

## FAQs

Our Frequently Asked Question section currently contains two areas:

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Alarm Systems

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Network Installations

In order to find your question, click "Edit" on the Menu Bar, then Ctrl-F and enter your search terms.

Pioneer Custom Cabling's FAQ section is constantly being revised and updated. Please check back for updates.

If you don't see your question/answer, email us.

Alarm Systems FAQs

Is the alarm system monitored locally?

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Yes. The call center is manned 24/7 by trained staff and exceeds all the local requirements.

Is every area or zone in the residence/business covered?

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Depends on the installation. Motion detectors and glass break detectors can cover wide areas. Having every window and door covered using a contact is time consuming and can be very expensive. However, the level of protection for your family or business is up to you and Pioneer can accommodate most any concern or security solution.

How quick of a response time is there by Law Enforcement once an alarm signal has been sent?

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The dialer on your alarm system can be programmed to immediate or have a delay. Once the signal is received by the Monitoring agency, they will respond by either calling you, or the Police depending on the nature of the alarm. Police

response times can vary; contact your local police for any questions. Also, make sure your permit and contact information is up to date.

What can I do if a burglar cuts my phone lines?

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We offer back up cell phone dialers for our systems, ask for details. We can also program your alarm panel to monitor for dial tone, and alert you to problems.

Are the systems that Pioneer installs quality? What if I wanted to install my own alarm system?

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The panels that we use are the industry standard, used by the major names in the alarm industry. We have years of installation experience, installing your own alarm system requires professional training, and programming knowledge. After our system is installed, we test every zone to assure that the monitoring agency receives all the signals with no problems.

Who should know my code to my alarm system?

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Only the adults who live in the home, or trusted employees of your business should have access to the alarm code. Never give out your code to anyone, and do not write the code down. Codes should be changed twice a year. You can assign temporary housekeeper/babysitter codes, ask for details or see your owner's manual.

Will my siren be heard outside?

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Yes. The sirens we use are 105 decibels. It is extremely loud; please use ear protection when testing your system. We also offer exterior sirens and strobes for your home or business. Sirens may be restricted in some areas.

Should I test my system?

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Yes, test your system at least once a month. Call the monitoring agency and request the system be put into test mode. Then set the alarm and trigger it. Trigger multiple areas in your home/business, and then call your monitoring agency to

hear the results. This insures your safety, and verifies that your phone system is working correctly. You may be asked for personal information by the monitoring agency to verify your identity in testing your system.

What is a "Panic" button? Can I get one of those?

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Panic buttons are special devices or signals that can be sent to the monitoring agency from your home or business. They are a priority signal that takes precedence over other signals. They are usually on a key fob device, keypad, or under a cash register for you to hit regardless of the panel being in an "armed" or "unarmed" mode. These devices can be programmed for instant police contact, and are usually used when being robbed or attacked. They are very similar to a "duress" code, but offer instant sirens and police response. Ask for more details if you are interested in utilizing this option.

Can my alarm system be tied into my smoke detection system?

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Our panels offer this capability, and are compliant with the national regulatory system. We would be happy to work with your fire protection expert on integrating this into your alarm system. There is a permit process for fire protection in most areas, there may be restrictions. Ask for more information.

Am I protected if there is a power failure in my home or business?

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Yes! Every panel we install in homes and businesses offers an integrated battery back up for power outages. They can protect for up to 7 hours. There are also upgrades available at a very reasonable cost. We recommend replacing these batteries every 5 years. We do not recommend using a UPS for our alarm panels.

Are your alarm systems pet safe? What does "pet immune" mean?

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Yes, we offer pet safe or pet immunity with our alarm systems. Basically, our devices can be programmed to ignore pets such as cats, dogs, and small birds. Usually pets under 80 pounds, or up to 3 small animals are fine using our typical system. However, we offer upgrades for larger animals, and multiple pet homes.

Does Pioneer offer wireless security systems for homes and businesses? When are these required?

