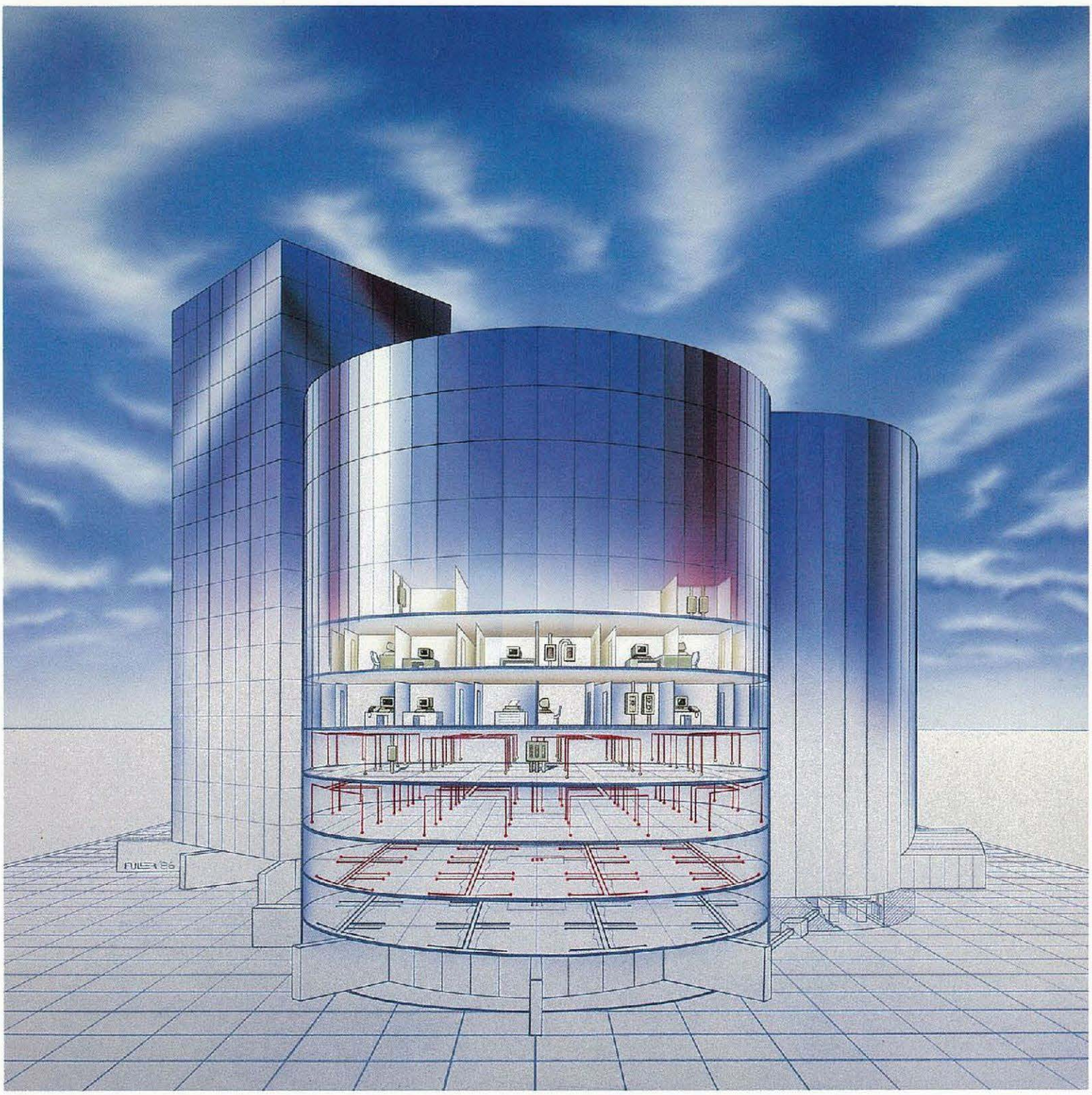
AT&T

Premises Distribution System



Component Guide

Premises Distribution System Component Guide

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Contents

About This Guide

This guide describes all the components that have been tested and approved for the AT&T Premises Distribution System (PDS). These components have been divided into two categories. Those designated in the table of contents with an asterisk (*) will be used for the majority of PDS installations, and will be referred to as the **core components**. The other components, referred to as the **optional components**, are essential to some systems but are less commonly used than the core components.

The guide itself is divided into six sections, corresponding to the six PDS component families:

- **Transmission media** includes a variety of cords and cables, both wire and fiber, for transmitting voice, data, and other communications signals.
- **Closures, cross connects, and interconnects** includes the special cabinets that hold and protect cables at points where they are spliced, and the frames and modular components that serve as connecting points, also called administration points, where the circuits of a distribution system can be conveniently linked, routed, and rerouted.
- **Connectors, plugs, and jacks** includes the connectors, plugs, connecting blocks, and information outlets for both wire and fiber.
- **Adapters** includes the adapters used to make connections between various wire cables.
- **Electrical protection devices** includes the protector panels and protector units used to limit harmful electrical power surges that can damage distribution system equipment.
- **Tools and support hardware** includes the modular cabinets, brackets, clips, clamps, and other equipment necessary to house and support cable runs and connections.

At the beginning of each section, there is an introduction that gives general information about the components covered in that section. These introductions discuss the physical properties of the components, including the reasons certain components are used in particular situations; define terms that will be used in the descriptions of individual components; and explain the codes developed by AT&T that are used when ordering components for a distribution system.

Each component featured in this guide is used in one or more of the six subsystems, or functional groupings, that comprise the AT&T Premises Distribution System. These subsystems are specified in the upper right-hand corner of each component listing. When linked to one another, the subsystems provide a complete, integrated distribution system. In most cases, the names of the subsystems are derived from the functions they serve. The individual subsystems are described below.

When a premises distribution system encompasses more than one building, the components that facilitate communication between buildings constitute the **campus subsystem**. This subsystem includes wire cable, optical fiber cable, and connectors to link the buildings on a campus; and electrical protection devices to prevent potential harm when cables are exposed to lightning and/or power.

The voice and data equipment common to a building's entire distribution system is usually stored and maintained in the equipment room. The **equipment wiring subsystem** consists of the cable, connectors, and associated support hardware that interconnect the various units in an equipment room.

The main cable route in a building, running from the equipment room (often in the basement) to other distribution connecting points, is called the **riser subsystem**. This subsystem consists of all the wire and/or optical fiber cable and the support hardware necessary to link the riser cable, run vertically between floors, to other locations. The connecting points for the riser subsystem commonly include a cross connect in a backbone or riser closet, a network interface, a connection with interbuilding facilities (the campus subsystem), or a computer room.

The circuits in the riser subsystem must be extended to information outlets (IOs), or wall jacks, at user work locations. The **horizontal wiring subsystem** joins the riser cable and information outlets; it is always located on one floor and always terminates in an information outlet at one end.

The information outlets must, in turn, be connected to terminal devices at work locations. The **work location wiring subsystem** consists of the mounting cords, extension cords, and connectors that bridge the distance between a terminal and an information outlet.

Finally, every distribution system includes cross connects, interconnects, and information outlets that serve as administration points for routing and rerouting circuits. Called the **administration subsystem**, these components link all the other subsystems.

Section 1: Transmission Media

Contents

Fiber Cable

Introduction to Transmission Media

The AT&T Premises Distribution System (PDS) includes mounting cords used to connect terminal equipment to information outlets; wire cables used in the horizontal, riser, and campus subsystems; and optical fiber cables used, at present, mainly in the riser and campus subsystems.

Both the wire and fiber cables used in PDS may be divided into two basic categories: inside cable and outside cable. These cables differ in function and construction. Designed for use within buildings, inside cable has an air core and a flame-retardant sheath. Where a cable is designated for plenum use, it also meets specific requirements for not producing toxic smoke in the event of a fire.

Outside cable, which is run between buildings in a campus environment, is designed to meet the needs of the particular environment in which it is installed. Specific cables are designed for one of the three common kinds of installation. Underground (in-conduit) cable, installed in an underground system of conduit and manholes, consists of air-core cable covered by a special protective sheath. Direct-buried cable, which is set in a trench, unprotected by conduit, requires a waterproofing compound and additional protective coverings. Aerial cable, which is supported on poles and suspended between buildings, has varying features, such as lightning protection, depending on the environment.

Certain types of inside cable and outside cable can be ordered from the factory, either connectorized or unconnectorized. For example, where the length of a cable run can be measured exactly, or where a fiber cable is run directly to an interconnect or cross-connect module, connectorized cable will save installation time, because all the precision work is already completed. On the other hand, where exact cable runs are unknown or conduits are nearly full, it makes sense to order unconnectorized cable for greater flexibility and ease of pulling.

Regardless of whether it has primarily wire or optical fiber transmission media, every AT&T Premises Distribution System requires mounting cords at work locations to connect terminal devices or auxiliary equipment to information outlets.

Wire Cable

Each wire cable used in PDS consists of a core of 24-gauge copper conductors* that are annealed, that is, put through a special heating process during manufacturing that makes them resistant to the flex and vibration stresses encountered in typical applications, and able to withstand damage during stripping and termination of the wire.

Solid copper conductors are used for some applications, and stranded copper conductors for others. In stranded copper construction, a specified number of small-gauge wires are twisted or stranded together to form a unit. Solid conductors are less costly than stranded, have better conductivity, and are easier to terminate; stranded conductors, however, are more flexible. In addition, a scratch or nick that occurs during stripping will usually be a far less serious problem with a stranded conductor than similar damage to a solid wire conductor.

Conductors are covered by an insulation, called a dielectric, which prevents contact between conductors or between a conductor and its environment, and thus controls the flow of current through the conductor. Most insulation in PDS cable consists of extruded thermoplastics, which are plastics that soften and flow when heated and become firm when cooled. Extrusion refers to a manufacturing process that involves heating the material and forcing it through a die, which results in uniform, homogeneous insulation.

An important characteristic of conductors and dielectrics is the property, known as capacitance, that permits the storage of electrically separated charges whenever a difference in potential exists between conductors. The ratio of the capacitance of an insulated wire to that of the same wire uninsulated in air, called the wire's dielectric constant, is used as a measure in selecting an insulation material. Generally, a low dielectric constant is desirable.

Some cables include a layer wrapped around the core of insulated conductors, which further insulates that group of conductors. This extra layer, called a core wrap, gives the finished cable extra protection from stress and heat, improves the roundness of a cable to give it a more uniform appearance, and helps to isolate the cable core from electrical discharges in the environment. Some core wraps are also designed to retard a cable's flame and smoke generation.

Sometimes a metallic covering or envelope, called a shield, is added to the cable to minimize the effect of external electromagnetic signals on the cable and to reduce the radiated signal from the cable to an acceptable level.

Finally, a protective outer coating, called the jacket, surrounds the cable's core and wires, protecting them against mechanical damage, moisture, and other harmful elements. Made of the same kinds of materials as conductor insulation, cable jackets can also enhance the physical, electrical, or chemical properties of the underlying insulation, and of the cable as a whole. In some cases, the cable jacket is bonded to another material inside the jacket, forming a protective sheath.

* There are two exceptions to 24-gauge wire in PDS: ground wire is available with 6-, 10-, or 12-gauge conductors; undercarpet cable and DUCTPIC™ underground cable are available only with 26-gauge conductors.

Inside Wire Cable

Inside wire cable includes nonplenum, plenum, riser, and undercarpet cables, as well as ground and cross-connecting wires.

Nonplenum (DIW) cable is the general-purpose wire in PDS; larger pair sizes are used to connect the equipment room to the riser subsystem or to satellite closets, while smaller pair sizes are used to connect satellite closets to information outlets.

For plenum applications, bulk plenum cable—with either TEFLON® insulation and a HALAR® jacket, or HALAR insulation and a HALAR jacket—offers low-flame and low-smoke producing qualities. Because of its lower dielectric constant, TEFLON/HALAR cable provides a higher bit rate than HALAR/HALAR over longer distances, but differences over shorter distances are negligible.

Riser cable, which has a fire-retardant sheath and is installed in the riser shaft without conduit, serves the riser subsystem.

When short runs of cable must be run in open office spaces, flat, undercarpet cable, either unconnectorized for field connectorization or connectorized with modular plugs, helps avoid obstruction and preserves aesthetic appearances.

As its name implies, ground wire is used to ensure electrical safety by grounding connections and outside wiring.

At the cross connect there are commonly two ways to connect circuits: with F Cross-Connecting Wire, which must be cut down at the cross connect by the installer, or with patch cords, which are simply pushed on and pulled off the connecting block, thus facilitating the administration of cross-connect fields.

Outside Wire Cable

The selection of outside cable is governed by conditions at the installation site and economic considerations.

For underground (in-conduit) cable applications where duct congestion is a concern, underground cable with DUCTPIC insulation provides standard capacitance in a small cable diameter. At sites where steam entering the duct poses a particular threat, STEAMPETH underground cable is used.

For direct-buried cable applications, waterproof cable filled with FLEXGEL® filling compound and protected by an ASP (aluminum-steel-polyethylene) sheath provides protection against moisture, physical damage, and burrowing animals.

