HIGH-SPEED DATA TRANSMISSION OPTICAL FIBER

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Abstract:

Optical fiber is an excellent vehicle for high-speed data transmission as long as light transmission is efficient - even across connector assemblies. This translates to a need to polish connector end faces to optimize performance. Increasingly, with the adoption of newer fiber configurations, as well as ever-tightening specifications, automation of the polishing process is a necessity. ULTRA TEC provides a leading range of polishers to the fiber optic industry -- from manual polishing and low production of single patch cords, through in the field polishing, right up to mass production in FIBERTEC machine.

1.INTRODUCTION:

Developed for In-the-field and Retro-Polishing applications, the FTTx (Fiber To The "x") portable connector/termini/contact polisher from ULTRA TEC provides the performance required by installation professionals for the FTTx, LAN, CATV, and Aircraft/shipboard applications.The Photonwares MEMS N x M optical fiber switch uses an advanced 2D configuration in which each mirror only moves within two positions: in or out of the light path. The unique digital mirror technology advantageously eliminates the need for software position calibrations associated with conventional analog MEMS, that have long term drift issues. The switches feature intrinsic temperature insensitivity, latching to the positions against vibrations, direct driving, and low cost. The passive switches establish optical signal paths in milliseconds supporting all date rates, ideally suited to manage and monitor large optical networks intelligently and remotely.

1.2 ADVANTAGES OF OPTICAL FIBERS

1. Speed

Fiber optic cables beat copper in this department, and it isn't even close. Fiber optic cables are made of tiny strands of glass, each about the size of a human hair, and use light pulses. Thus, they can carry a lot of data-up to 60 terabits per second-at speeds just slightly slower than the speed of light. Copper cables, limited by the speed at which electrons travel, can only reach about 10 gigabits per second.

2. Reach

Fiber optic cables are the better choice if we need to send a signal over greater distances. Copper cables can only carry signals about 100 meters, while some singlemode fiber optic cables can carry more data up to 25 miles. Fiber optic cable also carries data with less attenuation or signal loss-only about three percent every 100 meters-than copper, which loses over 90 percent over the same distance.

3. Reliability

Since they are electrical conductors, copper cables are still susceptible to interference and electrical surges. Fiber uses a process known as total internal reflection to carry light signals instead of electricity, so it's not bothered by electromagnetic interference (EMI) that can interrupt data transmission. Fiber is also immune to temperature changes, severe weather and moisture, all of which can hamper the connectivity of copper cable. Plus, fiber does not present a fire hazard like old or worn copper cables can.

4. Durability

Able to withstand a pulling force of only around 25 pounds, copper wire is fragile when compared to fiber optic cables. Fiber, despite being much lighter, can withstand up to 200 pounds of pressure, which is certainly preferable during construction of a local area network (LAN).

Copper cables also experience corrosion and will eventually have to be replaced after as little as five years. Their performance degrades as they age, even to the point where they lose their signal all together. Fiber optic cables, on the other hand, are sturdier with fewer parts and can last up to 50 years. When you're choosing a cable, its longevity should be taken into account.

5. Security

Your data is much more secure with fiber optic cables, which don't carry electrical signals and are almost impossible to tap into. Even if a cable is compromised or damaged, it can easily be detected by monitoring the power transmission. Copper cables, on the other hand, can still be tapped, which could affect your internet speed or even destroy your network.

6. Cost

True, copper may seem to be the most cost-effective option because it costs much less than fiber optic cable. However, after you factor in hidden costs, maintenance, interference, risk of tampering and replacement cost, fiber optic cable is a better financial option in the long run.

7. New technology

Network devices that require more bandwidth, higher speeds and more reliable internet connectivity, such as security cameras, digital signage and VoIP phone systems, make fiber optic cable the obvious choice for those who provide telecommunications and internet.

Micro-Electro-Mechanical System (MEMS) switches are based on a highly reliable thermal actuation that eliminates the risk of electrostatic stiction or electric discharge shorting. Unlike conventional MEMS, our MEMS does not need a hermetical seal, further reducing the reliability risk. The switches have passed well over 10^9 cycles of switching tests. Our MEMS switches use an advantageous 2D configuration in which each mirror moves between two positions: in or out of the light path, as shown in the enclosed Figure. This unique digital mirror technology offers fault-safe latching function as well as eliminates the need for software position calibrations associated with conventional analog rotating MEMS, that have long-term drift issues. The switches feature temperature insensitivity, latching to the positions against vibrations, direct driving, and low cost. The versatile platform accommodates various fibers of SM, PM, and MM, as well as free space integrations. The passive switches support all date rates, ideally suited to manage optical networks intelligently and remotely with extremely low latency.

Industry-standard polishes are readily achieved due to a robust design and system build along with using the latest techniques.

The polisher can be held at any desired angle during operation. This allows for true portable operation in small workspaces, cross-connects, fiber nodes and wire closets. The unit can be operated with either a battery pack or a power supply (both included with standard package).

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Five benefits of presentation matrix switches:

1. Consolidate management of multiple video sources
2. Provide user-friendly switching between displays
3. Feature multiple display modes for optimal display flexibility
4. Allow control of one or two computers with a built-in KVM switch
5. Support sending stereo sound to speakers or amplifiers

Most multi-format matrix switches should be able to connect multiple audio/video sources, such as computers, media players and cable boxes, with one or two HDMI displays and also provide the ability to control the content shown on each screen. A preview feature shows the content from all of the sources at the same time, allowing quick identification of each source's content.Userscan easily switch between connected video sources using the front-panel buttons, an IR remote or an RS-232 serial controller. A built-in KVM switch allows control of one or two connected computers using a keyboard and mouse. Also, a presentation matrix switch should include USB ports that accept peripherals such as flash drives.

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