EMR
SMPTE CARD
for
Archimedes
300 & 400 Series
A3000 Tower

INSTRUCTIONS FOR USE
With Studio24Plus (from Ver.2)

EMR SMPTE EXPANSION CARD
Use with STUDIO 24+ (from V2)

Introduction

The SMPTE card provides a sync to tape facility which conforms to ANSI/SMPTE 12M-1986 time and control code for video and audio tape. It is designed for use with EMR's Studio24Plus on the Archimedes range of computers and can be used on any of the available slots. The card is equipped with standard jack audio in and out sockets and a rotary pot. control for adjusting audio out level.

A3000 users require EMR's TOWER 3000 for installation of the SMPTE card. 400 series users can install the card directly into the 4-slot backplane. 310 users require a 4-slot backplane to install SMPTE as well as an EMR/Acorn Midi interface and ARVIS video controller. The latter is required when using a video recorder to lock incoming pictures (via its Genlock facility) and display them inside the program.

The primary use of the SMPTE card is to allow precise synchronisation of Studio24Plus with an external video recorder or multitrack tape recorder, ie. control is from an `external source`. The program then converts the SMPTE timecode into MTC (Midi Time Code) and uses this to control the music realtime operations and send Midi timing clock messages via Midi out ports to rhythm machines.

The use of an external video recorder with a video control card (with Genlock) and the SMPTE card enables composition of film music and advertising jingles with Midi instruments (and Studio24Plus or MegaStudio).

The use of an external multitrack recorder and the SMPTE card enables multiple Song structures of Studio24Plus to be sync'ed together or more simply, several parts to be made from limited numbers of Midi instruments.

The SMPTE card will read timecode placed on an audio track source and lock into the nearest quarter frame received from tape playback. The Studio24Plus program will automatically check timecode and run play/record routines in sync when Clock mode is set to SMPTE.

There is no initialisation required for the SMPTE card. It powers up ready to

go and remains in an idle state waiting for a command via Studio24Plus. A full command set is provided in an extra window and can be accessed from the top menu bar by clicking on SMPTE with the left mouse button. Exit from the window by clicking on OK.

The SMPTE window

The SMPTE window in STUDIO 24 PLUS is as follows:

```
SMPTE
Frame Type: 24 25 Drop 30
Cue Live: On Off
Stripe Tape
Re-Stripe Tape
Generate Lock Accuracy
User Bits: 00000000 Fmt: 0
Stop Current Operation
Pattern SMPTE: 0: 0: 0: 0
Song SMPTE: 0: 0: 0: 0
Beats Offset: 1: 1: 0
OK
```

General Procedures

Striping

First, an audio track of a video or audio tape is "striped" with SMPTE timecode: A start time is set from the command SMPTE Time in hours, minutes, seconds and frames. The frame count is set from the command Frame Type from 24 to 30 fps (frames per second). With the SMPTE card "audio out" connected to an audio in channel on the external source, and the tape located to a suitable start point and put into audio record (for the selected channel), the command Stripe Tape is selected. The SMPTE Time setting will now start to increment and timecode will be recorded on the tape until it is stopped.

Re-Striping

Occasionally a tape may start to lose its timecode locations due to dropout or

general wear. The SMPTE card has been tested for use in severe environmental working conditions satisfactorily and will normally continue to produce usable results even with dropouts on the original tape. However, the command Re-Stripe Tape can be used to "repair" an old tape to a usable condition. Its operation is exactly as Stripe Tape above, except for selecting Re-Stripe Tape instead of Stripe Tape.

Once a video tape has been prepared with timecode, it will either already have the film (+ audio or speech track) on it, or may have this ported from another recorder at the same time as striping or afterwards, depending on the type of video recorder available for running the film whilst recording the music. Ideally, your set-up will let you take your striped blank tape and let you have film or another audio soundtrack placed on it at any time, possibly in sections to allow construction of the total film sequence.

For both video and audio tape, it is essential to have SMPTE timecode with "Pre-Roll" time (prior to running the film or music) and "Post-Roll" time (after the film or music has ended). Only one frame type should be used for striping and the same film type as the original should be used for re-striping.