Aerial cable can be either self-supporting or non-self-supporting. Self-supporting aerial cable consists of a galvanized-steel support strand flooded with a moisture-proofing compound and covered with an ALPETH (aluminum-polyethylene) sheath. Where damage to the cable sheath, especially by wildlife, is likely, reinforced self-supporting aerial cable is used. Similar to self-supporting aerial cable, this cable offers added reinforcement in the form of a soldered steel wrap flooded with moisture-proofing compound. Non-self-supporting aerial cable, which requires that the cable be lashed to a supporting steel strand attached to telephone poles, is an air-core cable with an aluminum shield, and is available with any of three sheaths, depending on the application. The standard sheath for PDS applications where lightning exposure is at a minimum is ALPETH. For lightning protection, a PAP (polyethylene-aluminum-polyethylene) sheath is recommended. For additional lightning protection and protection from mechanical damage or wildlife, a PASP (polyethylene-aluminum-steel-polyethylene) sheath is preferred.

Code Systems for Inside and Outside Wire Cable

The variety of cables available are coded according to their physical characteristics.

Wire cable, whether for inside or outside plant, is designated by a 4-character alphabetic code. The first letter designates the type of cable design; the second, the type of insulation; the third, the gauge and type of metal used for the conductor; and the fourth, the type of sheath.

CODE	L	L	L	L
POSITION	1	2	3	4

Position	Meaning	Options
1	Cable design	A - Waterproof, pulp air core, or riser B - Air core C - Pulp MUP, Pseudo-MUP, or high potential waterproof D - DUCTPIC or STEAMPETH
2	Insulation type	C - Dual expanded polyolefin F - Dual expanded polyolefin core with FLEXGEL filling compound K - Solid polyolefin, air core R - Expanded polyethylene/polyvinyl chloride
3	Gauge and metal of conductor	M - 24 AWG copper
4	Sheath type	A - ALPETH G - PAP H - PASP M - ALVYN N - Bonded STEAMPETH P - Reinforced self-supporting S - Self-supporting W - ASP Z - Bonded STALPETH

Example: BKMA cable is an air-core cable with polyolefin insulation around 24-gauge conductors with an ALPETH sheath.

Mounting Cords

All PDS mounting cords are 24-gauge cables with stranded conductors. Each conductor consists of seven strands of fine-gauge copper grouped together to form a single electrical path, a construction that furnishes a good balance between flexibility and relatively low electrical resistance.

Each stranded conductor is individually insulated with a thermoplastic dielectric, and the conductors are arranged in twisted pairs to minimize or eliminate crosstalk and decrease unbalanced mutual capacitance.

A polyvinyl chloride (PVC) jacket covers each mounting cord and protects against mechanical damage, moisture, and other harmful elements. PVC is used because it provides flame retardance and abrasion resistance at a reasonable cost.

PDS mounting cords are terminated, most of them at both ends, with factory-installed polycarbonate modular plugs. In some cases, such as the D8AC Mounting Cord, this plug is "keyed," that is, uniquely shaped for a particular application so that it cannot be mistakenly inserted in the wrong outlet. The plug clamps the insulated conductors and is specially designed for a long flex life. The plug's locking tab holds the plug securely in place when it is inserted in a modular jack, yet it has enough flexibility to be inserted thousands of times without breaking.

Fiber Cable

Optical fiber cable employs a technology in which light is transmitted along the inside of a thin glass or plastic fiber. The AT&T Premises Distribution System uses glass fibers, consisting of a germanium core surrounded by a silica cladding, each of which is protected by a dual construction coating that cushions the fiber against microbending losses, provides abrasion resistance, and preserves its mechanical strength.

One way to classify optical fiber cable is by mode, which is the path (single-mode) or paths (multimode) that light can travel in the cable; mode is a function of the size of a cable's core, with only the smallest diameters being classified as single-mode. The core's refractive index is the ratio of the speed of light in a vacuum to the speed of light in the cable's core.

With a 62.5-micron core, the optical fiber cable used in the AT&T Premises Distribution System is a multimode cable, meaning that light disperses into multiple lightwaves, each of which takes its own path. Since the different lightwaves travel at different speeds, this dispersion can cause losses and impose limitations on a system over long distances. To avoid

this problem, PDS fiber cable has a core with a nonuniform refractive index, called a graded index; the core's refractive index is greatest at the center and tapers off toward the edges of the core. This increases efficiency since the light farther from the core's center travels a longer distance, but at a higher speed, than the light at the center, meaning that all the rays reach the same point at approximately the same time.

PDS optical fiber cable includes two designs—ribbon and LIGHTPACK™. Ribbon cable, which consists of twelve fibers set side by side and laminated between clear pressure-sensitive adhesive tapes, is available in both air-core and filled constructions. The filled variety uses a specially formulated compound that remains soft over a wide temperature range; it behaves as an elastic solid during small strain loads or, if the yield stress is exceeded, acts as a liquid to allow fiber movement in the core area. Ribbon cable that has been connectorized at the factory is equipped on both ends with hardware that protects the array connectorized ribbons within. Ribbon cable can be used with individual fiber splicing systems.

LIGHTPACK cable consists of a bundle of up to 36 fibers held together loosely with a spirally wrapped binder; up to eight bundles lie inside a large tube. LIGHTPACK cables are factory-connectorized with arrays or unconnectorized (individually fiber spliced).

PDS includes four sheath designs to meet the specific requirements of underground, buried, aerial, and building applications:

- A crossply metallic sheath consists of four layers, which are, starting from the core tube outward: steel strength members, an intermediate jacket of high-density polyethylene, additional steel strength members, and an outer layer of high-density polyethylene.
- A crossply nonmetallic sheath using fiberglass strength members is also available. Like steel strength members, the fiberglass members provide mechanical protection; however, since the nonmetallic sheath contains no conductive elements, it provides a high degree of immunity from lightning damage or induction.
- A rodent-lightning protective sheath has the same construction as the crossply metallic sheath but incorporates an extra layer of a stainless steel laminate.
- A PVC sheath incorporates nonmetallic strength members and a flame-retardant PVC jacket. This cable is UL listed for use in riser applications.

Inside Fiber Cable

Inside fiber cable includes three types of cable used in buildings: the first two types, lightguide riser cable and lightguide building cable (LGBC), are used primarily in the backbone subsystem. All inside fiber cables are UL listed. A lightguide riser cable may consist of from one to twelve ribbons, with up to twelve fibers in each ribbon. From 2 to 136 guaranteed fibers may be contained in a single ribbon cable having an outer sheath diameter of 0.48 inches.

A lightguide building cable (LGBC) may consist of 2, 4, 6, 12, 18, 34, or 36 fibers; the single fibers in this type of cable can be spliced to the fibers in a LIGHTPACK cable or to individual fibers separated from a ribbon cable, using the mechanical multimode splice. If LGBC is run to a cross-connect or interconnect field, the fibers can be field-connectorized before installation.

The third type of inside cable, interconnect cable, is generally used as a patch cord between cables at optical cross-connect fields or as a link between cross-connect or interconnect modules and optical/electronic equipment. The sturdy construction of this cable makes it ideal for applications in which fibers must be rearranged or moved. In most cases, the distances between points on the cross-connect field or between the cross-connect field and optical equipment can be determined in advance, and so connectorized cables should be used (see the FL cables); where these distances are not known in advance, unconnectorized interconnect cable, which can be field connectorized, should be used (see the 1860 Series cables).

Outside Fiber Cable

Used in underground, direct-buried, and aerial applications between buildings, outside fiber cable is filled with a specially formulated compound that protects the fibers from environmental damage, such as moisture. The sheath of outside cable, reinforced with steel or fiberglass, provides additional protection from the elements. This category encompasses ribbon cable and LIGHTPACK cable, as described above. LIGHTPACK cable is used when less than 96 fibers are needed, while ribbon cable is generally used when a high fiber count is required.

As with wire cable, the choice of a particular type of outside cable is determined in part by the conditions at the installation site and, in part, by economic considerations.

For underground plant applications in which neither lightning nor rodents present an environmental problem, standard filled, steel-reinforced crossply cable or LIGHTPACK cable is the most economical choice (see 3BAX or 3DAX). If there is a small possibility of lightning damage, these cables can be pulled into buried PVC ducts. In high lightning areas, cables with fiberglass-reinforced sheaths provide excellent immunity from lightning damage, since these cables contain no metallic elements (see 3BFX or 3DFX).

For direct buried applications (either plowed or trenched) the standard metallic crossply cable or LIGHTPACK cable (see 3BAX or 3DAX) is again the best choice, except where lightning and rodents pre-

sent major hazards; there, a cable offering protection from these hazards should be used (see 3BHX or 3DHX).

For aerial applications in which lightning protection is required, fiberglass-reinforced cable, which has no metallic strength members, is the best choice (see 3BFX or 3DFX). If both lightning and rodent protection are needed, a cable offering protection from both of these hazards should be used (see 3BHX or 3DHX).

Code Systems for Inside and Outside Fiber Cables

Since all PDS cable is available in a variety of cable sheaths, core designs, and fiber counts, the cables are coded according to their physical characteristics.

The different types of ribbon and LIGHTPACK cables are designated using a 7-character alphanumeric code. As shown below, the first four characters define the fiber type and the construction of the cable; the following three characters indicate the number of guaranteed fibers.

CODE	N	L	L	L	—	N	N	N
POSITION	1	2	3	4	—	5	6	7

Example: A 3DAX cable is a multimode cable with a 62.5-μm core, has a LIGHTPACK filled core, a metallic crossply sheath, and no oversheath.

Position	Meaning	Options
1	Fiber design	1 - Multimode with 50-μm core 3 - Multimode with 62.5-μm core (PDS standard) 4 - Single mode
2	Cable core design	A - Ribbon air core B - Ribbon filled core D - LIGHTPACK filled core
3	Sheath design	A - Metallic crossply E - PVC flame-retardant crossply* F - Dielectric H - Rodent and lightning protection
4	Oversheath design	B - B oversheath X - No oversheath required
5-7	No. of guaranteed fibers (in even numbers only)	004-136 for ribbon cables 004-048 for LIGHTPACK cables

* The PVC flame-retardant crossply sheath is only available on ribbon air-core cables.

* There are two exceptions to 24-gauge wire in PDS: ground wire is available with 6-, 10-, or 12-gauge conductors; undercarpet cable and DUCTPIC™ underground cable are available only with 26-gauge conductors.

The two types of LGBC cables (plenum and nonplenum) are also designated using a 7-character alphanumeric code. The first three numbers refer to the number of fibers in the cable; the last three characters indicate the type of fiber and how it is to be used.

CODE	LGBC-	N	N	N	A	–	L	L	X
POSITION		1	2	3	4	–	5	6	7

Example: The product code LGBC-012A-LPX describes a 12-fiber, multimode cable with a 62.5-μm core, designed for plenum use.

All connectorized interconnection cables used in PDS are designated as FL1P-P, FL2P-P; FL1P-B, FL2P-B; or FL1P-A, FL2P-A. The number in the code refers to the number of fibers in the cable. The letter "P" after the hyphen stands for the (straight-tip) ST™ (P2020A-C-125) Connector Plug; the letter "B" after the hyphen stands for the data link 1005B Connector Plug; the letter "A" after the hyphen stands for the biconic 1006A Connector Plug.

All unconnectorized interconnection cables used in PDS are simply provided with a number followed by a letter: 1860A, 1861A, 1862A.

Position	Meaning	Options
1-3	Fiber count	002 004 006 012
4	Space holder for future use	A
5	Fiber design	L - Multimode with 62.5μm core S - Single mode
6	Fiber use	P - Plenum R - Riser
7	Space holder for future use	X

Modular Null Modem Cable

Applications

The Modular Null Modem Cable is used to connect the Premises Lightwave System (PLS) Model 2731 Multiplexer to the AT&T Premises Distribution System.

Description

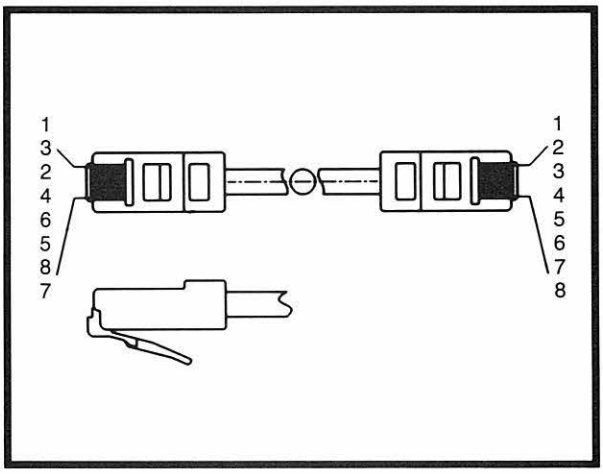
The null modem cable is a 4-pair round cord covered by a PVC jacket, with a modular plug at each end. It has pins 2 and 3, 5 and 6, and 7 and 8 crossed over. The cable is 3 feet long.

Specifications

Physical Specifications

Gauge: 24 AWG
Pair Size: 4
Length: 3 ft

Product Code	Comcode
NCA-3444-10	105 224 992



Mounting Cord, D6AP

Applications

The D6AP Mounting Cord is used at work locations to provide power to auxiliary equipment, such as the Z3A Asynchronous Data Unit (ADU). It can also be used to connect a single-line analog telephone to an information outlet, and provides additional crosstalk protection for older-model single-line telephones.

