ADAMS · SMITH

USER BULLETIN

ZETA-THREE USER BULLETIN #14

Version 3.60 Software

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CONTENTS

ADAMS-SMITH 34 TOWER STREET, HUDSON, MA 01749-1721 U.S.A.
Tel.: 508-562-3801 Fax: 508-568-0404
THE STYPHER CORPORATION

1. INSTALLATION

Installation procedures are identical to those for Version 3.50 software. See ZETA THREE USER BULLETIN #9, "Installation of Version 3.50 Software", Aug 22, 1989.

2. GENERATOR

GENERATOR OUTPUT STOP

The Time Code Generator now supports a mode whereby its output will effectively switch off when time code is stopped. Up until now, the time code frame at which the generator was stopped would be continuously repeated at the output. Using the new "off" mode, the generator will transmit a continuous stream of "ones" (i.e. a 2400Hz square wave) when stopped.
"Off" mode is enabled by setting generator Constant 5 LSD to a 1.

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3. MASTER and SLAVE

3.1 Many Zeta users have requested that, when the Zeta is synchronizing two multitrack recorders, the Record buttons of the two decks be somehow linked together. An optional new **automatic record mode** allows this to happen by forcing the Slave deck's record function to exactly track that of the Master deck. Significantly, the punch in can take place either at the Zeta Remote or at the controls of the Master deck itself.
The mode can be switched on in a new Zeta System menu:

```
Z17 AUTO REC'D=OFF
                SLAVE
```

One restriction should be noted: The Master transport must provide a Record Tally signal in order for this function to work at all. To determine whether or not this is the case for your Master transport, check that the following two statements are both true:

(a) Constant 85 for the Master should be an odd number (i.e. the 1 bit in the lsd is set to a 1), signifying that the Zeta expects a Record Tally; and

(b) The record LED in the MASTER ENABLE key should light solidly when and only when the Master is recording, signifying that the Tally is in fact working properly.

3.2 An "automatic resolve" mode has been installed for the Slave transport.
In the past, the Zeta would resolve the Slave deck very nicely, provided that play action was initiated either at the Zeta or at the Zeta Remote. (This, of course, assumes that conditions were correct for resolving i.e. Zeta system resolve, Slave enabled, Master disabled.)
With "automatic resolve", play motion may be initiated at the transport itself, and the Zeta will do the rest.

Some requirements, however, must first be met:

(a) The Slave transport must be equipped with a Play Tally.

(b) The transport cable must connect that tally to the Zeta's "Spare Tally" input pin (most of the ATR cables already do this).

(c) The Zeta must be told that its Spare Tally input is in fact a Play Tally. This is done by setting Slave Constant 85 msd (left hand digit) to a one. (If your Constant 85 msd is already set to some number other than zero or one, then don't change it, as that indicates that the Spare Tally input is definitely being used for some other purpose.)

Several decks in 3.60 software will already be set up correctly, but, due to the last minute arrival of the "automatic resolve" feature, not all eligible candidates have been updated and tested.

3.3 Several new transports have been added to the Zeta's lists:

```
FOSTEX R-8
STELLAVOX TD-9 PERFO
STUDER D-820 (48.0K, 44.1K)
SONY VO-5800/5850 with Zeta Search Option (ZSO)
JVC DS-DT900 (DAT)
PANASONIC AU-660 (MII)
SONY BVH-2000 (Master only)
TASCAM BR-20T
```

Significant changes have been made to the Constants for:

```
AMPEX VPR-6 (AS MASTER ONLY)
AMPEX VPR-2/6/80
OTARI MTR-100A
```

3.4 To make room for some of the new features in 3.60, the number of User transport areas has been cut back from 10 to 6.
By way of compensation, these areas can now be labelled! Each area has a six character label which may be adjusted, character by character, in the `SAVE TRANSPORT` menus. These labels will be retained and will appear also in the `TRANSPORT` selection lists.

3.5 Some jogging and shuttling routines have been added to the Zeta transport sections. A review of the revised Transport Constants lists will show that an inordinately large number of Constants have been devoted to this subject! For the time being however, only a handful of transports will actually make use of this feature (JVC 6650/8250, SONY 5850 etc with Zeta Search Option, Tascam 40/50 Series).
Future software versions will expand this capability.

