TECHNICAL BULLETIN

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SOLITAIRE AND JADE-S FADER AUTOMATION SYSTEMS
FAULT FINDING TIPS

The Solitaire and Jade-S share the same fader automation system. The principles of operation are based on the Solo Logic Automation system, so are relevant to that system also. Note however this mixer has 1 large automation PCB, so notes regarding communication between multiple PCB's are not relevant.

The Solitaire/Jade-S system uses multiple processor PCB's (2 for 24ch, 3 for 32 and 40ch, 4 for 48 and 56ch). These are connected in series along an internal serial RS232 link within the mixer but operate independently and have separate memory and program IC's.

It important to note the fader automation system and the ADP system are completely separate. Should they both develop faults at the same time, suspect the +5V supply, which is the ONLY common part.

Also note the Solitaire Midi mute version uses a complete different control system. However this is closely related to the mute operation within the fader automation systems, where the mutes system operates separately alongside the faders but integrated within the timecode based recall system. See Technical Bulletin 88, for details of mute systems.

GENERAL TIPS

Current firmware is V2.7 (as on LCD screen at start up)

If internal CPU problems are suspected, Disconnect external equipment :-

Any external PC system, Any external MTC source (yes, bad MTC can crash the system)

Any external midi control system. This should NOT be used in any case as Solitaire and Jade are not programmed to operate from or to midi control systems, only for MTC and MMC use.

See Technical Bulletin 43 for Solitaire Automation test and setup menu operation (this is included in the Jade-S and later Solitaire user manuals)

The CPU's control 1-16, 17-24+master, 25-40 and 41-56. Faults generally happen associated with complete blocks of faders corresponding to these groups.

The default state of the mutes is ON. Any section with all mutes on will have an unpowered or halted CPU. If the mute switches operate the channel mute lights in the normal way, then the local CPU is running. It is possible for the local CPU to operate but not communicate with the rest of the system and not be found at start up.

Any fault indication on the LCD showing "dpb" as part of the error message is an internal communications or processing error.

Errors such as an internal comms problem will usually only be in one of the CPU's. It is necessary to find which. These are 2 to 4 of the P12924 PCB's located under 1-16, 17-24/master, 25-40 and 41-56. These are the faders they individually control. This PCB is on top of another P13089 (connects automation to all channel modules)

Difficulty starting 1 section may be too low power voltage. Check the +5V (red and black supply wires) actually on the affected CPU (this should be 4.8V or more at start up) There is voltage sense system that will stop the CPU at about 4.75V. The power distribution PCB under the master section is easy to get at and can be used as a guide. If the voltage is too low set +5.4V or +5.6V on PSU . For Solitaire - set Grid PSU jumper (recent PSU's with Iss G PCB) or modify Grid, see Technical Note 45. For Jade-S - adjust pre-set on D series PSU PCB, Technical Note 36

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CPU PROBLEMS

The serial communications cables start at the master (17-24) and go on to slave1 (1-16), then to slave 2 (25-40) and then to slave 3(41+) to the MTC display. These are all 10way ribbons going to and from the P12924's on top at the edge facing the rear of the mixer.

At start up the system shows "multiprocessor startup" and then "2 slaves found" or however many slaves it has found. Note that as slaves are in series, a failure in slave 1 will prevent slave 2 being found, in 2 will stop 3 etc.

If the cpu is running but not found (see note on mute operation above) check for bad serial cable/comms.

Run the mixer, wait for the fault. disconnect the serial from the slave 1 CPU (under 1-16) at CON 5 (this isolates all slaves)

Restart, see what happens. if the master section appears OK the problem is in one of the slaves. If the problem persists the master section CPU has failed.

If the problem is due to a slave, reconnect CON5 to slave 1 and disconnect CON 6 (this isolates slave 2+). Restart and try again.

If this is OK then slave 1 is OK. reconnect CON6 to slave 1. move to slave 3 (40-48) disconnect the serial from the slave 3 CPU at CON 5 (this isolates slave 3 leaving 1&2 in use).

Restart the system. If the system is OK, slave 3 is at fault.

OTHER CPU NOTES

Strange operation or consistent errors of memory (e.g. always needs recalibration) may be a scrambled RAM. Remove the RAM IC's (large DIL IC with no label), short all pins against a metal surface (eg. aluminium cooking foil) to clear memory and replace.

Failure of external communications, RS232 or midi is likely to be the associated Comms IC. The comms port can be individually tested (see TB 43). If this shows a fault replace the appropriate IC. A common cause of such failure is "hot plugging" the cable particularly if the external source is a PC. PC PSU's can float a high voltage above earth causing failure of the mixer port.