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Yes, we offer systems that meet the highest industry standards. Wireless is recommended for installations with restricted wall/attic access and in temporary applications such as a business move. Wired systems are usually preferred as battery replacement is required in wireless security systems. Batteries usually last 5 years, but may vary depending on usage. Wireless is very safe however, our systems utilize encryption and are used in banks and government facilities around the U.S. Wireless systems also are somewhat more expensive than wired systems in some applications.

What brand does Pioneer use?

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We have an extensive working knowledge with many name brand industry systems however currently we use Honeywell Ademco Systems. They are used by many well-known industry names, and offer incredible flexibility and well-known reliability.

Do you offer medical alert devices?

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Yes, and there is a wide variety available. We can program this option into your keypad, or offer you key chain or neck worn devices.

Will I own my alarm system? Can I go with another monitoring service after my contract is done with Pioneer?

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Yes and yes. After your one-year contract with Pioneer, if you decide to seek other monitoring solutions we would be happy to assist you. You own the system we install after your contract is met, and we will not come knocking on your door to repossess it like many companies do. However, we offer the most competitive monitoring rates in the industry and hope that you will stay with Pioneer. \$25 transfer fee may apply.

How specialized of a security solution can I expect from Pioneer?

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Here at Pioneer, the options for your security system are endless. We offer solutions for ANY security question or problem that your family or business may encounter. Every system we install is customized for you; there are no "package deals" like some alarm companies try to sell. We will be happy to discuss solutions for your security problems, please feel free to approach us with your ideas or questions. We install Honeywell, Bosch, and many other well-known products. We have a dizzying array of products available to us, and we are positive that we can offer your business or home the best security product available, and at the best price!

Questions to Ask Yourself:

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How many cameras will you need? Some monitoring systems can accommodate only one or two, while other systems offer further expansion.

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Do you need audio as well as video? Some camera systems include microphones so you can hear what you're seeing.

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Do you want color or black and white? Color pictures are often clearer, but the equipment can be more expensive. Color cameras might not work in low-light situations.

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Do you prefer wired or wireless? The right choice for you depends on where the camera will be located:

Wired cameras are fixed in place and must be put in a spot where the wiring won't get in the way. They offer greater assurance of a high-quality picture.

Wireless cameras can be moved around easily and can be installed in more places, but other devices (such as cordless phones, baby monitors and some computer networks) can interfere with signal transmission.

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Will the camera be outside? Cameras that monitor outdoor locations require special weatherproof housings and may not be appropriate for extreme temperatures. Those that might be the target of vandalism need extra-tough casings to resist tampering.

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What is the light source? Steady, reliable light - either from the environment or from the camera itself - is required for clear images. A camera's lux rating measures its ability to capture images in the dark. The lower the lux rating, the less light is required for a clean picture. Unobtrusive monitoring in the dark or near-darkness can be done with infrared light, which is invisible to the human eye, but the technology can be expensive.

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Is there a power source nearby? Some cameras and monitors must be plugged into a wall outlet. Others can run on battery power.

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Do you want to use your computer? Some cameras can be attached to a computer, allowing you to view the images from anywhere using an Internet connection. The required software is usually included with the camera.

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Will you record the images? Some cameras are meant just for viewing - to see what the kids are doing in the backyard or who is ringing the doorbell. Others are meant for long-term monitoring and may be attached to VCRs. If a VCR attachment is planned, make sure the camera system is compatible with the recorder. Special VCRs can use time-lapse recording to fit many hours on a standard videotape. Some recorders can be set to activate only when motion is detected.

## Network Cabling FAQs

What is plenum-rated cable? Why do I need it?

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A plenum is a space within a building that is used for the movement of environmental air. This typically refers to the air space above a suspended ceiling, but it can also be the area beneath a raised floor in a computer room. In effect, these spaces act as ducts for the air conditioning system. Since a return-air duct no longer needs to be installed, the building costs go down which is why they appear in the majority of offices built today.

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The plenum space is part of the air conditioning system, so anything inside it must exhibit low flame spread and low smoke producing characteristics. Unfortunately, this is not optional. The National Electrical Code mandates that all cables run in an air plenum must be plenum-rated.