4. MIDI

4.1 When operated from the ZETA-REMOTE (or from the Computer Port), the MIDI Tempo Map now supports **Fast Forward** and **Rewind** operations. This emulation of transport functions provides a very convenient method of manipulating the Map position.
Maximum "wind" speed, after a short acceleration period, is approximately 20 bars per second.

4.2 A new menu has been added which shows the current state of the MIDI Time Code output. Intended primarily as a trouble shooting aid, this display will always show the MIDI Time Code number which is being transmitted from the MIDI output, and will go blank (all dashes) when transmissions are halted. It will also show when a time code "rejam" has taken place, in a similar manner to the main time code generator.

```
D10 MIDI TC --------
```

4.3 Due to the inclusion of the MIDI Time Code display, all subsequent MIDI menu items have been re-numbered:

```
D11 LOCK MODE=ADR/FWL/AUTO
D12 SLOW RELOCK=OFF/ON
D13 SPLICE TRAP=OFF/ON
D14 TIMEBASE       ->
D15 MAP LOAD/SAVE  ->
D16 BEEP=OFF/RMT/ . . /RMT+MIDI CT
D17 MIDI CONSTS    ->
```

5. ZETA SYSTEM

New functions are described in sections 7 thru 10. To allow for several new menus, some of the existing menus have been renumbered:

```
Z17 AUTO REC'D=OFF/SLAVE
Z18 RMT REC'D=SYSTEM/SLAVE
Z19 RMT Z_ECHO=OFF/ON
Z20 ZETA TC LINK=OFF/ON
Z21 SENSE=OFF/MIDI_IN/SLAVE/SLV+MID_IN/MASTER/MAST+SLV
Z22 SENSE OUTPUT ->
Z23 CLEAR REGISTERS
Z24 SYSTEM RESET ->
```

6. EVENTS

Two new arming choices for each event trigger have been added. The original "MIDI NOTE" option was designed to trigger a MIDI Note On message immediately followed by a corresponding Note Off. This has proved to be a little restrictive in some situations, and many users have requested separate Note On and Note Off triggers. Therefore, the new Event Arming menu now reads (where xx = Event number):

```
Exx EV_xx=DISARMED
          AUX OUT
          NOTE ON/OFF
          NOTE ON
          NOTE OFF
          PROG CHNG
          REMOTE FN
```

As before, channel, note number and velocity are specified for each event trigger under the menu heading "E12 MIDI TRIGGERS ->"

7. AUX OUT

7.1 A system Record Tally output is now available on the Aux Out connector (Ring contact), and may be selected in menu "Z14 XOUT RNG=" (see 7.2 below). This tally will be active, driving the output to ground potential, if either the Master or the Slave transport is recording.
Note that the Aux Out connector can drive up to 200 milliamps DC. If the Record Tally is to be used to turn on an AC studio record lamp, then an external relay **must** be used to isolate the AC line from the Zeta (please!).

7.2 A new "SYS PRK" (System Park) function may be assigned to either the Aux Out Tip or Ring. The complete Tip and Ring menus now read as follows:

```
Z13 XOUT TIP=AUX 1
          TIMBASE
          OFF
          SYS PRK

Z14 XOUT RNG=AUX 2
          OFF
          SYS PRK
          REC TLY
```

The term "parked" is applied to a slave device when chasing a master. When the master is stopped, for example after winding to a new starting position, and the slave has also moved into position ready to begin synchronizing as soon as the master begins to play, then the slave is said to be "parked". Both the Zeta's Slave transport and MIDI section can assume "parked" status, as long as they are enabled **and** chasing a master.
"Parked" status is most frequently used to ensure that the master device does not begin playing until the slave devices have caught up to it and are "parked". This action may be observed by executing a GOTO at the Zeta's front panel when both the Master and Slave are enabled, and by further pressing the CONTINUE key so that the machines will begin playing as soon as the GOTO point has been reached. Notice that the Master, which usually arrives first, will wait for the Slave to also arrive (i.e. become "parked") before going into play.
This all works very correctly within the Zeta itself, but what if more Zeta's are added to the system to expand the number of synchronized transports? How is the Master in the first Zeta going to know when the Slave in the second Zeta is "parked"?