Stopping the current operation

During Re-Striping Tape, the process will continue indefinitely, even after incoming lock is completely lost. So, for any reason, you wish to stop this (or other SMPTE realtime operations), click on Stop Current Operation to put the SMPTE card into idle mode.

To leave the SMPTE window, click on OK.

Checking Lock accuracy

If you wish to check your striping operation's accuracy on tape when playing into the SMPTE_ card, select Generate Lock Accuracy from the SMPTE window. The result displayed is a percentage figure for the number of bits decoded correctly. It is used to help set up the record and playback levels. The percentage lock is shown as a decimal number 0-100% every 0.5 seconds. Use Stop Current Operation to abort this command.

Writing your own instructions for other SMPTE devices

SMPTE timecode has within its format the means to allow users to send messages for addressing user devices etc. More information on this is available from the SMPTE specifications. The data is coded into 32 "User

Bits" shown as 8 Hex values from 0 to &F. A Mode Format should be also specified (0-3). The message is sent from the program as a System Exclusive message and then transferred to SMPTE format via the Expansion card.

Select the command User Bits and type in the 8 Hex values from left to right, then press RETURN. Next type in the Mode number. Press RETURN and the message will be sent to the SMPTE card.

User Bits received from a SMPTE message will be indicated in the display but are not currently used.

Recording with SMPTE

An efficient, yet simple way of writing music to fit the film had to be found as many users of Studio24PIus may be starting this for the first time.

Since Studio24Plus uses *"Patterns"* for recording which are eventually arranged into a total *"Song",* a special Cue Live function is provided to automate the process.

The steps to take are as follows:

1. Run the film noting key parts of the action (cue points in your "hit list") where a new music sequence is required - these can be your new patterns. At this time, you can also decide to use the Cue Live command or not. In many cases of writing film music, especially in more "atmospheric" or "mood" music, it is possible to group the film into sections (which will become music, effects, a mixture of both, or even blank Patterns in Studio24Plus). If this is the case, note down approximate time lengths of sections - using the time counter on the screen bar - and prepare Patterns for each without viewing the film in INTERNAL CLOCK mode. Then jump on to Cue Live below.

2. During (1) above or in the next re-run of the film, note the SMPTE settings of each proposed Pattern.

3. Create a sufficient number of (blank) Patterns needed for the total film sequence, giving them working title names.

4. In the SMPTE command window, set the Pattern SMPTE value to the first Pattern to be worked on, say 0 hours, 4 minutes, 10 seconds, 3 frames. Set the program in SMPTE CLOCK mode and use the video recorder in play to run Studio24Plus realtime record and playback operations whilst viewing the film.

5. Once a Pattern is completed, reset the Pattern SMPTE value to the next

Pattern's start location and prepare the soundtrack for it. Continue with this pattern-making process until all sections are complete.

6. Once all Patterns are produced, they have to be arranged in the correct order from the Arrange page in the top menu bar. Unlike the arrangement of a purely music composition, a film or performance will be using SMPTE as a timing reference, so now we can ignore the Bar/Beat/Tick settings of each pattern as they are ordered at this time - these will be put right with the Cue Live function next.

Cue Live

Now we can use this command to precisely cue in realtime each pattern in the arrange page (called the *"Hit List")*.

Remember to SAVE your Song at frequent intervals (or Patterns if trying out several ideas).

7. **From the SMPTE window, set this command to ON.**

8. **Next, set the Song SMPTE to the start location of the film sequence and exit via OK.**

9. **Select SONG mode on the main screen (and also check you are in SMPTE CLOCK mode).**

10. **Rewind the film, start the pre-roll and select PLAY. The screen is now in video display and the video bar shows Current Bar/Beat/Tick; Current SMPTE; and Elapsed Time. The Bar locator will not run until the Song SMPTE Time is reached. When this happens, the first Pattern will automatically play. If you require a silent start this could be a blank pattern or simply a number of bar rests.**