Description

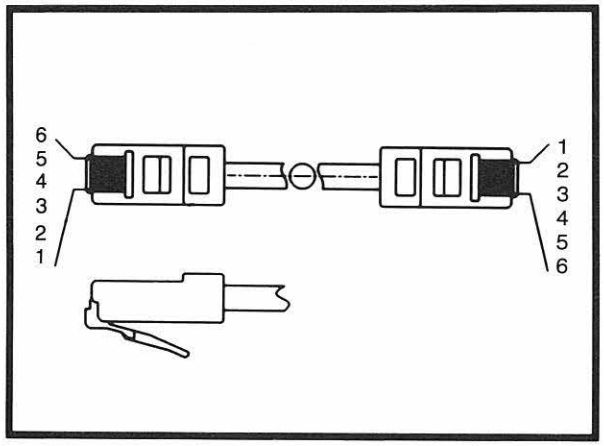
The D6AP Mounting Cord consists of a 3-pair (two twisted and one straight) round cord with stranded copper conductors and a PVC jacket. It has a 6-position modular plug at each end and comes in three standard lengths.

Specifications

Physical Specifications

Gauge: 24 AWG
Pair Size: 3
Lengths: 7 ft, 14 ft, 25 ft

Product Code	Length (Ft)	Comcode
D6AP-87	7	102 937 620
D6AP-87	14	102 937 604
D6AP-87	25	102 937 588



Mounting Cord, D8AC

Applications

The D8AC Mounting Cord is used at work locations to connect a speakerphone to an information outlet.

Description

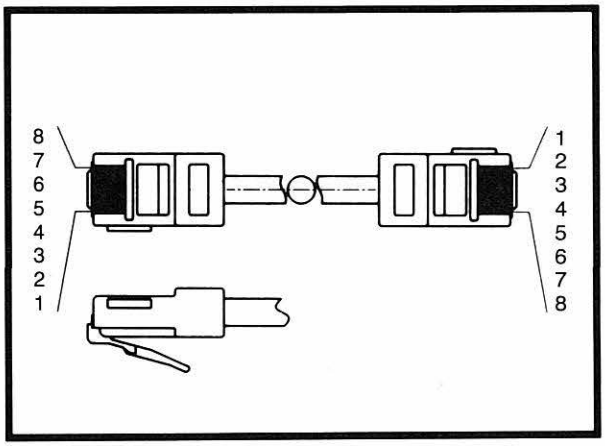
The D8AC Mounting Cord consists of a 4-pair round cord with stranded copper conductors and a PVC jacket. It has an 8-position, keyed, modular plug at each end. It is similar to the D8W Mounting Cord, except for its plug profile, which allows the plug to be inserted into a speakerphone jack, but not into a standard voice jack.

Specifications

Physical Specifications

Gauge: 24 AWG
Pair Size: 4
Lengths: 1.5 ft, 4 ft, 14 ft

Product Code	Length (Ft)	Comcode
D8AC-87	1.5	103 796 199
D8AC-87	4	103 796 215
D8AC-87	14	103 796 231



Mounting Cord, D8AF

Applications

The D8AF Mounting Cord is used as an extension cord at work locations to connect a terminal device to an information outlet when the standard mounting cord cannot bridge the distance between the device and the outlet.

Description

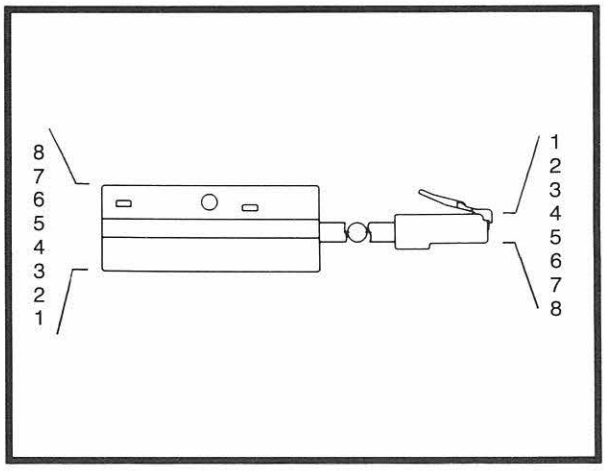
The D8AF Mounting Cord consists of a 4-pair, stranded conductor round cord with an 8-position modular plug at one end and an 8-position modular jack on the other.

Specifications

Physical Specifications

Gauge: 24 AWG
Pair Size: 4
Lengths: 14 ft, 25 ft

Product Code	Length (Ft)	Comcode
D8AF-87	14	104 073 655
D8AF-87	25	104 073 663



Mounting Cord, D8AM

Applications

The D8AM Mounting Cord is used at work locations to connect terminal equipment to an information outlet when the transmit and receive pairs must be reversed.

Description

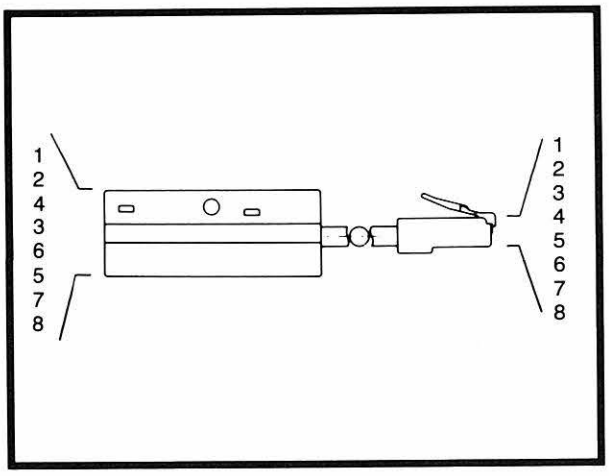
The D8AM Mounting Cord consists of a 4-pair round cord with stranded copper conductors and a PVC jacket; pairs 2 and 3 are crossed over. It has an 8-pin modular jack at one end and an 8-pin modular plug at the other.

Specifications

Physical Specifications

Gauge: 24 AWG
Pair Size: 4
Length: 6 in.

Product Code	Comcode
D8AM	104 154 414



Mounting Cord, D8W

Applications

The D8W Mounting Cord is used at work locations to connect a terminal device, either voice or data, to an information outlet.

Description

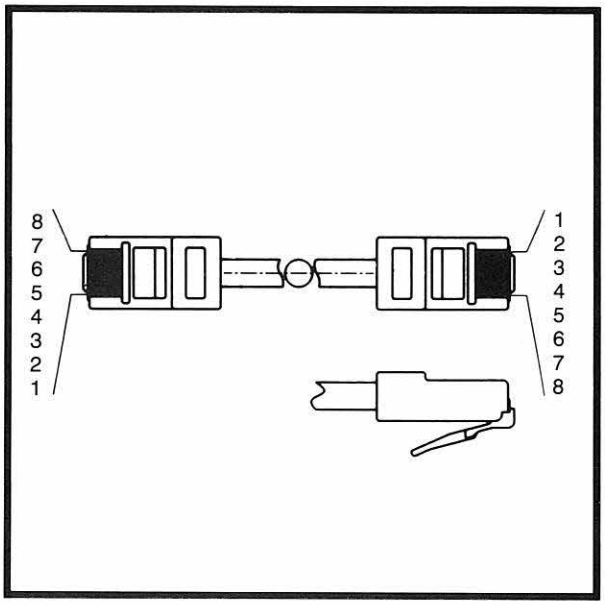
The D8W Mounting Cord consists of a 4-pair, stranded conductor round cord with an 8-position plug on each end. The cord is wired straight through.

Specifications

Physical Specifications

Gauge: 24 AWG
Pair Size: 4
Lengths: 1 ft, 2.5 ft, 7 ft, 14 ft, 25 ft

Product Code	Color	Length (Ft)	Comcode
D8W-50	Ivory	1	102 796 943
D8W-50	Ivory	7	102 796 976
D8W-50	Ivory	14	102 796 968
D8W-50	Ivory	25	102 796 950
D8W-87	Satin Silver	1	103 786 760
D8W-87	Satin Silver	2.5	104 160 148
D8W-87	Satin Silver	7	103 786 786
D8W-87	Satin Silver	14	103 786 802
D8W-87	Satin Silver	25	103 786 828



Patch Cord, 110 Patch Panel System, 1-, 2-, 3-, and 4-Pair

Applications

The 110 Patch Panel System Patch Cord is used to route and reroute circuits. The 1-pair patch cord is used to patch across a single pair of wires. The 2-pair patch cord is used to patch across two pairs of wires. The 3-pair patch cord is the standard cord used between the purple (PBX) and white (distribution) fields, and between the blue (station) and orange (data) fields. The 4-pair patch cord is used for special applications, when there is need to patch all eight wires.

Description

The patch cord is a connectorized jumper cord that mates with the 110C Connecting Block mounted on the 110 Wiring Block. Patch cord connectors are built in such a way that they prevent accidental polarity reversal or pair splitting, thus ensuring error-free connections. They are available in lengths from 2 to 19 feet, and come in packages of ten.

Specifications

Physical Specifications

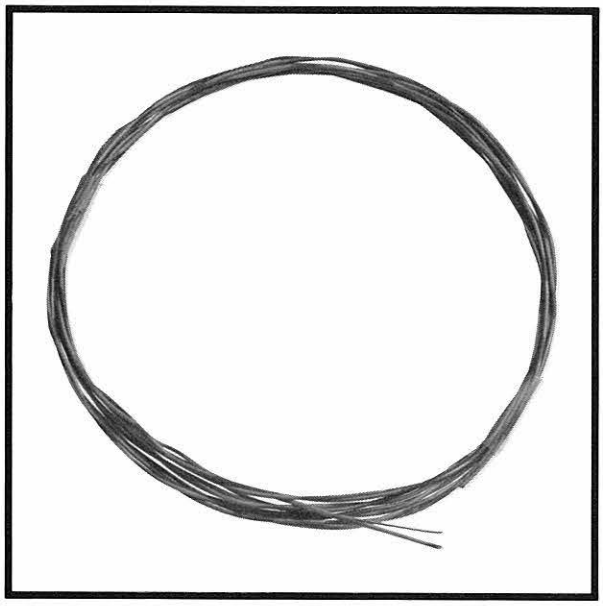
Pair Size: 1, 2, 3, 4
Lengths: 2 ft, 3 ft, 4 ft, 5 ft, 6 ft, 7 ft, 8 ft, 9 ft, 19 ft

Product Code	Pair Size	Length (Ft)	Comcode	Product Code	Pair Size	Length (Ft)	Comcode
110P2A2B	1	2	104 324 991	110P6A2B	3	2	103 882 965
110P2A3B	1	3	104 325 006	110P6A3B	3	3	103 882 957
110P2A4B	1	4	104 325 014	110P6A4B	3	4	103 882 940
110P2A5B	1	5	103 908 349	110P6A5B	3	5	103 882 973
110P2A6B	1	6	104 325 022	110P6A6B	3	6	103 882 932
110P2A7B	1	7	104 325 030	110P6A7B	3	7	103 882 924
110P2A8B	1	8	104 325 048	110P6A8B	3	8	103 882 916
110P2A9B	1	9	103 908 356	110P6A9B	3	9	103 882 908
110P2A19B	1	19	103 908 364	110P6A19B	3	19	103 882 890
110P4A2B	2	2	104 317 318	110P8A2B	4	2	104 317 409
110P4A3B	2	3	104 317 326	110P8A3B	4	3	104 317 417
110P4A4B	2	4	104 317 334	110P8A4B	4	4	104 317 425
110P4A5B	2	5	104 317 342	110P8A5B	4	5	104 317 433
110P4A6B	2	6	104 317 359	110P8A6B	4	6	104 317 441
110P4A7B	2	7	104 317 367	110P8A7B	4	7	104 317 458
110P4A8B	2	8	104 317 375	110P8A8B	4	8	104 317 466
110P4A9B	2	9	104 317 383	110P8A9B	4	9	104 317 474
110P4A19B	2	19	104 317 391	110P8A19B	4	19	104 317 482

F Cross-Connecting Wire

Applications

F Cross-Connecting Wire is used to connect circuits at 110-type cross connects.



Description

F Cross-Connecting Wire has solid annealed copper conductors individually insulated with PVC. The insulation is marked at regular intervals with an additional code for color.

Specifications

Physical Specifications

Gauge: 24 AWG
Pair Size: 1, 2, 3
Outside Diameter: 0.038 in. maximum

Electrical Specifications

DC Resistance: 52 Ohms/1000 ft
Mutual Capacitance: 0.015 μF/1000 ft (maximum)

Product Code	Length (Ft)	Comcode
1	1000	841 506 553
2	1150	841 506 579
3	660	841 506 587

Ground Wire

Applications

There are three types of Ground Wire available for use in the Premises Distribution System:

- 6-Gauge Ground Wire is used to ground connections to protected cable terminals, protector mountings, and groups of station protectors
- 10- or 12-Gauge Ground Wire is used to ground outside plant and station wiring
- B Ground Wire is used for bonding and grounding in the communications zones on utility poles and for upgrading power company grounds.

Description

The 6-, 10-, and 12-Gauge Ground Wires are insulated with PVC. B Ground Wire is a bare, 6-gauge solid copper wire.

