Fibre optic cable specification pdf

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CreativeCommonsSomeone in the San Francisco Bay Area is walking around with a pair of wire cutters, and putting them to bad use. Following a string of nearly a dozen vandalism incidents of fiber-optic cables in the area, the FBI is conducting an investigation. The perpetrator (or perpetrators) is apparently snipping underground fiber-optic cables throughout the region, causing widespread Internet and phone problems. In a statement, the FBI reported, “Within the past year, cables were intentionally severed. The individuals may appear to be normal telecommunications maintenance workers or possess tools consistent with that job role.” The latest incident, which occurred Tuesday, caused many Wave Broadband customers to experience considerable service disruptions. According to officials, this attack is the 11th since last July, and FBI Special Agent Greg Wuthrich told USA Today, “When it affects multiple companies and cities, it does become disturbing. We definitely need the public’s assistance.” While law enforcement does not believe that these are coordinated attacks, the larger problem at hand is the obvious vulnerability of Internet lines that these attacks have emphasized. Speaking with USA Today, Roger Entner of Massachusetts-based Recon Analytics noted, “Our most critical infrastructure is basically unsecured,” and while nothing more has come out of these latest attacks than annoying blackouts, some experts are concerned that criminals and vandals are just testing the waters. As Ralph Descheneaux of North Carolina-based Network Integrity Systems told the paper, “You can spend a lot of money on encryption and fire walling, but you also need to cover the basics. At the end of the day, if you don’t protect the actual transport mechanism, you’re always going to have a point of vulnerability.” Much of the Internet (and seemingly, our well-being) is connected to these thin cables that run underground and under the sea, but the relative ease with which these past few attacks have been carried out (and the apparent lack of information surrounding who the perpetrators may be) is raising some major red flags for security experts. The FBI is urging anyone with information to come forward, and have added that those responsible may be dressed as utility workers. Editors' Recommendations By Jennifer VanBaren A fiber optic cable is a thin glass strand used for transmitting light. Fiber optic cables are used primarily by telephone companies and electric companies. They are typically either single mode or dual mode, also called multimode. Single mode fiber optic cables are used for high speed and long distances; dual mode fiber optic cables are primarily used for short distances. Dual mode fiber optic cables have a slightly bigger diameter than single mode. Dual mode generally uses two fibers instead of one and offers a high bandwidth. Dual mode cables are not used for long distances, over 3,000 feet, because the multiple light paths lead to distortion to the receiving party. Dual mode fiber optic cables are made of glass and have diameters between 50 microns to 100 microns. Light is transferred through these cables using numerous paths. A single mode fiber optic contains a diameter between 8.3 microns to 10 microns and light is transferred via one path only. Audio Splitters AUX Cables Cable Bags & Cases Cable Management Boxes Cable Straps Extension Cables HDMI Cables HDMI Splitters HDMI Switchers Satellite Splitters Speaker Cables VGA Cables The role of cable is to carry an audio or video signal from one device to another. Cables carry signals between DVD players and TVs, stereo receivers and speakers, and computers and video projectors. Cables don't change the nature of the audio or video signal they carry. They don't convert or process signals in any way. That's the job of the devices on either end. The cable itself is just the messenger. Cables are made up of three basic parts: conductor, shielding and connector [source: Graves]. The conductor is the wire that actually carries the signal. One or more layers of shielding prevent the wire from acting as an antenna that picks up radio frequency interference (RFI) and electromagnetic interference (EMI) [source: Graves]. The connector is the plug at the end of the cable that connects to your device. Cables are important components of any home stereo or home theater setup. If you don't use the right cables for the right job then you could end up with subpar sound or picture quality. And if you use cables that are damaged or otherwise junky, you could really end up with a lousy experience. For audiophiles, using low-end cables with a $5,000 plasma HDTV is like putting crappy tires on a Ferrari. Some audio/video experts argue that consumers should spend 20 percent of their total system cost on cables alone [source: Rushing]. The truth is that many cheaper cables offer a listening/viewing experience that most consumers could never tell from the really high-end cables [source: Rothman]. To keep things simple, we're going to break down the overwhelming amount of cable types into three categories: audio-only, video-only and audio/video cables that carry both sound and picture. By Dan Ketchum i fiber optic computer cables image by Andrew Brown from Fotolia.com Fiber-optic cables transmit large quantities of data at the speed of light. Devices such as modems, routers, televisions and personal computers use fiber-optic cables to receive and transmit all sorts of information. The fibers in these cables are made from fragile glass and many common problems result from tension, pressure or stress on the fibers. Dead, frayed or otherwise damaged cables usually cannot be fixed at home and must be replaced. Inspect