11. **As the film proceeds, when the point for the next Pattern's music/effects occurs HIT the TAB key (hence the *Hit List!)* and the Pattern will be automatically located in the Song to that position in terms of bar/beat/tick. This means that patterns do not require a precise end point during recording.**

12. **Use the TAB key for each subsequent Pattern in the film sequence until completed. At the end of the last Pattern the PLAY operation will be stopped and the main screen will appear. You may also use the ESCAPE key to exit the Cue Live operation and re-run or go on to something else.**

13. **Go into the Arrange page and check the positions in your *Hit List,* then SAVE your arrangement (allowing you to have several *Hit Lists* for one film) or SAVE your SONG which will save everything required.**

14 Now re-run the film and the music will be fitted to the action!

15. Fine adjustment of the music in terms of the video film can be made by altering a Pattern's start position in the Arrange page. Remember that the actual length of a Pattern is not critical as a following Pattern can be set to start within the previous pattern. Use the Multi-Copy function in the COPY window to re-structure a Pattern to fit if it is too long.

16. Use the Beats Offset command in the SMPTE window to offset a pattern in terms of its beats locator when checking out Patterns alone.

Summary of Commands in the SMPTE window

Frame Type Set the required frame type by clicking on 24, 25, Drop (29) or 30 frames/second. This will be highlighted white. This is necessary for Stripe Tape/Re-Stripe Tape commands and for incrementing correctly the readouts of SMPTE in the Studio24Plus main screen or video bar.

Cue Live Set this On for use in Song mode with Playback. All Patterns in the Arrange page may then be cue'd in terms of their beat location as the film is viewed for quick and precise Pattern positioning in the film sequence. On exit of Song play, this command will be set to Off automatically, to avoid further playback in Song mode waiting for another re-run of Cue Live. Alternatively, Off may be selected if you wish to abort the command.

SMPTE Time Sets the start time for Stripe Tape and Re-Stripe Tape in house, minutes, seconds and frames. The latter is adjusted to fit the current Frame Type set.

Stripe Tape Allows audio and video tape to be "Striped" with SMPTE timecode throughout its length.

Re-Stripe Tape Allows old, damaged or tape with dropouts to be "Re-Striped" to full lock accuracy.

Generate Lock Accuracy Checks lock accuracy of striped tape. Useful for setting record and playback levels. A value of 0% is expected for full lock.

User Bits Allows User defined addressing to be sent with SMPTE timecode and acted upon by specific external devices, such as intelligent locators for multitracking, to read and intepret user messages.

Stop Current Operation Aborts the current realtime operation of the *SMPTE*

card and puts it into idle mode ready for a new realtime command.

Pattern SMPTE Used when recording or playing Patterns to locate the start of the current Pattern to its film location in tenns of SMPTE.

Song SMPTE Used when playing back (with or without Cue Live) to locate the start of the Song in terms of SMPTE film location.

Beats Offset Allows a forward Beat offset to be set for the current Pattern when re-recording or editing a particular pattern - especially after it has been assigned a Beat location in the arrange page using Cue Live.

Film Courses

Training in the use of Studio24PIus for writing film music is given at EMR's Computer Music Learning Centre (CMLC) in Southend, Essex. Please ring or write for details to the Secretary, CMLC, Suite 2/3, 50 Hamlet Court Road, Westcliff-On-Sea, Essex SSO 7LX. Telephone 0702 335747.

Upgrading of STUDI024PLUS

A reminder that EMR's policy of continuous improvement offers the end user occasional free upgrades where new "intermediate" versions have been produced. For example, to make full use of the SMPTE instruction above, Version 2.0c is now available free of charge. Always telephone first to check latest version available and price charge, if applicable. Then send your original PROGRAM and UTILITY discs to EMR LTD, 14 Mount Close, Wickford, Essex SS11 8HG, with suitable packaging and return postage.

Extra Utilities

The STUDI024PLUS   program can accept special Utilities produced by EMR, such as Midi Analyser, now available. It is also planned to produce Film Director for emulating the SMPTE environment. Ask for details of these and other products in the EMR ARPEGGIO MUSIC SYSTEM.

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