



TECHNICAL BULLETIN

Date: 13th Apr 05 Revised May 14 (rev 2)

No: 99

Raised by: T C
Distributed to: As required

Soundtracs Digico, unit 10 Silverglade Business Park Chessington Surrey KT9 2QL England
Tel: +44 (0)1372 845600 Fax: +44 (0)1372 845656 email: support@digiconsoles.com

OPTICAL CONNECTIONS FAULT FINDING NOTES **For Optocore® system in DiGiCo and Soundtracs consoles**

Optocore System checking.

In the event of suspected problems in a DiGiCo-Optocore interconnection system a few checks can be carried out on site. Note it is important to take a methodical approach, and not rush these, as the system is quite complex and besides potentially carrying over 500 audio channels, involves a novel automatic redundant switch-over system to help the system ignore broken cables, which can confuse test results.

Basic external optical cable test

Do a physical inspection of all connectors for a tight positive fit and of cables along their full length. This sounds obvious but may well show up mechanical damage.

External cables supplied by DiGiCo (2, 5, 100 or 150 m) supplied with the standard HMA military connector can be given a "rough" test, using a torch (flashlight). Shine a torch at one connector and visually check the light coming out of the other end of the cable. You should see 2 distant lights visible. If only one light is seen, a break has occurred in the cable.

Note typical cable breaks (caused for example by slamming the cable in a door frame) will show no damage to on the outside of the cable jacket. The minimum bend radius is 25mm and bending into a right angle can snap the glass core.

However if 2 lights are seen, this does NOT always mean the cable is good. It is completely possible for a cable to develop high loss (attenuation) on one or both cores. This is not detectable with the human eye and requires a specialised test instrument. This type of fault can lead to the more obscure "noise" related problems in the Optocore system.

Note it is possible for the cable to suffer crush damage. This can be caused by, for example, being driven over, or even very tight cable ties in a cable bundle. The specified crush strength of most cables is about 20Kg on a 1 mm length. Again, crush damage often will not show on the outside of the cable jacket.

Cont.

Testing a complete mixer system.

Loop operation.

If a redundant loop Optocore system is proving troublesome, first disconnect one side of the loop.

Typically disconnect A or B optical port on the mixer. If disconnecting one does not help, reconnect and disconnect the other. The reason for trying this is that in the event of intermittent operation, the system may be switching between main and redundant operation at random. Switching 500 channels is not silent, especially if the fault causes many changeovers per second.

If disconnecting the loop and running single ended helps, this may help point to the source of the problem.

Optical port testing

If a system is still causing concern proceed as follows.

Set up 1 mixer and 1 rack only. Ensure the mixer is configured as FOH (D-series) or single mixer (SD-series), to enable all audio output to the rack from the mixer.

Using ONLY one cable, connect the mixer to the rack from optical ports A-A, A-B, B-A and B-B. In a non redundant system all combinations should work if using Optocore V1.10 or V1.34. If all combinations fail, use a different external cable. Check audio input and output works to the rack.

Continue to test with 1 mixer and 1 rack all combinations with other racks and mixers. Only ever change ONE ITEM at a time (port connected, rack etc.) and retest after each change.

Be methodical about this. If the external cable is proved OK, this testing is likely to show one chassis optical port on a rack or a mixer is not operating correctly.

As a temporary solution avoid the use of any port found in question.

Internal optical connections

Occasionally, failure of a chassis connection is due to a loose an internal optical connector. These can be seen in groups of 2 pairs of connectors (2 each send and return) on a sub PCB in the rack madipod or within the mixer DSP "engine" drawer.

If an internal connection is suspected, check all 4 internal "SC" (D-series) or "LC" (SD-series) optical connectors are firmly seated (these press home with a "click").

Refer to the mixer technical information for access to the mixer engine or rack Madipod.

Cable and connector losses.

The only objective test for cables which may have a high loss i.e. that are damaged but not actually broken, is to use an optical power meter and optical source test system.

Digico technical support will be pleased to advise on suitable instruments and the expected / acceptable measurements made on such systems. Also refer to Technical Bulletin 101 for power budget figures and design characteristics.

Contact you technical support provider to arrange replacement of the appropriate optical port or cable.