Specifications

Physical Specifications

Gauge: 6, 10, 12 AWG

Outside Diameter, Maximum Average Insulated:
- 0.237 in. (6 AWG)
- 0.156 in. (10 AWG)
- 0.133 in. (12 AWG)

Insulation Thickness, Minimum Average:
- 0.028 in. (6 AWG)
- 0.0205 in. (10 AWG)
- 0.0205 in. (12 AWG)

Electrical Specifications

Conductor Resistance:
- 0.415 Ohms/100 ft maximum (6 AWG)
- 1.049 Ohms/100 ft maximum (10 AWG)
- 1.669 Ohms/100 ft maximum (12 AWG)

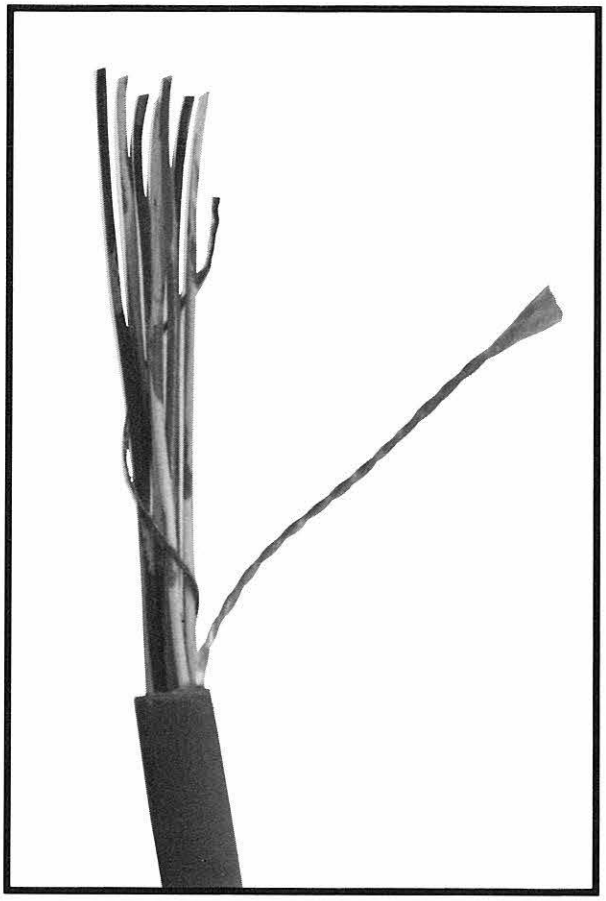
Description	Length (Ft)	Comcode
6 AWG coil	600	401 172 341
6 AWG reel	4000	401 172 341
10 AWG coil	200	401 172 341
12 AWG coil	300	401 172 341
B Ground coil	600*	401 172 424
B Ground reel	4000*	400 292 231

* Order by footage.

Nonplenum (DIW) Cable, Bulk

Applications

Bulk Nonplenum (DIW or "D inside wire") Cable is a general-purpose cable used in many applications in a Premises Distribution System. Larger pair sizes are used for cable runs from the equipment room to riser or satellite closets, while smaller pair sizes are used for connecting satellite closets to information outlets. If run through conduit, it can be used in air-handling plenums.



Description

Nonplenum (DIW) cable consists of solid annealed copper conductors insulated with color-coded PVC; it has a nylon binder and a rip cord to tear back the sheath. The cable has a gray or beige PVC sheath with improved frictional properties, permitting it to be pulled through conduit without using lubricants that can eventually clog conduits and cause corrosion. Nonplenum (DIW) cable is UL listed (type CM and CMR).

Specifications

Physical Specifications

Gauge: 24 AWG
Pair Size: 4, 25, 50, 100, 200
Weight Per 100 Feet: 1.65 lb (4-pair)
Outside Diameter: 0.18 in. (4-pair) to 0.97 in. (200-pair)
Insulation Thickness: 0.006 in.

Electrical Specifications

DC Resistance: 28.6 Ohms/1000 ft (maximum)
Mutual Capacitance: 18 pF/ft
Impedance: 100 Ohms above 1 MHz
Attenuation:
- 0.3 dB/100 ft at 0.1 MHz
- 0.8 dB/100 ft at 1 MHz
- 3.0 dB/100 ft at 10 MHz

Delay: 0.17 μsec/100 ft at 1 MHz
Dielectric Strength: 2000 Vrms between conductors
Bit Rate: supports T1 systems (1.544 mb/s up to 2600 ft)

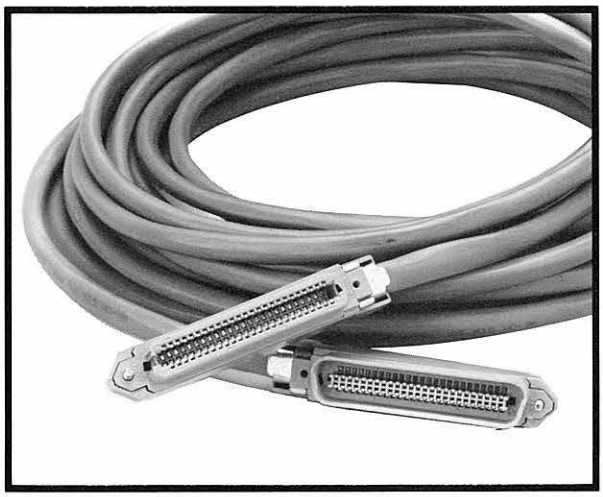
Product Code	Pair Size	Length (Ft)	Color	Packaging	Comcode
DIW 4/24 GY W300	4	300	Gray	WETOTE	403 313 877
DIW 4/24 BG W500	4	500	Beige	WETOTE	105 192 066
DIW 4/24 BG S500	4	500	Beige	Spool*	105 196 950
DIW 4/24 GY W500	4	500	Gray	WETOTE	403 313 935
DIW 4/24 BG W1000	4	1000	Beige	WETOTE	104 316 807
DIW 4/24 BG S1000	4	1000	Beige	Spool	104 309 737
DIW 4/24 GY W1000	4	1000	Gray	WETOTE	403 101 140
DIW 4/24 GY S1000	4	1000	Gray	Spool	103 137 063
DIW 4/24 BL W1000	4	1000	Blue	WETOTE	104 307 814
DIW 4/24 BG R5000	4	5000	Beige	Reel*	
DIW 4/24 GY R5000	4	5000	Gray	Reel	
DIW 4/24 IV R5000	4	5000	Ivory	Reel	
DIW 4/24 BG R16800	4	16800	Beige	Reel	105 135 743
DIW 4/24 GY R16800	4	16800	Gray	Reel	401 606 819
DIW 25/24 BG R1000	25	1000	Beige	Reel	104 316 831
DIW 25/24 GY R1000	25	1000	Gray	Reel	105 003 693
DIW 25/24 BG R5000	25	5000	Beige	Reel	105 164 313
DIW 25/24 GY R5000	25	5000	Gray	Reel	105 164 305
DIW 25/24 GY R6780	25	6780	Gray	Reel	400 025 425
DIW 25/24 GY R11300	25	11300	Gray	Reel	105 133 961
DIW 50/24 BG R1000	50	1000	Beige	Reel	104 316 823
DIW 50/24 GY R1000	50	1000	Gray	Reel	105 004 907
DIW 50/24 BG R5000	50	5000	Beige	Reel	105 164 297
DIW 50/24 GY R5000	50	5000	Gray	Reel	105 164 289
DIW 50/24 GY R4155	50	4155	Gray	Reel	400 025 433
DIW 50/24 GY R5900	50	5900	Gray	Reel	105 133 987
DIW 100/24 BG R1000	100	1000	Beige	Reel	104 317 193
DIW 100/24 GY R1000	100	1000	Gray	Reel	105 004 170
DIW 100/24 GY R2090	100	2090	Gray	Reel	400 025 458
DIW 100/24 GY R3400	100	3400	Gray	Reel	105 134 027
DIW 100/24 GY R3000	100	3000	Gray	Reel	104 273 375
DIW 200/24 GY R3000	200	3000	Gray	Reel	104 273 354

* A spool is less than 1 foot in diameter; a reel is more than 1 foot in diameter.

Nonplenum Cable with 50-Pin Connectors

Applications

Nonplenum Cable with 50-Pin Connectors is used to connect voice switching equipment, terminal devices, data devices, and connectorized distribution cable to the administration subsystem.



Description

The cable consists of solid annealed copper conductors insulated with semirigid gray PVC. It is available with connectors on one end (single-ended) or on both ends (double-ended), and is equipped with 25-pair female, male, or male and female connectors. It comes in standard lengths, ranging from 5 to 200 feet.

Specifications

Physical Specifications

Gauge: 24 AWG
Pair Size: 25
Weight: 8.544 lb/100 ft
Outside Diameter: 0.38 in.
Insulation Thickness: 0.006 in
Jacket Thickness: 0.025 in.

Electrical Specifications

DC Resistance: 28.6 Ohms/1000 ft
Mutual Capacitance: 18 pF/ft
Characteristic Impedance: 100 Ohms above 1 MHz
Attenuation:
- 0.3 dB/100 ft at 0.1 MHz
- 0.8 dB/100 ft at 1 MHz
- 3.0 dB/100 ft at 10 MHz

Delay: 0.17 μsec/100 ft at 1 MHz
Bit Rate: supports T1 systems (1.544 mb/s up to 2600 ft)

Product Code	Connector Type	Length (Ft)	Single- or Double-Ended	Comcode
A25B	Female	5	Single	100 959 113
A25B	Female	10	Single	100 959 139
A25B	Female	15	Single	100 959 162
A25B	Female	25	Single	100 849 918
A25B	Female	30	Single	100 959 246
A25B	Female	50	Single	100 016 765
A25B	Female	75	Single	100 849 926
A25B	Female	100	Single	100 016 773
A25B	Female	150	Single	100 959 428
A25B	Female	200	Single	100 959 477
A25B	Female/Female	5	Double	100 959 105
A25B	Female/Female	10	Double	100 959 147
A25B	Female/Female	15	Double	100 959 170
A25B	Female/Female	20	Double	100 959 212
A25B	Female/Female	30	Double	100 016 781
A25B	Female/Female	50	Double	100 959 261
A25B	Female/Female	75	Double	100 959 303
A25B	Female/Female	100	Double	100 016 807
A25B	Female/Female	200	Double	100 016 815
A25D	Male	10	Single	100 959 931
A25D	Male	15	Single	100 959 949
A25D	Male	25	Single	100 959 964
A25D	Male	50	Single	100 960 004
A25D	Male	75	Single	101 208 908
A25D	Male	100	Single	101 129 484
A25D	Male	150	Single	101 129 492
A25D	Male	200	Single	100 960 053
A25D	Male/Male	10	Double	100 963 982
A25D	Male/Male	15	Double	100 963 990
A25D	Male/Male	25	Double	100 959 972
A25D	Male/Male	50	Double	100 985 571
A25D	Male/Male	75	Double	101 507 077
A25D	Male/Male	100	Double	100 960 046
A25D	Male/Male	150	Double	101 507 796
A25D	Male/Male	200	Double	101 508 281
B25A	Male/Female	5	Double	101 017 326
B25A	Male/Female	10	Double	101 619 336
B25A	Male/Female	15	Double	100 017 334
B25A	Male/Female	20	Double	101 619 450
B25A	Male/Female	30	Double	100 017 342
B25A	Male/Female	60	Double	100 017 359
B25A	Male/Female	100	Double	100 017 367

Plenum Cable, Bulk (HALAR/HALAR)

Applications

Bulk Plenum Cable is used for cable runs between an information outlet and a satellite closet and between the equipment room and the riser or satellite closets. It conforms to the low-flame and low-smoke producing requirements of section 800-3(d) of the National Electrical Code (NEC), it is UL listed (type CMP), and can be used in air-handling plenums or above suspended ceilings without the use of conduits. The cable can be connectorized in the field or terminated on 110-type wiring blocks.

Description

Plenum cable has 24-gauge, twisted-pair copper conductors individually insulated with HALAR and sheathed with an outer jacket of the same material.

Specifications

Physical Specifications

Gauge: 24 AWG
Pair Size: 4, 25, 50, 75, 100
Outside Diameter: 0.16 in. (4-pair)
Insulation Thickness: 0.004 in. (minimum)
Jacket Thickness: 0.006 in. (minimum)

Electrical Specifications

Conductor Resistance: 28.6 Ohms/1000 ft
Mutual Capacitance: 16 pF/ft
Impedance: 100 Ohms above 1 MHz; 600 Ohms at 1 kHz
Attenuation:
  0.3 dB/100 ft at 0.1 MHz
  0.8 dB/100 ft at 1 MHz
Dielectric Strength: 2.6
Bit Rate: supports T1 systems (1.544 mb/s up to 2600 ft)

Product Code	Pair Size	Comcode
2001 004B W1000	4	105 147 631
2001 025B R1000	25	105 147 680
2001 050B R1000	50	105 147 698
2001 075B R1000	75	105 147 706
2001 100B R1000	100	105 147 714

Plenum Cable, Bulk (TEFLON/HALAR)

Applications

Bulk Plenum Cable is used for cable runs from equipment rooms to riser or satellite closets. It conforms to the low-flame and low-smoke-producing requirements of NEC 800-3(d), is UL listed (type CMP), and it can be used in air-handling plenums or above suspended ceilings without the use of conduits. The cable can be connectorized in the field or terminated on 110-type wiring blocks.