If a Zeta-Remote is controlling the system, then the problem is taken care of within the Remote.
If there is no Remote, then the "SYS PRK" output on the second Zeta will provide the solution, that is, if it is connected to "SYS PRK IN" on the first Zeta (see Section 8, AUX IN).

Connecting two Zeta's using the "SYS PRK" line:

1. Run an XLR cable from the GEN CODE OUT connector of the primary Zeta to the MASTER CODE IN connector of the secondary unit.

2. Run a cable with 1/4" plugs (preferably stereo) from AUX OUT of the secondary Zeta to AUX IN of the primary Zeta.

3. Connect Master and Slave transports to the primary Zeta.

4. Connect only a Slave transport to the secondary Zeta.

5. Establish the following menu selections for the primary Zeta:

```
Z15 XIN=SYS PARK IN
Z20 ZETA TC LINK=ON
```

6. Establish the following menu selection for the secondary Zeta:

```
Z13 XOUT TIP=SYS PRK
```

7. Enable Master and Slave on **both** Zeta's. (The Master must be enabled on the secondary Zeta in order to allow its Slave to chase the time code coming into its Master Reader, which is in turn being generated by the primary Zeta.)

Notes:

(i) The "SYS PRK" output line will be asserted (driven to ground potential) when any of the slave devices within the Zeta is **not** parked.

(ii) If more than two Zetas are daisy chained using the above method, then "parked" status will still be correctly propagated through the system.

(iii) "SYS PRK" (Aux Out from a secondary Zeta) will not be asserted unless that Zeta's Master is enabled. In operation then, Master enable establishes the link between the Slave on the secondary Zeta and the Master on the primary Zeta. (When a Zeta is acting as the "middle" unit in a chain of 3 or more Zeta's, this allows separate chase subsystems to operate correctly when the chain is broken.)

8. AUX IN

The 1/4" mono Aux In jack, previously used only for MIDI Tempo learn functions, now offers some very useful features. These may be selected via menu:

```
Z15 XIN=OFF
        RECORD HOLD
        REC'D TOGGLE
        ALL ENABLE'
        STOP/CONT
        SYS PARK IN
```

In all cases, the Tip and Sleeve need only to be shorted together by a switch, footswitch, transistor or relay in order for the indicated function to operate.

RECORD HOLD: Puts the transport into record when the switch is closed, and punches out of record when the switch is released. The transport to which the record commands are directed may be selected in same way as for the Zeta Remote, using the menu `Z18 RMT REC'D=SYSTEM/SLAVE`.

REC'D TOGGLE: Puts the transport into record when the switch is pulsed closed for the first time, and punches out of record when the switch is pulsed again.
Select the transport using `Z18 RMT REC'D=SYSTEM/SLAVE`.

ALL ENABLE: Enables all three devices (Master, Slave and MIDI) when the switch is closed, and disables them all when the switch is released. This function is intended primarily for automated systems, where a master controller must put the slaves into chase at specific times.

STOP/CONT: When connected to an external switch, this will function in exactly the same way as the STOP/CONT switch on the front panel.

SYS PARK IN: Intended for use with a `SYS PRK` output from a slave Zeta. Refer to the discussion in Section 7, "AUX OUT".
When the contacts are closed, and the Zeta's internal master has just completed a cueing operation, then the master will not go into play mode until the contacts are opened. When Aux In is connected to a `SYS PRK` output from a "slave" Zeta, then the master will not play until the other Zeta's slave transport has finished cueing.

Notes:

1. Aux In Tip is pulled up to 5VDC by a 10Kohm resistor; Aux In Sleeve is at ground potential.
2. When operating in pulsed mode (`REC'D TOGGLE, STOP/CONT`), the pulse must be held for a minimum of 66msec.