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Coincidentally, the plenum above an office ceiling also represents the most practical route for running cables in most buildings. So special plenum-rated cables have been developed with insulation and jacketing that utilize Teflon and other compounds which can be run safely in air plenums.

How do you know if you need plenum cable?

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Ask your building engineer. Or call your local electrical code inspector to come by and check it for you. As a rule, however, most offices built since the Eighties require plenum cabling, for the obvious reason of cost.

What are the different types of cable and how are they used?

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Communications Cable: primarily for telephone cable

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Class 2 Cable: signaling cable primarily for data communications

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Riser: vertical shaft used to route cable between floors

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Plenum: Heating, Ventilation, Air Conditioning (HVAC) air return area -- mostly drop ceilings. Also below raised floors (where the underfloor area is used for ventilation).

What are specific cable classifications?

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CMS, CL2X (Restricted Cable) must be enclosed in conduit, up to 10 feet exposed; must pass UL 1581 VW-1 test

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CM, CL2 (General Purpose Cable) for use in areas other than risers or plenums; must pass UL 1581 vertical tray test

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CMR, CL2R (Riser Cable) for cable in vertical shafts; must pass UL test method 1666

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CMP, CL2P (Plenum Cable) for use in plenum areas (air ducts); must pass UL 910 test for smoke and flame spread

What are the specifications for cable conductors?

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Cable conductor gauge is specified as AWG (American Wire Gauge). A higher number is a smaller diameter. Telephone cable used indoors is typically 24 or 26 AWG, whereas household electrical wiring is typically 12 or 14 AWG.

What is the difference between plugs versus jacks?

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The EIA/TIA specifies an RJ-45 (ISO 8877) connector for Unshielded Twisted Pair (UTP) cable. The plug is the male component crimped on the end of the cable while the jack is the female component in a wall plate or patch panel, etc.

What are standard Networking Configurations?

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ATM 155Mbps uses pairs 2 and 4 (pins 1-2, 7-8)

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Ethernet 10Base-T uses pairs 2 and 3 (pins 1-2, 3-6)

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Ethernet 100Base-T4 uses pairs 2 and 3 (4T+) (pins 1-2, 3-6)

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Ethernet 100Base-T8 uses pairs 1,2,3 and 4 (pins 4-5, 1-2, 3-6, 7-8)

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Token-Ring uses pairs 1 and 3 (pins 4-5, 3-6)

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TP-PMD uses pairs 2 and 4 (pins 1-2, 7-8)

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100VG-AnyLAN uses pairs 1,2,3 and 4 (pins 4-5, 1-2, 3-6, 7-8)

What is Ethernet 10Base-T Crossover patch cord?

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This cable can be used to cascade hubs, or for connecting two Ethernet stations back-to-back without a hub.

What is a crossover implementation?

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A simple way to make a crossover patch cable is to take a dual-jack surface mount box and make the crossover between the two jacks. This allows using standard patch cables, and avoids the nuisance of having a crossover cable find its way into use in place of a regular patch cable.

What are EIA/TIA category specifications for transmission speeds?

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Category 1 = No performance criteria

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Category 2 = Rated to 1 MHz (used for telephone wiring)

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Category 3 = Rated to 16 MHz (used for Ethernet 10Base-T)

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Category 4 = Rated to 20 MHz (used for Token-Ring, 10Base-T)

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Category 5 = Rated to 100 MHz (used for 100Base-T, 10Base-T)

What type of equipment do you use to test cable?

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DVM = Digital Volt Meter (measures volts)

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DMM = Digital Multi Meter (measures volts, ohm, capacitance, and some measure frequency)

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TDR = Time Domain Reflectometer (measures cable lengths, locates impedance mismatches).

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Tone Generator and Inductive Amplifier = Used to trace cable pairs, follow cables hidden in walls or ceiling. The tone generator will typically put a 2 kHz audio tone on the cable under test, the inductive amp detects and plays this through a built-in speaker.

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Wiremap Tester - checks a cable for open or short circuits, reversed pairs, crossed pairs and split pairs.

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Noise Tester: Noise tests, 10Base-T: the standard sets limits for how often noise events can occur, and their size, in several frequency ranges. .