the fiber-optic cable by following it along its length. Look for bends in the cable, which obstruct the cable's optical fibers. Gently straighten any unnecessary bends. Remove any objects resting on top of, or otherwise putting pressure on, the cable. Check for excess tension in the cable. Fiber-optic cables should have some slack, as tension causes stress on the fibers. Slacken any cables that are pulled tightly. Shorten cable spans that seem excessively long by placing connected devices closer together and using shorter fiber-optic cables. Identify any splits, rips or tears in the cable. Replace any damaged cables with new fiber optics. Direct a laser pointer into the connector at one end the fiber-optic cable. If no light shines through the other end, the cable is dead and needs to be replaced. Locate the point at which the fiber-optic cable connects to a device, whether it be a modem, router, television or other piece of electronic equipment. Check the connection. If the connection is loose, firmly secure the cable to the electronic device. Inspect the cable's connectors. Spray the connector with compressed canned air to remove dust and foreign particles. Disconnect the fiber-optic cable and reconnect it to the device if simply tightening the connection fails to remedy the problem. Investigate the point of access for any fiber-optic cable that enters your home from the outside. Remove any foreign elements that could obstruct or place stress on the cable. By Blaze Johnson i Hemera Technologies/AbleStock.com/Getty Images Digital optical cables, also referred to as TOSLINK cables, feature a fiber optic core, designed to transmit digital audio formats. TOSLINK cables may offer superior sound quality improvements over analog connections. Certain televisions on the market include several audio connection options, designed to meet the specific needs of the customer when setting up a home theater system. Connecting a TOSLINK fiber optic cable to your television is an easy task that does not require any special tools or technical knowledge. Turn off the television and input device. Gain access to the rear of the television and input device. Remove the protective cap from one end of the TOSLINK cable and locate the small "TOSLINK OUT" jack, found at the rear of the television. Insert the exposed TOSLINK cable end to the "TOSLINK OUT" jack. Make sure to align the small nub on the cable with the notch on the television's output jack before insertion. Remove the protective cap from the remaining end of the TOSLINK cable. Insert the cable end into the input device's "TOSLINK IN" jack. Turn on the television and input device. Browse the television's audio setup menu; choose the "SPDIF OUT/TOSLINK OUT" audio output option and save the settings. Select the appropriate input selection source for the external sound device. Adjust the volume and sound settings to complete the setup process, if necessary. By Eric Novinson i optical fibre (fiber) 2 image by BlueMiniu from Fotolia.com Fiber optic cable transmits information using light signals. Fiber optic networks operate under the standards 10 Base-F, 100 Base-F, FDDI, FDDI duplex, 1000 Base-F and 10 Gbase, which include bandwidth capacity in their definitions. Single mode fiber optic cable is the earliest form of fiber optic cable. This type of cable sends a single beam of light down the cable. Multimode fiber optic cable is an improved version of fiber optic communication. Because multimode fiber sends several light beams that combine into one signal, performance may be slightly higher, as the multimode installation includes several lasers which may combine to produce a maximum transmission rate greater than the specification standard rate to improve reliability. For example, a 10 gigabyte multimode network may include four lasers sending at 3 gigabytes. Older installations operate with lower bandwidth, especially if the signal is sent over long distances without amplification. The 10 Base-F standards from 1993 are the earliest standard for fiber optic transmission over Ethernet networks, according to the University of California, Berkeley. 10 Base networks send information at 10 megabytes per second. FDDI, or fiber distributed data interface, is an alternative to an Ethernet network. FDDI is specifically designed for fiber optic communication, unlike Ethernet specifications designed for use with copper wires. FDDI uses both single mode cable to connect separate structures and multimode cable inside a structure, according to the University of California, Berkeley. FDDI networks are arranged in a ring of computers that pass an electronic token around the ring to communicate, this structure is known as a token ring network. The FDDI standard is a 100 megabyte per second network. FDDI-2 sends video images as well as data with a 100 megabyte per second standard. FDDI duplex mode sends data at double speed, allowing 200 megabyte per second communication. Some networks send data at 100 megabyte per second. The standards that govern these fiber networks are included in the 100 Base-F family. Any of the 100 Base, or 100 megabyte per second, standards including the fiber optic standard are referred to as Fast Ethernet. Fiber Ethernet networks are installed under the 1000 Base-F standard. This standard allows transmission of data at one thousand megabytes per second. As with the other standard families there are related Ethernet specifications, such as 1000 Base-FX, that also operate at the same speed. The 10 GBase standard covers Ethernet networks that include copper wires, wireless signals and fiber optic cables, so there is no separate 10 GBase-F standard. 10 Gbase standards govern networks that send information at 10 gigabytes per second.

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