9. FAILURE SENSE MODE (for LIVE PERFORMANCE)

This is a completely new feature, absolutely unique to the Zeta-Three!
Briefly, a method was needed to provide fail-safe operation when the Zeta-Three was used to synchronize pre-recorded tracks *during live performance*.
For example, should a tape deck be used to provide sound tracks to enhance the performance, then the Zeta may be setup to slave a second deck which acts as a back-up. If the first deck were to fail, then the Zeta would immediately perform two functions:

(i) switch the failed deck out, making the back-up deck the new "master", and

(ii) provide a signal which will switch the audio console's inputs from the original deck's tracks to those of the back-up deck.

The Zeta can handle many different situations similar to this example, including failure detection via its MIDI input.
A detailed discussion may be found in ZETA-THREE USER BULLETIN #15, "Failure Sense mode for Live Performance".
For the present, it is simply noted that two new Zeta System menus have been created to support Failure Sense Mode:

```
Z21 SENSE=OFF
          MIDI_IN
          SLAVE
          SLV+MID_IN
          MASTER
          MAST+SLV

Z22 SENSE OUTPUT ->
                    .1 OFF
                    .2 EV_3 AUX OUT
                    .3 EV_3 NOTE ON/OFF
                    .4 EV_3 NOTE ON
                    .5 EV_3 NOTE OFF
                    .6 EV_3 PROG CHANGE
                    .7 EV_3 REMOTE FN
```

10. SERIAL COMMANDS

Many changes have been incorporated into the interface protocol. Only a brief summary is included here. Anyone requiring detailed information should contact the factory to obtain a copy of the manual Chapter 13 as revised for software version 3.60 (and 3E60). Section numbers in the text refer to Chapter 13, and not to this bulletin.

- One may request that the Serial Interface collect and transmit data only when that data has changed. This represents a considerable savings in communications and processor bandwidth, as no time is then spent re-processing data which remains static. See the "N" command in section 13.2.4.

- More Serial Interface Constants have been added to control the operation of the above "N" command (see section 13.6). Consequently, requests for read back of these Constants may now contain a Constant address (see the "m" command, section 13.2.4).

- The three response data formats 'W' (Combined Time, User Bits and Status), 'Y' (Combined Time and Status) and 'Z' (Combined User Bits and Status), may now be optionally extended to include "Extra Status" (four more digits per response).

- A "LOOP" character may be requested which will be transmitted from the Zeta exactly once per execution of its background loop (see section 13.3.2). Once initiated, any cessation of transmission of this character would indicate that the Zeta is no longer available for serial communication, having either failed, been disconnected, or powered down. The LOOP character may also be used to synchronize data request messages to the rate that the Zeta will intercept and process these messages (i.e. once per background loop).

- The software version message from the Zeta-Three will be slightly different if a Zeta-Three*em* is attached. See sections 13.4.1 thru 13.4.5.

- New transports have been assigned identification numbers and added to the transport list.

- Jog and shuttle commands have been installed in the Master, Slave and Zeta System sections. These commands will of course only be useful if the both the target transport and the Zeta's transport Constants support such a feature.

- A direct Resolve command ('V') has been added to the Slave transport section.

- Fast forward ("F") and rewind ("R") commands now appear in the MIDI section, synthesizing transport "wind" functions (see 13.11.11).

- The most recent MIDI Tempo Map edit or load/save error code is now included in the MIDI status response (see section 13.10.11). Appendix I lists all possible Zeta error messages, with their hex codes, and including those generated by Tempo Map operations. A new command has been added to the MIDI section which will clear the most recent Tempo Map error (see the "@W" command, section 13.11.11).

- Two simple trap registers ("a" and "b") have been added to the ZETA SYSTEM section. These may be used to quickly trap a current time code value which is to read back later.

- The new AUX IN and AUX OUT functions as well as the new Failure Sense Mode options may all be assigned through the serial port.

- Transport record, MIDI learn, and Failure Sense mode status now all available in the ZETA SYSTEM User Bits (see section 13.10.16).

- Events may now be fired by type, and Event enable types have been extended to include MIDI Note On and MIDI Note Off ("@F" and "@V" commands, section 13.11.13).

- Activity on the serial receive line is now tallied by the presence of an asterisk in the menu:

```
Z08*COMPUTER PORT ->
```