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Butt-in set: a telephone handset that when placed in series with a battery (such as the one in a tone generator), allows voice communication over a copper cable pair. Can be used for temporary phone service in a wiring closet.

What is the minimum bending radius for a cable?

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According to EIA SP-2840A (a draft version of EIA-568-x) the minimum bend radius for UTP is 4 x cable outside diameter, about one inch. For multipair cables the minimum bending radius is 10 x outside diameter.

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SP-2840A gives minimum bend radii for Type 1A Shielded Twisted Pair (100 Mb/s STP) of 7.5 cm (3-in) for non-plenum cable, 15 cm (6-in) for the stiffer plenum-rated kind.

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For fiber optic cables not in tension, the minimum bend radius is 10 x diameter; cables loaded in tension may not be bent at less than 20 x diameter. SP-2840A states that no f/o cable will be bent on a radius less than 3.0 cm (1.18-in).

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The ISO DIS 11801 standard, Section 7.1 General specs for 100 ohm and 120 ohm balanced cable lists three different minimum bend radii. Minimum for pulling during installation is 8x cable diameter, min installed radius is 6x for riser cable, 4x for horizontal.

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For fiber optic cables not in tension, the minimum bend radius is 10 x diameter; cables loaded in tension may not be bent at less than 20 x diameter. SP-2840A states that no f/o cable will be bent on a radius less than 3.0 cm (1.18-in).

What are the different types of fiber optic cable?

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**Multimode (MM) Fiber:** Step index or graded index fiber. In North America the most common size is 62.5/125; in Europe, 50/125 is often used. These numbers represent the diameter of the core (62.5) and diameter of the cladding (125) in microns. Multimode fiber is typically used in applications such as local area networks, at distances less than 2 km.

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**Single Mode (SM) Fiber:** Single mode fiber has a very small core. Typical values are 5-10 microns. Single mode fiber has a much higher capacity and allows longer distances than multimode fiber. Typically used for wide area networks such as telephone company switch to switch connections and cable TV (CATV).

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**Loose Buffer:** The fiber is contained in a plastic tube for protection. To give better waterproofing protection to the fiber, the space between the tubes is sometimes gel-filled. Typical applications are outside installations. One drawback of loose buffer construction is a larger bending radius. Gel-filled cable requires the installer to spend time cleaning and drying the individual cables, and cleaning up the site afterwards.

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**Tight Buffer:** Buffer layers of plastic and yarn material are applied over the fiber. Results in a smaller cable diameter with a smaller bending radius. Typical applications are patch cords and local area network connections. At least one mfr. produces this type of cable for inside/outside use.

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**Ribbon Cable:** Typically 12 coated fibers are bonded together to form a ribbon. There are higher density ribbons (x100) which have the advantage of being mass-terminated into array connectors. A disadvantage is that they are often harder, and require special tools to terminate and splice.

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Fiber Connectors: There are a lot of different types of connectors, but the ones commonly found in LAN/MAN/WAN installations are:

FSD - Fixed Shroud Device, such as the FDDI MIC dual-fiber connector.

SC - A push-pull connector. The international standard. The SC connectors are recommended in SP-2840A. The SC connector has the advantage (over ST) of being duplexed into a single connector clip with both transmit/receive fibers.

SMA - Threaded connector, not much used anymore because of losses that change with each disconnection and reconnection.

ST - Keyed, bayonet-style connector, very commonly used.

What type of equipment do you use to test fiber optic cable?

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Continuity tester: used to identify a fiber, and detect a break. One type resembles a f/o connector attached to a flashlight.

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Fault locator: used to determine exact location of a break. Works by shining a very bright visible light into the strand. At the break, this light is visible through the cable jacket.

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Tone Generator and Tracer: used to identify a cable midspan or to locate a strand at its far end. Similar in purpose to the tone testers used on copper cable. The tone generator imposes a steady or warbling audio tone on light passing down the cable. The tracer detects and recovers the tone from light lost through the cable jacket as a result of bending the cable slightly.

