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## DMX Compatibility

### Introduction

From time to time Jands receives reports of DMX incompatibilities between Vista consoles and equipment made by other manufacturers. Users often blame the Vista console as being the source of the problem - this Tech Note provides information on this issue.

### Vista DMX

All Vista consoles are regularly tested using a Goddard Design Company DMXter2, and visually verified with an oscilloscope against the DMX standard. At the time of writing all Jands Vista and Byron products comply with the ANSI E1.11 -2004 Entertainment Technology USITT DMX512-A "Asynchronous Serial Digital Data Transmission Standard for Controlling Lighting Equipment and Accessories" referred hereafter simply as "DMX".

### DMX

The DMX standard incorporates a wide tolerance in many of the timing parameters to allow variation in product design. This is both an advantage and a disadvantage – it has ensured a wide and rapid acceptance of the standard because it is relatively easy to generate, while at the same time allowing incompatibilities to occur.

The main areas of incompatibility are in regard to two parameters - the interslot time and the break time. The former represents the time between the data for two adjacent channels (eg. from when channel 9 finishes and channel 10 starts); the latter represents the length of the Break, which is used to indicate the start of a fresh packet of data.

### Issue

Lower end or old technology DMX product often have slow processors that are unable to keep up with the higher data rate Jands Vista products transmit. This inadequacy manifests itself in many ways depending on the design of DMX receiver – symptoms range from fixtures that work most of the time and just sporadically jump, through flickering or jittering output, to fixtures that don't respond at all.

### Testing

The symptoms of incompatible DMX look very similar to general DMX faults such as intermittent or broken cables, unterminated lines, and ground loops. Hence it's important to try some tests first:

- Try different cables.
- Check the DMX line is properly terminated.
- Check a second fixture of the same type to eliminate a failure in the fixture. Note this does not eliminate fixture design faults or software bugs.
- Try running the fixture and console from the same power outlet to eliminate ground loops.



The latter is best tested by temporarily moving the console next to the fixture (or vice versa) and plugging the fixture directly into the console via a short cable. If the problem is still evident, it is likely there is a compatibility issue.

## Compatibility Resolutions

There are a few things that have been shown to help compatibility issues:

- Upgrade to the latest Vista/Byron version. From time to time changes are made to the console DMX output, and other changes may be made in the future.
- Verify the library is correct by adjusting the Vista controls while viewing the DMX output, then comparing the results against the fixture data sheet. Fixture libraries are complicated and fixture incompatibility symptoms may appear if the library is not completely correct.
- Patch the fixtures at low DMX channels. A low channel number can be advantage if the DMX data is coming in too fast for the fixture, and it starts to miss channels.
- Patch the fixtures at high DMX channels. There have been reports of high channel numbers improving compatibility.
- Use an M1 or UD512 instead of a T4/T2/S3/I3/S1 console. The DMX timing on the M1 and UD512 is significantly different to that of the other Vista consoles.
- Use a Pathport node or Artnet receiver to drive the fixtures. These products transmit the DMX data independently of Vista; some of the Pathport products in particular are configurable with regard to DMX output timing, and Artnet receivers can be quite inexpensive.
- DMX patch products have also been found to fix this issue because they retransmit the data at a slower rate. It may be possible to put into service an otherwise unused piece of equipment.

One of the above usually leads to a solution that doesn't involve replacing the incompatible fixtures.