Transmitting MIDI Signals over Long Distances

The use of MIDI (Musical Instrument Digital Interface) signals is certainly commonplace in most musical setups. Various keyboards, synthesizers, rhythm machines, computers, controllers etc. are routinely linked together via a standard interface cable fitted with 5 pin male DIN connectors and for short distances everything usually works fine. The MIDI specification however calls for a maximum cable length of 50 feet (approximately 15 meters) and this is fine for configurations where everything is in one location as on a stage or in a small club. When MIDI signals must be distributed over longer distances such as in a sports stadium or arena however 50 feet can be a significant limitation. Extending cables beyond the 50 foot limit can result in corrupted data, intermittent signals and can even occasionally lead to a real disaster right in the middle of a performance.

Liteway Inc. has come up with two ways to address this situation with its ***MIDI-Extender***® product line. The first is the MIDI-1001 system. This product group consists of two transceivers and utilizes common off-the-shelf so called "CAT5" data cables for interconnections. A CAT5 cable by the way is the one commonly used to connect computers to an Ethernet bus and is commonly available from virtually all electronic outlets that handle computers. In operation the MIDI-1001 system takes the standard MIDI current loop signals and converts them into carefully balanced voltage signals. These signals are then conveyed between the various MIDI units by the twisted cable pairs within the CAT5 cable. This results in error free transmission over distances of up to 1000 feet. Indicator LEDs are provided on all units to signal the presence of MIDI signals and a link LED is provided to assure that the cables are intact. Power for the system is obtained from a simple 12 volt wall-type plug in adapter and only one side of the link needs to be powered as power is sent between MIDI units by the same CAT5 cable. Actual MIDI connections to the MIDI-1001 units are by means of standard 5 pin DIN connectors and cables.

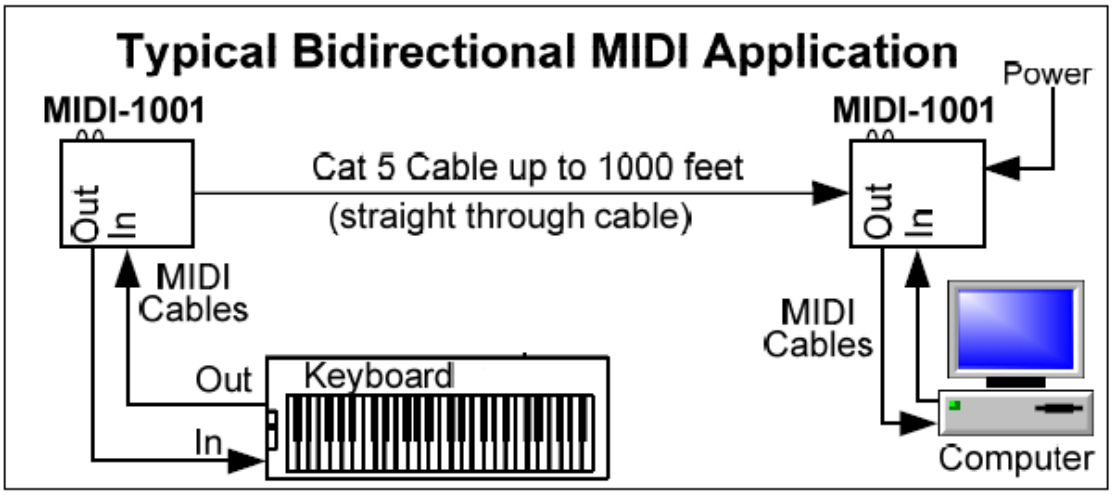
In those instances where even 1000 feet is not enough, or where there is severe electrical interference in the area where the MIDI or CAT5 cables must be run the use of fiber optic transmission techniques can assure high quality noise-free signals. This technology is used by the MIDI-2001 system. Here the standard MIDI signals are converted into pulses of light which are then sent through fiber optic cable. Since fiber optic cable is virtually immune to electrical interference, it can be routed wherever convenient without regard the proximity of electrical noise producers, water or high voltages. In addition, since fiber optic cable is totally non-conducting, ground loops which can result in loss or corruption of MIDI data are virtually eliminated. It is also important to note that transmission distances using the MIDI-2001 fiber optic system can easily extend

to a mile or more. As in the case of the CAT5 system signal and link indicator LEDs are provided, power is obtained from simple wall type plug-in adapters and all signal connections to the MIDI units are by means of standard 5 pin DIN connectors and cables. The operating power in this case must be applied to each transceiver as the fiber optic interconnecting cable is non-conductive.

The accompanying diagram shows two typical MIDI connection systems. Note that the interface can be MIDI-1001 or MIDI-2001 units depending on the requirements of the installation. Each transceiver pair will produce “textbook quality” signals over distances well in excess of the maximum 50 foot MIDI specification limitation. Each system will also operate from –20 to +60C (-4 to 140F) thereby allowing them to be used both indoors and outdoors.

The cost for the MIDI-1001 system (less CAT5 cable) is about $250 and includes applicable plug-in wall-type power supplies as well. The MIDI-2001 fiber optic system will cost around $550 (less fiber optic cable). CAT5 or fiber optic cable will usually add less than an additional $100 to these costs. All units can be easily rack mounted as well if desired.

Considering the performance of the CAT5 or fiber optic MIDI transmission system, particularly in a critical installation, it is important for the professional musician to seriously consider this technology.



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