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Optical Source and Power Meter: used to measure the end-to-end loss through a f/o strand, or system of cable, connectors and patch cables. Measurements are more accurate than an OTDR.

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Optical Time Domain Reflectometer (OTDR): used to measure the length of a cable, and detect any flaws in it. Can also be used to measure end-to-end loss, although less accurately than a power meter.

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Fiber Talk set: allows using a pair of f/o strands as a telephone line.

Where can I find ISDN Cabling Guidelines?

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The North American ISDN Users Forum (NIUF) has produced a document titled \_ISDN Wiring and Powering Guidelines\_ NIUF #433-94 which describes residence and small business ISDN cabling.

How do you test unshielded twisted pair cables?

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Many of the problems encountered in UTP cable plants are a result of miswired patch cables, jacks and crossconnects. Horizontal and riser distribution cables and patch cables are wired straight through end-to-end -- pin 1 at one end should be connected to pin 1 at the other. (Crossover patch cables are an exception, as described later). Normally, jacks and crossconnects are designed so that the installer always punches down the cable pairs in a standard order. The white striped lead is usually punched down first, followed by the solid color. The jack's internal wiring connects each pair to the correct pins, according to the assignment scheme for which the jack is designed: EIA-568A, 568B, USOC or whatever. (One source of problems is an installation in which USOC jacks are mixed with EIA-568A or 568B. Everything appears to be punched down correctly, but some cables work and others do not).

Wiremap Tests: Wiremap tests will check all lines in the cable for all of the following errors:

Open: Lack of continuity between pins at both ends of the cable.

Short: Two or more lines short-circuited together.

Crossed pair: A pair is connected to different pins at each end (example: pair 1 is connected to pins 4&5 at one end, and pins 1&2 at the other).

Reversed pair: The two lines in a pair are connected to opposite pins at each end of the cable (example: the line on pin 1 is connected to pin 2 at the other end, the line on pin 2 is connected to line 1). Also called a polarity reversal or tip-and-ring reversal.

Split pair: One line from each of two pairs is connected as if it were a pair (example: the Blue and White-Orange lines are

connected to pins 4&5, White-Blue and Orange to pins 3&6). The result is excessive Near End Crosstalk (NEXT), which wastes 10Base-T bandwidth and usually prevents 16 Mb/s token-ring from working at all.

**Length Tests:** Checking cable length is usually done using a time domain reflectometer (TDR), which transmits a pulse down the cable, and measures the elapsed time until it receives a reflection from the far end of the cable. Each type of cable transmits signals at something less than the speed of light. This factor is called the nominal velocity of propagation (NVP), expressed as a decimal fraction of the speed of light. (UTP has an NVP of approximately 0.59-0.65). From the elapsed time and the NVP, the TDR calculates the cable's length. A TDR may be a special-purpose unit such as the Tektronix 1503, or may be built into a handheld cable tester.

**Testing for Impulse Noise:** The 10Base-T standard defines limits for the voltage and number of occurrences/minute of impulse noise occurring in several frequency ranges. Many of the handheld cable testers include the capability to test for this.

What is Near-End Crosstalk (NEXT)?

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Imagine yourself speaking into a telephone. Normally, as you speak you can hear the person on the other end and also hear yourself through the handset. Imagine how it would sound if your voice was amplified so it was louder than the other person's. Each time you spoke you'd be deaf to anything coming from the other end. A cable with inadequate immunity to NEXT couples so much of the signal being transmitted back onto the receive pair (or pairs) that incoming signals are unintelligible. Cable and connecting hardware installed using poor practices can have their NEXT performance reduced by as much as a whole Category.

What is signal attenuation?

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A signal traveling on a cable becomes weaker the further it travels. Each interconnection also reduces its strength. At some point the signal becomes too weak for the network hardware to interpret reliably. Particularly at higher frequencies (10MHz and up) UTP cable attenuates signals much sooner than does co-axial or shielded twisted pair cable. Knowing the attenuation (and NEXT) of a link allows you to determine whether it will function for a particular access method, and how much margin is available to accommodate increased losses due to temperature changes, aging, etc.