If the system operates OK whilst powered but loses stored settings at switch off or after a few hours this is the NiCad RAM support battery. This should read at least 3.0V (3.9V typical) under all conditions. This is a standard component available from the factory or local component supplier. Note that a Nicad left for a some time (weeks or months) may go short-circuit (reading 0V) and cannot be recharged. This may also halt the CPU permanently.

A completely frozen CPU is sometimes due to bad seating of the CPU IC itself. This is retained by 4 clips. These clips may break (releasing the IC) or simply removing/replacing the IC can help. Note this is a SMT device in a special socket and great care must be taken not to bend the pins. The clips can be released with a small screwdriver, releasing opposite sides first.

It can be seen all P12924 CPU PCB's are identical. If 1 PCB has failed it can be substituted by another for fault finding or temporary operation. Note the firmware EPROMs are specific to their location in the mixer and must be swapped between PCB's to maintain the correct position. Only in the 40+ channel mixers do the first 2 slave CPU's have the same EPROMs. Note that there are jumpers positioned to make a CPU a slave or a master. Refer to the user manual for settings. In lager mixers in the event of a CPU failure it is common to fit a master and 1 working slave in position 1 to leave channels 1-24 + main faders working (and therefore also all 24 groups) and loosing the remaining faders (25+) as temporary situation, pending repair.

METERBRIDGE MTC DISPLAY, JADE-S ONLY

The large timecode display is a passive reader on the internal serial comms buss. It has no effect on the operation of the system and can be disconnected if this is a problem for the user. "Hinge" the rear panel back by removing the top panel screws and loosening the lower screws and remove the 10 way ribbon from the PCB. If this PCB (P13567) is Iss P3 it should be replaced by Iss A.

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TIMECODE ERRORS

The system uses MTC (midi time code) for external synchronisation. This is a computer interface and the Soundtracs system expects correctly formatted data. It has become apparent that many MTC sources do not actually provide this.

In particular, PC based SMPTE to MTC converters and a number of outboard converters (e.g. JLCooper 100) do NOT provide absolute code conversion on a second by second basis. If timecode is rewound part way back in a mix (i.e. not to 00.00.00.00) the code will often not covert the absolute minutes value until the 59 seconds boundary. This will introduce a discontinuous timecode stream and will crash the Soundtracs system. The JL Cooper PPS2 is a small SMPTE to MTC converter that has been found to be reliable.

The Alesis BRC MTC output is known to cause problems. Use the SMPTE output and the JLC PPS2 to convert back to MTC. This may seem unnecessary but does solve unreliable operation.

It should be noted the system will only display the last whole frame value sent to it. It absolutely CANNOT introduce offsets, skip ranges etc. It is a dumb reader, so real but incorrect timecode values are NOT generated by the Soundtracs system.

Unreliable timecode operation or system crashes with converters or PC's present are normally an external problem.

PC SYSTEMS

There are 2 basic versions of the PC system software for Solitaire, V1 and V2. The Solo Logic PC software is entirely different and not discussed here. All Jade-S mixers have V2 . Both run under Windows 3.11. If the system works leave it alone!! There is no benefit changing to Win 95/98 or adding memory.

V1 is standard with the older mixers, controls only the fader system and uses the PC serial and mouse ports directly can run on PC's up to P75. V 1.11 will run on PC's up P100 (approx.). This has a separate manual supplement and requires custom made cables as in manual, section 2. Do not use 9-25 pin adapters. This system is normally trouble free system if correctly setup and installed as per the manual. CTS or other time-out errors shown on the PC during mix transfer are normally caused by wiring or the PC speed (too fast).

V 2 is standard on later mixers and a chargeable upgrade for earlier mixers. It provides fader automation as Version 1, control and saving of ADP data (alongside mix data) and control groups ("VCA groups") on motor fader mixers. V2 comes complete with matching cables and a custom triple serial PC ISA plug in card (for faders, ADP and group faders). The mouse goes direct to the PC as before.

Grouping on VCA mixers is still present in software but may not work correctly if used. Jade-S motor fader mixers have group faders fitted at the right end of the mixer. Solitaire has an optional free-standing 8 way fader module available for group fader operation. The PC is required for Control Groups to work.

This software is generally reliable on PC's up to P200. Thereafter the limitations are related the ISA Buss speed. The PC card is designed for up to 12MHz operation (the original ISA spec is 8MHz)

Normally Soundtracs supply a matching PC with these mixers. If this Soundtracs PC has been changed in any way do not expect us to fix it for you! There is a reason we supply these setup, tested and ready to go.

Current versions Solitaire 2.12 Jade-S 2.13.

If motor fader groups are losing relative positions, adjust .ini file group time out setting as per readme file in the software.

If the PC system works correctly, leave it alone, do NOT change it, do not change the Windows version, do not change the hardware for a more modern PC to “improve” it. The system will probably stop working. Besides the system is 16 bit, 256 colour with a 38Kb midi serial link. A new PC cannot change this…..