

DN 6000253
USER'S MANUAL FOR
THE TIME CODE
TRANSLATOR/GENERATOR

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ACROAMATICS DOCUMENT HISTORY

The following table indicates major changes made to *User's Manual for the Timecode Generator/Translator*, Acroamatics Document Number 6000253, released on January 1, 2000, and contains a record of all revisions made since that date.

| DN6000253 CHANGE HISTORY | | | |
|---------------------------------|-------------|-------------------------|-------------|
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| | 1-1-00 | Original Issue | DJM |
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TABLE OF CONTENTS

CHAPTER 1 INTRODUCTION 1-1
 SOFTWARE DESCRIPTION 1-3
 Setting the Time 1-3
 Setting Generate Mode 1-3
 Setting Translate Mode 1-4
 Specifying Slow Code 1-4

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CHAPTER 1
INTRODUCTION

The Acroamatics Translator/Generator software works identically on the Model 503VA VME and Model 470 PCI mezzanine cards, and this manual applies to both. You can also use the Model 470 mezzanine card with both the 1502 (VME) and 1602 (PCI) versions of the Acroamatics Single Board PCM Data System.

The Time Code Translator/Generator converts amplitude modulated IRIG time code signals to a digital representation for downstream analysis. The Model 503V provides BCD time-of-year, days through microseconds, to both the VME Host computer and the Acroamatics Distribution & Host Interface card. The Distribution & Host Interface merges time data with decommutated PCM data and analog-to-digital data for time annotated data processing. Time messages are transmitted to the Distribution & Host Interface on one second and one millisecond intervals. The time data is also available to the VME Host computer in four 16-bit registers. The time is captured upon reading the microseconds or milliseconds registers, and held frozen until the days are read. The reading of these registers has no effect on the generated time outputs nor the data transmitted to the Distribution & Host Interface.

The Model 503V translator/generator is configured from the VME Host computer for several operating modes. In generate mode, the system operates as a time source, generating its timing from an onboard crystal oscillator. The unit is capable of generating IRIG standard A, B and G time code formats at multiple rates of 4, 2, 1, 1/2, and 1/4 times realtime. In addition, a slow code output is provided for time annotating strip chart recordings. The VME Host interface enables the operator to set the time for this mode.

In translate mode, the card operates as a time code reader, generating its timing from an external source such as an analog tape recording. The translator's input section permits the reading of time code over a wide range of input amplitude and frequency. The system is capable of translating several IRIG standard time code formats, including A, B and G, at multiple rates of 4, 2, 1, 1/2, and 1/4 times realtime.

The time code translator has two selectable modes of operation. In translate carrier mode, the system utilizes the input carrier for the time base in translating the input time code signal. The input carrier rate determines the resolution of time. This feature permits the unit to translate time as the carrier rate varies during playback. In translate failsafe mode, the internal timing is phased-lock to the the input carrier, and in the event of signal loss, the translator continues to generate time without interruption. The translator must be programmed to some predetermined rate, a multiple of 4, 2, 1, 1/2, or 1/4 times realtime. The time is resolved to microseconds for all time code input formats. This feature makes it possible to generate a time code format of higher resolution than that

being translated.

SOFTWARE DESCRIPTION

The setup software for the Model 503V Time Code Translator/Generator is similar to the existing Acroamatics Setup Compiler which is written in the C language and portable to many platforms. The programming language is compatible with that used in the Acroamatics 2000 series of Telemetry Data Processors. The Compiler processes the setup text for the time generator/translator and builds a simple table of setup parameters. At the end of the input, the table is transmitted essentially intact to the hardware registers. The following sections discuss the setup syntax for the Model 503V Time Code Generator/Translator.

You enter the Generator/Translator setup from the compiler using the **TGT** command. The general form of the setup is

```
TGT
  :
  :
  commands
  :
  :
  END
```

Setting the Time

To set the time, enter the command

```
TIME= [L] DDD:HHMM:SS [.SS]
```

The optional parameter **L** specifies a leap year. The remaining fields are as follows

| | |
|--------------|---|
| DDD | represents days (1 to 3 characters). |
| HH | is hours (must be two characters). |
| MM | is minutes (must be two characters). |
| SS.SS | seconds and fractions of seconds (1 to 5 characters). |

Any field delimited by colons may be empty, in which case it is taken to be zero.

Setting Generate Mode

To initiate Generate mode enter the command

```
GEN [code] [rate multiplier]
```

The optional parameter *code* specifies the output IRIG time code and must be G, A, or B. If *code* is not specified, IRIG B is generated. The optional parameter *rate multiplier* determines the rate at which the time code is generated. Valid rates are X.25, X.5, X1, X2, and X4. When *rate multiplier* is not specified, X1 is used.

Setting Translate Mode

To initiate Translate mode enter one of the **XLAT** commands shown below.

`XLAT [code] [Rate Multiplier] [INV] [OUT=code]`

The carrier frequency and the filter cutoff frequency are linked when you use this first form of the **XLAT** command as shown above. Carrier Mode setting is shown in the second form below.

`XLAT [code] [CAR filter-cutoff-freq] [INV]`

The translator normally operates in "failsafe" mode. In the failsafe mode, if the input time signal is lost, time is automatically generated until the input signal is regained. When the **CAR** option is selected, the card translates at the rate corresponding to the carrier it detects.

The optional parameters available when setting Translate mode are

code
rate multiplier (for Failsafe mode)
filter-cutoff-freq (for Carrier mode)
INV
CAR
OUT=

The parameters *code* and *rate multiplier*, which specify the input IRIG time code and the carrier frequency rate multiplier, are described above in the paragraph on the **GEN** command. The Carrier mode parameter *filter-cutoff-freq* sets the low-pass filter cutoff frequency. The cutoff filter frequency limits are 250Hz to 400kHz, which are specified as 250 to 400000. When Carrier Mode is selected, a filter cut-off frequency must be specified. The *INV* parameter sets the translator for an inverted signal. The *OUT=* option is used to specify the IRIG time code output, and must be specified as G, A, or B. If it is not specified, the output code is the same as the translate code.

Specifying Slow Code

The Model 503V generates a Slow Code for strip chart time annotation. The command to set the Slow Code is a two character command. There are four Slow Code rate commands available: S1 for a 1 second frame; S2 for 10 seconds; S3 for one minute; and S4 for a 10 minute frame. S1 is used if none is specified.