Description

This plenum cable has 24-gauge, twisted-pair solid copper conductors individually insulated with TEFLON and sheathed with an outer jacket of HALAR.

Specifications

Physical Specifications

Gauge: 24 AWG
Pair Size: 4, 25, 50, 100
Outside Diameter: 0.16 in. (4-pair)
Insulation Thickness: 0.006 in.
Jacket Thickness:
- 0.006 in. minimum (4-pair)
- 0.008 in. minimum (25-pair)
- 0.015 in. minimum (50- and 100-pair)

Electrical Specifications

DC Resistance: 25.7 Ohms/1000 ft
Mutual Capacitance: 17 pF/ft
Impedance: 90 Ohms above 1 MHz
Attenuation:
- 0.3 dB/100 ft at 0.1 MHz (4-pair)
- 0.8 dB/100 ft at 1.0 MHz (4-pair)
- 3.0 dB/100 ft at 10.0 MHz (4-pair)

Delay: 0.17 μsec per 100 ft at 1.0 MHz
Dielectric Strength: 2.1
Bit Rate: supports T1 systems (1.544 mb/s up to 2600 ft)

Product Code	Pair Size	Weight (Lbs/1000 ft)	Comcode
2021 004B S1000	4	15.23	105 192 199
2021 025B R1000	25	78.93	105 192 249
2021 050B R1000	50	155.13	105 192 264
2021 100B R1000	100	303.21	105 192 306

Riser Cable, ARMM

Applications

ARMM Riser Cable is used in riser shafts where a fire-retardant sheath is necessary to meet the low-flame requirements of NEC 800-3(b). It can be used without conduit and is UL listed (type CMR).

Description

The cable consists of a core of solid copper conductors insulated with a PVC skin over expanded polyethylene. The core is covered by a plastic tape layer and overlaid with a corrugated aluminum shield adhesively bonded to an outer jacket of PVC plastic, thus forming an ALVYN (aluminum-polyvinyl-chloride) sheath.

Specifications

Physical Specifications

Gauge: 24 AWG
Pair Size: 100, 200, 300, 600, 900, 1200, 1800
Weight Per Foot: 0.43 lb (100-pair) to 6.13 lb (1800-pair)
Outside Diameter: 0.89 in. (100-pair) to 3.14 in. (1800-pair)
Insulation Thickness: 0.006 in.
Jacket Thickness: 0.047 in. (100-pair) to 0.108 in. (1800-pair)

Electrical Specifications

DC Resistance: 288 Ohms/loop mi at 68°F (maximum)
Mutual Capacitance: 83 nF/mi at 1000 Hz
Characteristic Impedance:
650 Ohms at 1 kHz
105 Ohms at 1 MHz
Attenuation:
0.062 dB/100 ft at 0.1 MHz
0.65 dB/100 ft at 1 MHz

Product Code	Pair Size	Outside Diameter (In.)	Weight/Foot (Lb)	Comcode
ARMM	100	0.89	0.43	103 562 609
ARMM	200	1.19	0.79	103 562 625
ARMM	300	1.41	1.13	103 562 633
ARMM	600	1.9	2.15	103 562 658
ARMM	900	2.28	3.15	103 562 666
ARMM	1200	2.6	4.14	103 562 674
ARMM	1500	2.78	5.14	103 730 198
ARMM	1800	3.14	6.13	103 562 682

Undercarpet Cable, Bulk

Applications

Bulk Undercarpet Cable is used to preserve aesthetic appearances and avoid obstruction when cable must be run in an open area under a carpet. It can be connectorized on site with modular plugs.

Description

Bulk Undercarpet Cable is a 4-pair flat cable that consists of 26-gauge solid copper conductors insulated with PVC and covered with a flat PVC tape.

Specifications

Physical Specifications

Gauge: 26 AWG
Pair Size: 4
Weight Per Foot: 0.0135 lb/ft
Outer Measurements: 0.041 in. thick x 0.33 in. wide (maximum)
Insulation Thickness: 0.0055 in. (nominal)
Jacket Thickness: 0.006 in. (nominal)
Maximum Break Strength: 80 lb
Minimum Bend Radius: Cable folds over onto itself

Electrical Specifications

DC Resistance: 40 Ohms/1000 ft
Mutual Capacitance: 0.038 μF/1000 ft
Characteristic Impedance: 75 Ohms at 1 MHz
Attenuation: 2.2 dB/100 ft at 1 MHz
Dielectric Strength: 1500 Vac

NOTE: Undercarpet cable can be used in maximum lengths of 35 feet.

Length	Comcode
Customer-specified	403 724 404

Undercarpet Cable with Modular Plugs

Applications

Undercarpet Cable with Modular Plugs is used to connect information outlets to the horizontal wiring subsystem when the cable must be run under a carpet and needs to be connectorized.

Description

Undercarpet Cable with Modular Plugs is a 4-pair flat cable that consists of 26-gauge solid copper conductors insulated with plastic and covered with a PVC tape; it has modular plugs at each end.

Specifications

Physical Specifications

Gauge: 26 AWG
Pair Size: 4
Weight Per Foot: 0.0135 lb/ft
Outer Measurements: 0.041 in. thick x 0.33 in. wide (maximum)
Insulation Thickness: 0.0055 in. (nominal)
Jacket Thickness: 0.006 in. (nominal)
Maximum Break Strength: 80 lb
Minimum Bend Radius: Cable folds over onto itself

Electrical Specifications

DC Resistance: 40 Ohms/1000 ft
Mutual Capacitance: 0.038 μF/1000 ft
Characteristic Impedance: 75 Ohms at 1 MHz
Attenuation: 2.2 dB/100 ft at 1 MHz
Dielectric Strength: 1500 Vac

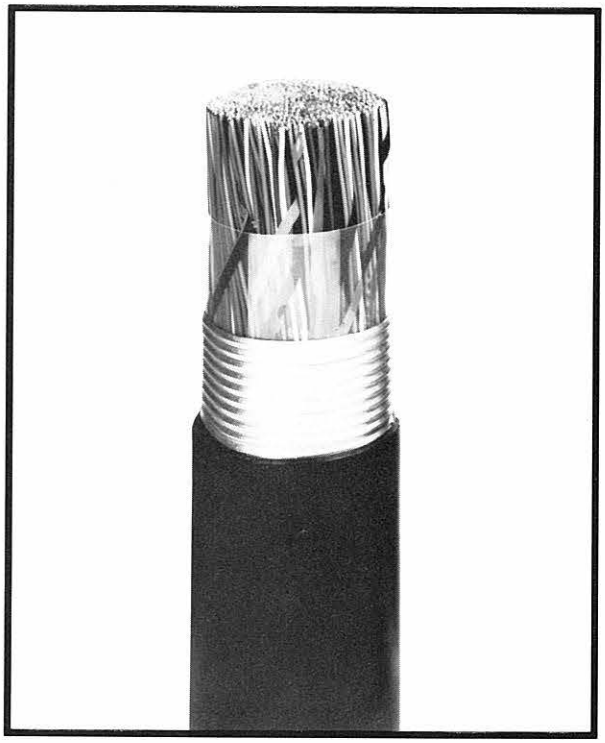
NOTE: Undercarpet cable can be used in maximum lengths of 35 feet.

Length (Ft)	Comcode
5	403 385 024
10	402 956 908
15	403 385 032
20	402 956 916
25	403 385 040
30	403 200 322
35	402 956 924

Aerial Cable, Non-Self-Supporting, ALPETH

Applications

ALPETH Non-Self-Supporting Aerial Cable is designed for outdoor use where it can be strung from poles. It should not be used in buried applications or in areas susceptible to lightning.



Description

The cable consists of plastic-insulated solid conductors covered by a plastic core wrap surrounded by a corrugated aluminum shield. A nylon binder and tape overlay, applied longitudinally, fit between the shield and an outer, seamless jacket of extruded polyethylene.

Specifications

Physical Specifications

Gauge: 24 AWG
Pair Size: 25 to 1800
Weight Per Foot: 0.13 lb (25-pair) to 5.92 lb (1800-pair)
Outside Diameter: 0.54 in. (25-pair) to 3.15 in. (1800-pair)

Electrical Specifications

DC Resistance: 144 Ohms/sheath mi (maximum)
Mutual Capacitance:
83 nF/mi at 1 kHz (nominal)
87 nF/mi at 1 kHz (maximum)
Attenuation: 5.7 dB/1000 ft at 772 kHz

Product Code	Pair Size	Outside Diameter Nominal (In.)	Weight/Foot Nominal (Lbs)	Comcode
BKMA	25	0.54	0.13	100 023 043
BKMA	50	0.68	0.22	100 023 076
BKMA	100	0.86	0.39	100 023 134
BKMA	200*	1.17	0.73	100 023 191
BKMA	300*	1.39	1.06	100 023 225
BKMA	400*	1.61	1.41	100 023 258
BKMA	600*	1.92	2.06	100 023 282
BKMA	900*	2.29	3.03	100 023 316
BKMA	1200*	2.61	4.00	103 711 313
BKMA	1500*	2.89	4.95	103 711 305
BKMA	1800*	3.15	5.92	103 711 297

* A pulling eye is available on these pair sizes.

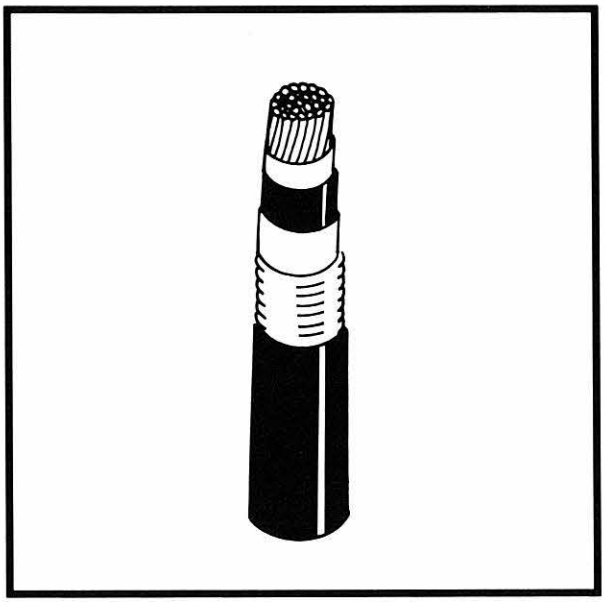
Warning

The National Electric Codes (NEC) of 1987 prohibit the use of outside plant copper telephone cables within the building, since they are not fire-resistant and do not pass any of the fire tests. If these cables are utilized within a building beyond a fifty (50) foot radius from the building cable entrance, they must be enclosed in heavy-duty metal conduit.

Aerial Cable, Non-Self-Supporting, PAP

Applications

PAP Non-Self-Supporting Aerial Cable is used in outdoor areas susceptible to damage from lightning.



Description

The cable consists of plastic-insulated conductors covered by a paper or plastic-core wrap and surrounded by an aluminum shield and a polyethylene jacket.

Specifications

Physical Specifications

Gauge: 24 AWG
Pair Size: 25 to 400
Weight Per Foot: 0.17 lb (25-pair) to 1.56 lb (400-pair)
Outside Diameter: 0.67 in. (25-pair) to 1.77 in. (400-pair)
Insulation Thickness: 0.003 in.

Electrical Specifications

DC Resistance: 144 Ohms/sheath mi (maximum)
Mutual Capacitance:
83 nF/mi at 1 kHz (nominal)
87 nF/mi at 1 kHz (maximum)
Attenuation: 5.7 dB/1000 ft at 772 kHz

Product Code	Pair Size	Outside Diameter, Nominal (In.)	Weight/Foot, Nominal (Lb)	Comcode
BKMG	25	0.67	0.17	100 023 407
BKMG	50	0.81	0.27	100 023 431
BKMG	100	1.01	0.46	100 023 498
BKMG	200*	1.33	0.83	100 023 555
BKMG	300*	1.55	1.18	100 023 589
BKMG	400*	1.77	1.56	100 023 613

* A pulling eye is available for these pair sizes.

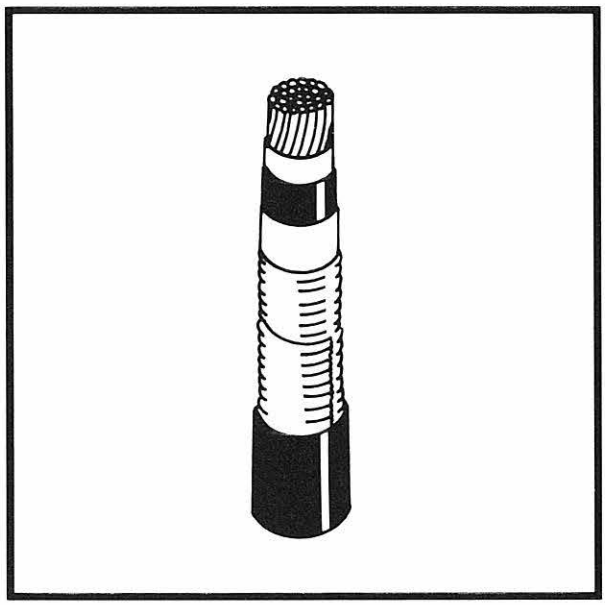
Warning

The National Electric Codes (NEC) of 1987 prohibit the use of outside plant copper telephone cables within the building, since they are not fire-resistant and do not pass any of the fire tests. If these cables are utilized within a building beyond a fifty (50) foot radius from the building cable entrance, they must be enclosed in heavy-duty metal conduit.

