entry from the time zones list box.

Time zone entries not already provided by Windows NT can be added using the TZEDIT utility found in the Windows NT Resource Kit. Consult Microsoft sales & support for more information on obtaining and using TZEDIT.

Jam Threshold

This is an absolute time specified in milliseconds instructing TCGSync how to correct time differences on the TCG-100 generator clock relative to the PC clock.

If TCGSync detects that the TCG-100's generator time is erroneous in excess of this amount of time (positive or negative) a "jam sync" will be performed. A jam sync stops the generator's time code output, re-synchronizes the time code registers to the correct time, and then restarts time code generation. Jam syncs momentarily interrupt time code output and cause "jumps" in encoded time data.

Time errors inside of the jam threshold time window will be corrected using slewing. Slewing involves providing minor adjustments to the TCG-100's time code generator signal frequency to move TCG-100 time toward correct time (the PC clock). Slewing is a passive correction process that occurs over time. No interruptions to time code generation occur during this process and no jumps occur in encoded time data. Time code frequency is still within specification parameters when these adjustments are active. Time code decoding equipment will read the time code normally.

The jam threshold window is set to 3000 milliseconds (3 seconds) by default. This value should be suitable for most applications. If immediate accuracy is desired over non-interrupted time code generation, user may choose to reduce the threshold.

Global Settings

The global settings button within the synchronization configuration screen allows changes to settings that apply to all TCG-100 devices operating in the computer. Currently, the only global settings is the location where the TCGSYNC-NT log file will be kept. The log file occasionally records debugging information for TCG-100 devices that TCGSYNC is synchronizing.

USING THE TCG-100 DEVICE MANAGER WITH TCGSYNC

The TCG-100 Device Manager provides monitoring and integration with the TCGSync service.

When TCGSync is installed and running the lower left-hand pane of the Monitor window provides control and information pertaining to TCGSync synchronization for that TCG-100 device. When TCGSync synchronization is active for the TCG-100 being monitored all manual control options in the upper left-hand pane of the monitor window are disabled (greyed out). You can use the Stop Synchronization option to suspend synchronization and enable manual controls for the TCG-100 device. Re-enabling synchronization will again disable manual controls.

Synchronization status line will display one of the following messages:

- *No synchronization (service not installed)* – TCGSync software has not been installed
- *No synchronization (service not running)* – TCGSync service is not running due to a startup failure or from having been manually stopped through the Service Control Manager.
- *Synchronization stopped* – Synchronization was stopped by the operator using the Monitor window controls.
- *Synchronization active (+/- xx ms)* – Synchronization is active for the TCG-100 being monitored. The milliseconds value indicates the position of the TCG-100's real-time reference relative to the PC clock. This value will oscillate around 0 and may do so more rapidly and at larger values as TCGSync corrects for time and frequency errors in the generator's clock.

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