Aerial Cable, Non-Self-Supporting, PASP

Applications

PASP Non-Self-Supporting Aerial Cable is used in outdoor areas susceptible to mechanical damage or damage from lightning or rodents. It can also be used in ducts and pressurized direct buried applications.



Description

The cable consists of plastic-insulated conductors covered by a paper or plastic core wrap and surrounded by an inner polyethylene layer, an aluminum shield, a corrugated steel wrap, and a polyethylene jacket.

Specifications

Physical Specifications

Gauge: 24 AWG
Pair Size: 25 to 600
Weight Per Foot: 0.22 lb (25-pair) to 2.42 lb (600-pair)
Outside Diameter: 0.68 in. (25-pair) to 2.11 in. (600-pair)

Electrical Specifications

DC Resistance: 144 Ohms/sheath mi (maximum)
Mutual Capacitance:
83 nF/mi at 1 kHz (nominal)
87 nF/mi at 1 kHz (maximum)
Attenuation: 5.7 dB/1000 ft at 772 kHz

Product Code	Pair Size	Outside Diameter, Nominal (In.)	Weight/Foot, Nominal (Lb)	Comcode
BKMH	25	0.68	0.22	100 023 746
BKMH	50	0.82	0.33	100 023 761
BKMH	75	0.93	0.43	100 023 787
BKMH	100	1.01	0.53	100 023 803
BKMH	150*	1.22	0.75	100 023 829
BKMH	200*	1.36	0.94	100 023 845
BKMH	300*	1.58	1.31	100 023 860
BKMH	400*	1.79	1.70	100 023 886
BKMH	600*	2.11	2.42	100 023 902

* A pulling eye is available on these pair sizes.

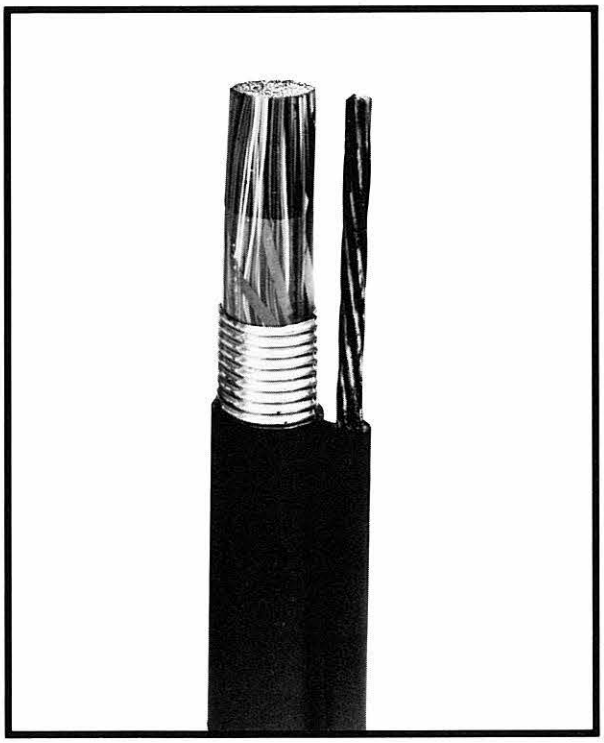
Warning

The National Electric Codes (NEC) of 1987 prohibit the use of outside plant copper telephone cables within the building, since they are not fire-resistant and do not pass any of the fire tests. If these cables are utilized within a building beyond a fifty (50) foot radius from the building cable entrance, they must be enclosed in heavy-duty metal conduit.

Aerial Cable, Self-Supporting

Applications

Self-Supporting Aerial Cable is used outdoors in pole-to-pole and pole-to-building spans.



Description

This cable consists of a supporting strand and a cable core of plastic-insulated conductors combined into a figure-eight design. The supporting strand is made from 6.6-mm, extra-high-strength galvanized steel; the cable conductors are encased in a plastic core wrap inside an aluminum shield that is adhesively bonded to the outer jacket. It is available with either an undulated or nonundulated core.

Specifications

Physical Specifications

Gauge: 24 AWG
Pair Size: 25 to 200
Weight Per Foot: 0.28 lb (25-pair) to 0.89 lb (200-pair)
Outside Diameter: 0.61 in. (25-pair) to 1.24 in. (200-pair)

Electrical Specifications

DC Resistance: 144 Ohms/sheath mi
Mutual Capacitance:
83 nF/mi at 1 kHz (nominal)
87 nF/mi at 1 kHz (maximum)
Attenuation: 5.7 dB/1000 ft at 772 kHz

Product Code	Pair Size	Outside Diameter, Nominal (In.)	Weight/Foot, Nominal (Lb)	Comcode
BKMS	25	0.61	0.28	100 023 944
BKMS	50	0.73	0.37	100 023 951
BKMS	75	0.92	0.46	101 452 092
BKMS	100	0.96	0.56	101 452 100
BKMS	150	1.12	0.73	101 452 118
BKMS	200	1.24	0.89	101 452 175

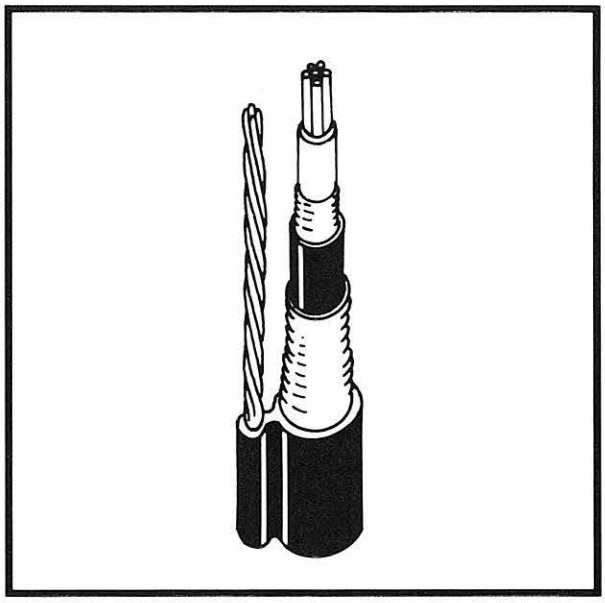
Warning

The National Electric Codes (NEC) of 1987 prohibit the use of outside plant copper telephone cables within the building, since they are not fire-resistant and do not pass any of the fire tests. If these cables are utilized within a building beyond a fifty (50) foot radius from the building cable entrance, they must be enclosed in heavy-duty metal conduit.

Aerial Cable, Reinforced Self-Supporting

Applications

Reinforced Self-Supporting Aerial Cable is used in areas prone to high sheath-related maintenance costs primarily due to wildlife damage.



Description

This cable consists of a supporting strand and a cable core of plastic insulated conductors combined into a figure-eight design. The supporting strand is made from 6.6-mm, extra-high-strength galvanized steel; the cable conductors are encased in an aluminum core wrap, a layer of polyethylene, a layer of steel, and an outer sheath of polyethylene.

Specifications

Physical Specifications

Gauge: 24 AWG
Pair Size: 25 to 200
Weight Per Foot: 0.45 lb (25-pair) to 1.18 lb (200-pair)
Outside Diameter: 0.90 in. (25-pair) to 1.52 in. (200-pair)

Electrical Specifications

DC Resistance: 144 Ohms/sheath mi (maximum)
Mutual Capacitance:
83 nF/mi at 1 kHz (nominal)
87 nF/mi at 1 kHz (maximum)
Attenuation: 5.7 dB/1000 ft at 772 kHz

Product Code	Pair Size	Outside Diameter, Nominal (In.)	Weight/Foot, Nominal (Lb)	Comcode
BKMP	25	0.90	0.45	102 857 174
BKMP	50	1.02	0.56	102 857 182
BKMP	75	1.20	0.70	102 857 190
BKMP	100	1.28	0.80	102 857 208
BKMP	150	0.36	0.98	102 857 216
BKMP	200	1.52	1.18	102 857 224

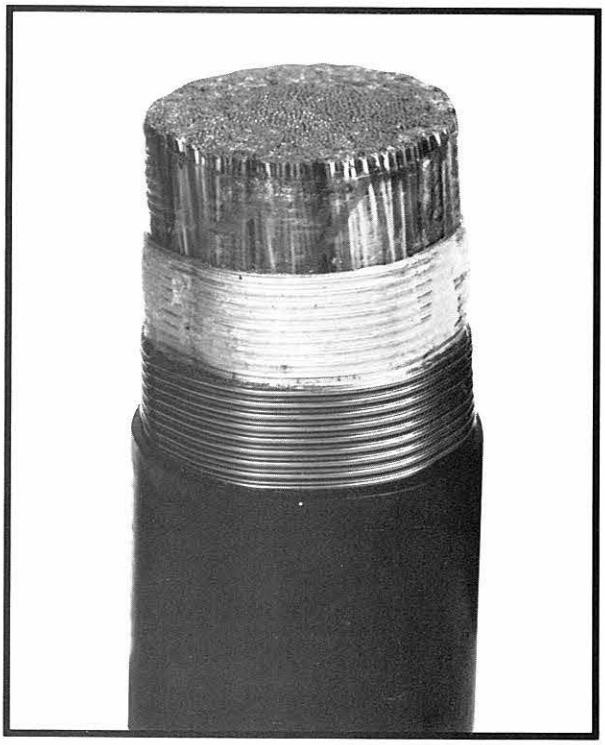
Warning

The National Electric Codes (NEC) of 1987 prohibit the use of outside plant copper telephone cables within the building, since they are not fire-resistant and do not pass any of the fire tests. If these cables are utilized within a building beyond a fifty (50) foot radius from the building cable entrance, they must be enclosed in heavy-duty metal conduit.

Buried Cable, Filled, ASP

Applications

ASP Filled Buried Cable is used for direct buried applications where wet or moist soil conditions threaten the electrical performance of the cable. ASP is also the preferred sheath for mechanical and wildlife protection.



Description

The cable consists of a core of solid copper conductors, insulated with plastic and surrounded by FLEXGEL filling compound. The core is surrounded by a plastic core wrap and shielded with a corrugated aluminum and steel shield. Between the core wrap and shielding, additional filling compound is added. The cable's outer jacket is polyethylene.

Specifications

Physical Specifications

Gauge: 24 AWG
Pair Size: 25 to 1800
Weight Per Foot: 0.22 lb (25-pair) to 7.29 lb (1800-pair)
Outside Diameter: 0.62 in. (25-pair) to 3.26 in. (1800-pair)
Insulation Thickness: 0.002 in.

Electrical Specifications

DC Resistance: 144 Ohms/sheath mi
Mutual Capacitance:
83 nF/mi at 1 kHz (nominal)
87 nF/mi at 1 kHz (maximum)
Attenuation: 5.0 dB/1000 ft at 772 kHz

Product Code	Pair Size	Outside Diameter, Nominal (In.)	Weight/Foot, Nominal (Lb)	Comcode
AFMW	25	0.62	0.22	103 266 888
AFMW	50	0.77	0.35	103 266 904
AFMW	100	0.98	0.59	103 266 920
AFMW	200*	1.31	1.05	103 266 946
AFMW	300*	1.52	1.45	103 266 961
AFMW	400*	1.71	1.86	103 266 987
AFMW	600*	2.05	2.71	103 267 001
AFMW	900*	2.44	3.90	103 267 027
AFMW	1200*	2.75	5.05	103 267 043
AFMW	1800*	3.26	7.29	103 267 084

* A pulling eye is available on these pair sizes.

Warning

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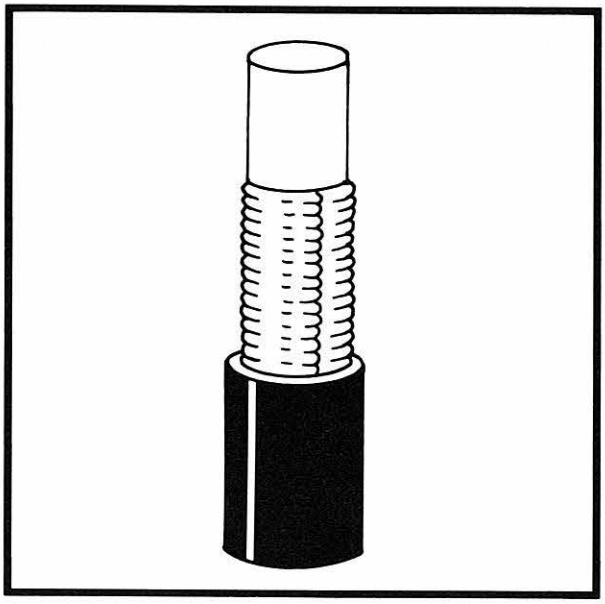
Outer Protection, UM

Applications

UM (Unsoldered Mechanical) Outer Protection is used in aerial or buried applications to provide additional mechanical protection on ALPETH, ASP, PAP, and PASP sheaths against a variety of sources such as animals, vandalism, rocky conditions, or rough pipes under roadways.



Description

UM protection consists of a longitudinal steel tape and polyethylene jacket installed in the factory over an ALPETH, ASP, PAP, or PASP cable sheath. This outer protection is ordered with the cable and is designated by a *-UM* after the sheath name (for example, PAP-UM).

Warning

The National Electric Codes (NEC) of 1987 prohibit the use of outside plant copper telephone cables within the building, since they are not fire-resistant and do not pass any of the fire tests. If these cables are utilized within a building beyond a fifty (50) foot radius from the building cable entrance, they must be enclosed in heavy-duty metal conduit.

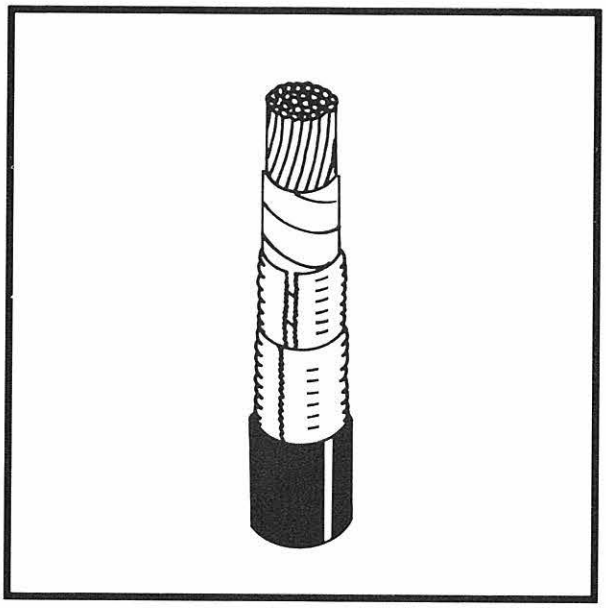
Underground Cable, Air-Core, DUCTPIC

Applications

DUCTPIC Air-Core Underground Cable is used where duct congestion is a prime concern. Because of its color-coded insulation, DUCTPIC cable allows for easier pair identification than standard pulp cable.

Description

DUCTPIC cable is an air-core cable with dual expanded plastic insulated conductors (DEPICs), covered with a bonded STALPETH sheath; the sheath consists of a corrugated aluminum shield and a corrugated, polymer-coated steel shield bonded to an outer polyethylene jacket.



Specifications

Physical Specifications

Gauge: 26 AWG
Pair Size: 1200 to 1500
Weight Per Foot: 3.7 lb (1200-pair) to 4.7 lb (1500-pair)
Outside Diameter: 2.33 in. (1200-pair) to 2.55 in. (1500-pair)

Electrical Specifications

DC Resistance: 144 Ohms/sheath mi (maximum)
Mutual Capacitance:
83 nF/mi at 1 kHz (nominal)
87 nF/mi at 1 kHz (maximum)
Attenuation: 6.5 dB/1000 ft at 772 kHz

Warning

The National Electric Codes (NEC) of 1987 prohibit the use of outside plant copper telephone cables within the building, since they are not fire-resistant and do not pass any of the fire tests. If these cables are utilized within a building beyond a fifty (50) foot radius from the building cable entrance, they must be enclosed in heavy-duty metal conduit.

Product Code	Pair Size	Outside Diameter, Nominal (In.)	Weight/Foot, Nominal (Lb)	Comcode
DCMZ	1200*	2.33	3.70	104 246 749
DCMZ	1500*	2.55	4.70	103 716 692

* A pulling eye is available on these pair sizes.

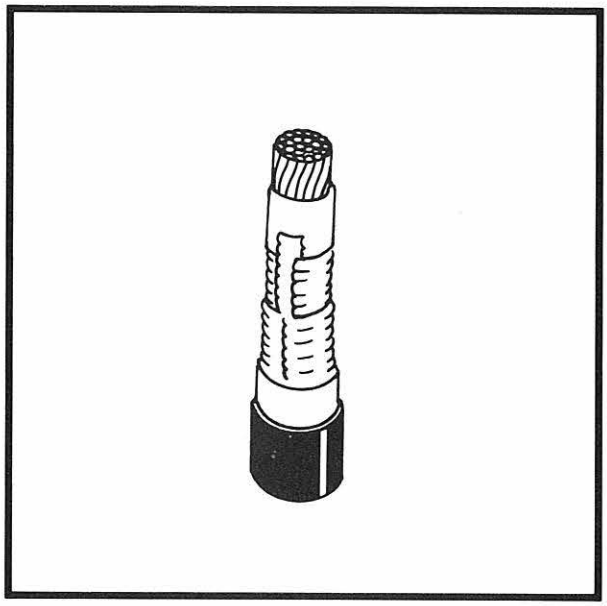
Underground Cable, Air-Core, STEAMPETH

Applications

STEAMPETH Air-Core Underground Cable is used in underground systems where a high incidence of damage could occur if steam entered the duct.

Description

STEAMPETH cable consists of a standard air-core cable with a sheath similar to bonded STALPETH except that the outer sheath member is made of medium-density polyethylene. Pulp cable with a STEAMPETH sheath is recommended for working environments up to 170°F; it should not be installed when temperatures are below 30°F. For temperatures up to 230°F, PIC STEAMPETH cable is available.



Specifications

Physical Specifications

Gauge: 24 AWG
Pair Size: 600 to 1200
Weight Per Foot: PIC 2.19 lb (600-pair) to 4.16 lb (1200-pair)
Outside Diameter: 1.92 in. (600-pair) to 2.59 in. (1200-pair)

Electrical Specifications

DC Resistance: 144 Ohms/sheath mi (maximum)
Mutual Capacitance:
83 nF/mi at 1 kHz (nominal)
87 nF/mi at 1 kHz (maximum)
Attenuation: 5.9 dB/1000 ft at 772 kHz

Warning

The National Electric Codes (NEC) of 1987 prohibit the use of outside plant copper telephone cables within the building, since they are not fire-resistant and do not pass any of the fire tests. If these cables are utilized within a building beyond a fifty (50) foot radius from the building cable entrance, they must be enclosed in heavy-duty metal conduit.

Copper-Bonded STEAMPETH

Product Code	Pair Size	Outside Diameter, Nominal (In.)	Weight/Foot, Nominal (Lbs)	Comcode
DKMN	600*	1.92	2.19	103 910 576
DKMN	900*	2.30	3.18	103 910 584
DKMN	1200*	2.59	4.16	103 886 891

Pulp-Bonded STEAMPETH

Product Code	Pair Size	Outside Diameter, Nominal (In.)	Weight/Foot, Nominal (Lbs)	Comcode
CDMN	1200*	2.55	4.02	103 886 545

* A pulling eye is available on these pair sizes.

Fiber Interconnection Cable, 1860A

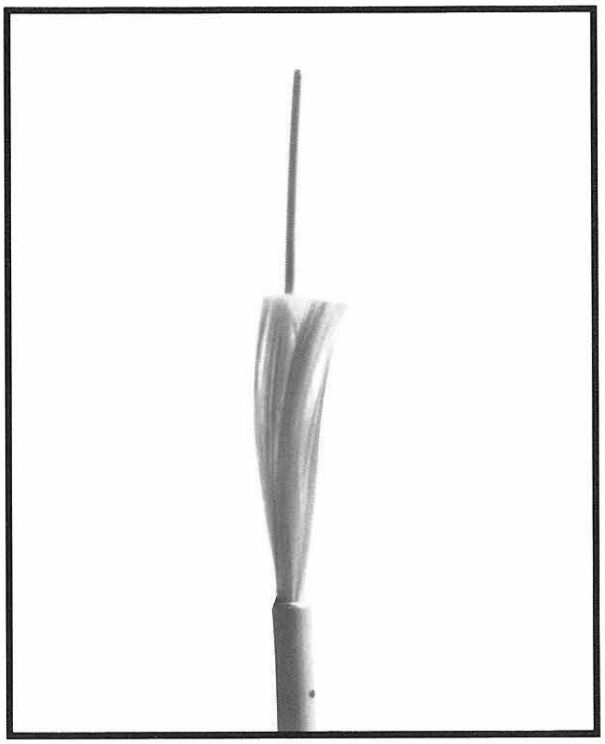
Applications

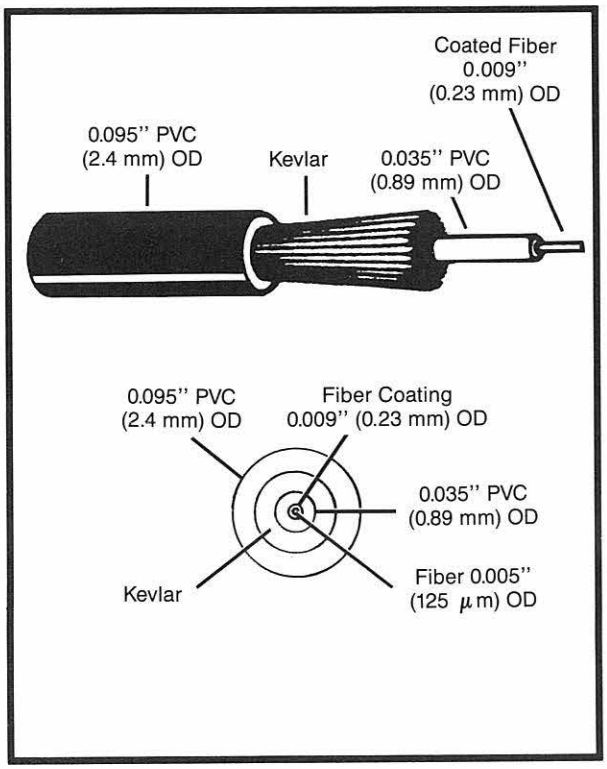
The 1860A Fiber Interconnection Cable is used in the satellite closet or the equipment room to interconnect fiber cables and equipment in applications requiring field connectorization.

Description

The 1860A cable consists of a single, graded-index fiber, with a 62.5-μm core and a 125-μm cladding; it is covered by a core wrap and an overjacket of flame-retardant PVC. 1860A cable is unconnectorized and is available in a 328-foot reel, or in any length by the foot.

1860A cable is also available with a factory-installed ST (P2020A-C-125) Connector Plug on each end (see FL1P-P Fiber Interconnection Cable), with a data link 1005B Connector Plug on one end and an ST connector plug on the other (see FL1P-B Fiber Interconnection Cable), or with a biconic 1006A Connector Plug on one end and an ST connector plug on the other (see FL1P-A Fiber Interconnection Cable).





Specifications

Physical Specifications

Number Of Fibers: 1
Cable Diameter: 0.095 in.
Weight: 6 oz/100 ft
Maximum Length Per Reel: 10,000 ft
Minimum Bend Radius: 0.5 in. short-term, 1.5 in. long-term without load
Operating Temperature: 32 to 130°F (0 to 55°C)

Optical Specifications

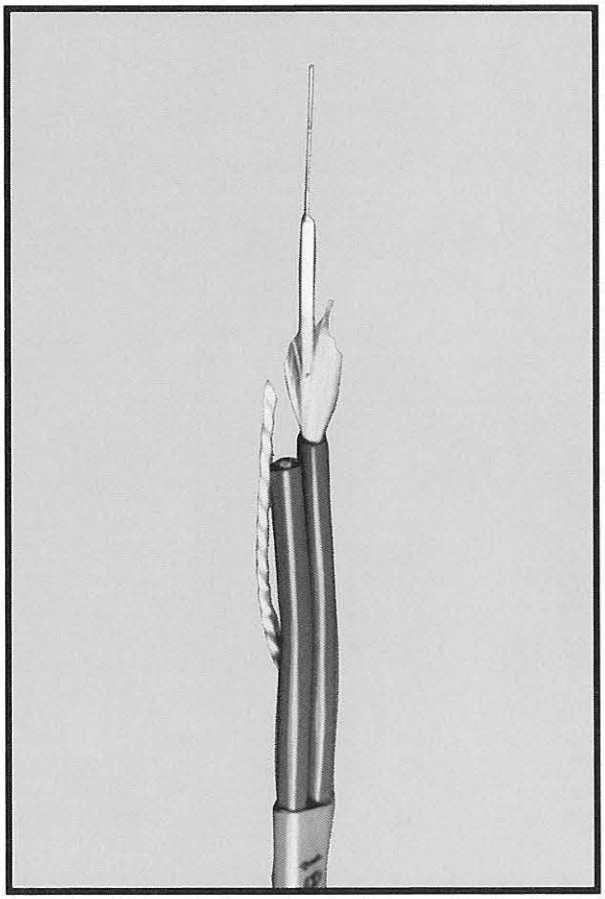
Maximum Mean Fiber Loss:
3.9 dB/km at 825 nm
3 dB/km at 1300 nm
Minimum Bandwidth:
160 MHz-km at 850 nm
200 MHz-km at 1300 nm

Product Code	Length	Comcode
1860A	328-ft reel	104 148 861
1860A	Order by footage	103 716 460

Fiber Interconnection Cable, 1861A

Applications

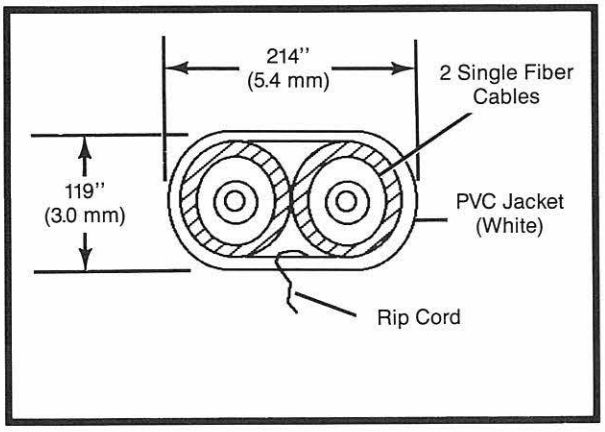
The 1861A Fiber Interconnection Cable is used in the satellite closet or the equipment room to interconnect fiber cables and equipment in applications requiring field connectorization.



Description

The 1861A cable is a dual fiber cable consisting of two single, parallel, graded-index fibers, with a 62.5-μm core and a 125-μm cladding; it is covered by a core wrap and an overjacket of flame-retardant PVC. It is unconnectorized and can be ordered in a 328-foot reel, or in any length by the foot.

1861A cable is also available with factory-installed ST (P2020A-C-125) Connector Plugs at each end (see FL2P-P Fiber Interconnection Cable), with data link 1005B Connector Plugs on one end and ST connector plugs on the other (see FL2P-B Fiber Interconnection Cable), or with biconic 1006A Connector Plugs on one end and ST connector plugs on the other (see FL2P-A Fiber Interconnection Cable).



Specifications

Physical Specifications

Number Of Fibers: 2
Cable Size: 0.214 in. x 0.119 in.
Weight: 19.6 oz/100 ft
Maximum Length Per Reel: 3280 ft
Minimum Bend Radius: 0.5 in. short-term, 1.5 in. long-term without load
Operating Temperature: 32 to 130°F (0 to 55°C)

Optical Specifications

Maximum Mean Fiber Loss:
- 3.9 dB/km at 825 nm
- 3 dB/km at 1300 nm

Minimum Bandwidth:
- 160 MHz-km at 850 nm
- 200 MHz-km at 1300 nm

Product Code	Length	Comcode
1861A	328-ft reel	104 148 879
1861A	Order by footage	103 910 170

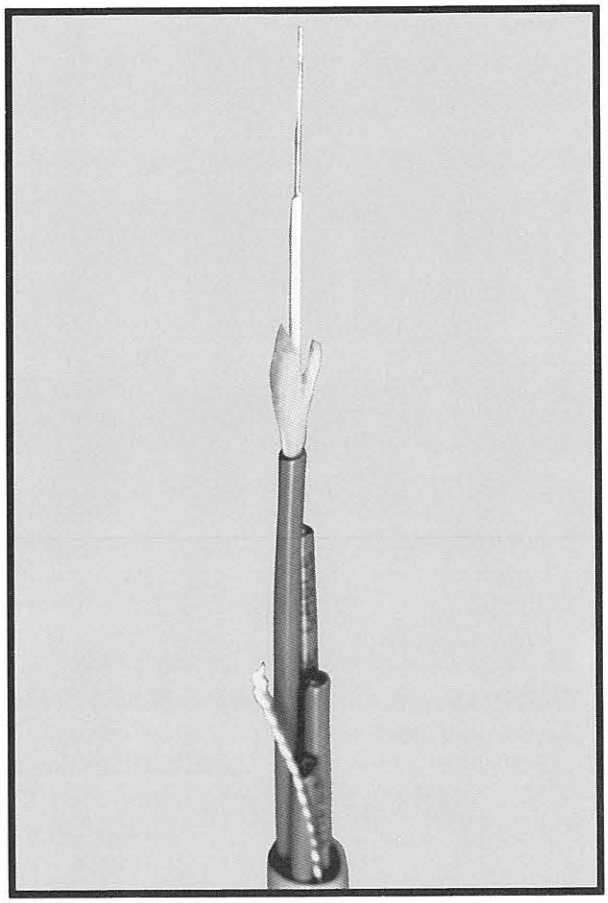
Fiber Interconnection Cable, 1862A

Applications

The 1862A Fiber Interconnection Cable is used to interconnect fiber cables and equipment, in applications requiring field connectorization.

Description

The 1862A is a quad fiber cable consisting of four single, parallel, graded-index fibers, with a 62.5-μm core and a 125-μm cladding; it is covered by a core wrap and an overjacket of flame-retardant PVC. 1862A cable is unconnectorized and ordered by the foot.



Specifications

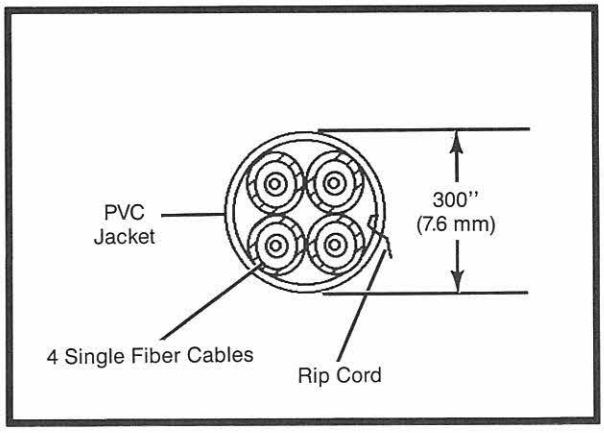
Physical Specifications

Number Of Fibers: 4
Cable Diameter: 0.285 in.
Weight: 42.6 oz/100 ft
Maximum Length Per Reel: 1000 ft
Minimum Bend Radius: 1.5 in. long-term without load
Operating Temperature: 32 to 130°F (0 to 55°C)

Optical Specifications

Maximum Mean Fiber Loss:
3.9 dB/km at 825 nm
3 dB/km at 1300 nm
Minimum Bandwidth:
160 MHz-km at 850 nm
200 MHz-km at 1300 nm

Product Code	Length	Comcode
1862A	Order by footage	103 910 188



Fiber Interconnection Cable, FL1P-A, FL2P-A

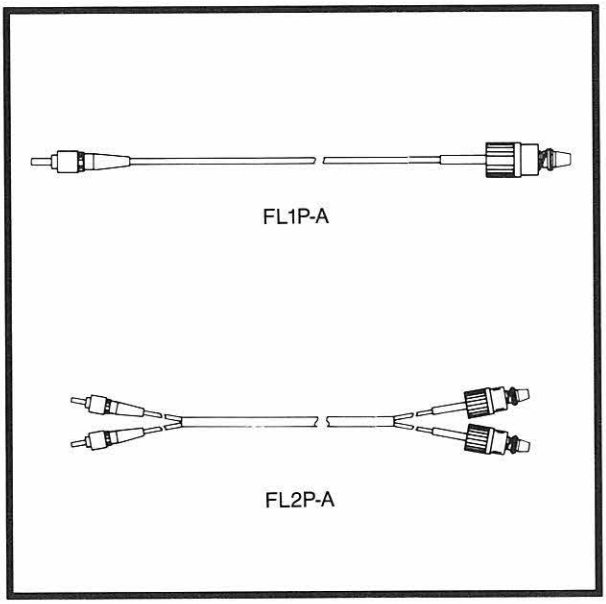
Applications

The FL1P-A and FL2P-A Fiber Interconnection Cables are used to connect fiber optic equipment, such as multiplexers, to lightguide cross connects and interconnects.

Description

The FL1P-A consists of 1860A (62.5/125-μm) single fiber cable with an ST (P2020A-C-125) Connector Plug on one end and a biconic 1006A Connector Plug on the other.

The FL2P-A consists of 1861A (62.5-/125-μm) dual fiber cable with ST connector plugs on one end and biconic connector plugs on the other.



Specifications

FL1P-A Physical Specifications

Number Of Fibers: 1
Coated Fiber Diameter: 0.0089 in.
Outer Jacket Thickness: 0.094 in.
Weight: 6 oz/100 ft
Minimum Bend Radius: 0.5 in. short-term, 1.5 in. long-term without load
Operating Temperature: 32 to 130°F (0 to 55°C)

Optical Specifications

Approximate Connector Losses: 0.5 dB/mated connector
Minimum Bandwidth:
160 MHz-km at 850 nm
200 MHz-km at 1300 nm

FL2P-A Physical Specifications

Number Of Fibers: 2
Coated Fiber Diameter: 0.0089 in.
Outer Jacket Thickness: 0.0741 in. x 0.2206 in.
Weight: 19.6 oz/100 ft
Minimum Bend Radius: 0.5 in. short-term, 1.5 in. long-term without load
Operating Temperature: 32 to 130°F (0 to 55°C)

Optical Specifications

Approximate Connector Losses: 0.5 dB/mated connector
Minimum Bandwidth:
160 MHz-km at 850 nm
200 MHz-km at 1300 nm

Product Code	Length (Ft)	Comcode
FL1P-A-04	4	104 264 882
FL1P-A-08	8	104 264 890
FL1P-A-10	10	104 264 908
FL1P-A-15	15	104 264 916
FL1P-A-35	35	104 264 924
FL2P-A-04	4	104 266 333
FL2P-A-10	10	104 266 341
FL2P-A-15	15	104 266 358
FL2P-A-20	20	104 266 366
FL2P-A-25	25	104 266 374
FL2P-A-30	30	104 266 382
FL2P-A-35	35	104 266 390
FL2P-A-50	50	104 244 942

Fiber Interconnection Cable, FL1P-B, FL2P-B

Applications

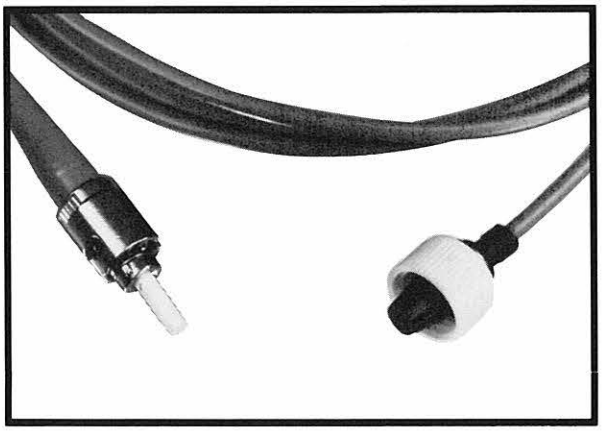
The FL1P-B and FL2P-B Fiber Interconnection Cables are used to connect fiber optic equipment, such as multiplexers, to lightguide cross connects and interconnects.

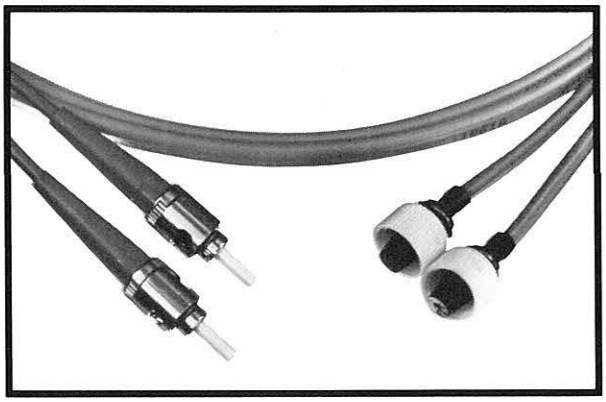
Description

The FL1P-B consists of 1860A (62.5/125-μm) single fiber cable with an ST (P2020A-C-125) Connector Plug on one end and a data link 1005B Connector Plug on the other.

The FL2P-B consists of 1861A (62.5/125-μm) dual fiber cable with ST connector plugs on one end and data link connector plugs on the other.

Both the FL1P-B and the FL2P-B are available in standard lengths of up to 35 feet for single fiber and up to 50 feet for dual fiber.





Specifications

FL1P-B Physical Specifications

Number Of Fibers: 1
Coated Fiber Diameter: 0.0089 in.
Outer Jacket Thickness: 0.094 in.
Weight: 6 oz/100 ft
Minimum Bend Radius: 0.5 in. short-term, 1.5 in. long-term without load
Operating Temperature: 32 to 130°F (0 to 55°C)

Optical Specifications

Approximate Connector Losses: 0.5 dB/mated connector
Minimum Bandwidth:
160 MHz-km at 850 nm
200 MHz-km at 1300 nm

FL2P-B Physical Specifications

Number of Fibers: 2
Coated Fiber Diameter: 0.0089 in.
Outer Jacket Thickness: 0.0741 in. x 0.2206 in.
Weight: 19.6 oz/100 ft
Minimum Bend Radius: 0.5 in. short-term, 1.5 in. long-term without load
Operating Temperature: 32 to 130°F (0 to 55°C)

Optical Specifications

Approximate Connector Losses: 0.5 dB/mated connector
Minimum Bandwidth:
160 MHz-km at 850 nm
200 MHz-km at 1300 nm

Product Code	Length (Ft)	Comcode
FL1P-B-04	4	104 264 932
FL1P-B-08	8	104 264 940
FL1P-B-10	10	104 264 957
FL1P-B-15	15	104 264 965
FL1P-B-35	35	104 264 973
FL2P-B-04	4	104 244 959
FL2P-B-10	10	104 244 967
FL2P-B-15	15	104 244 975
FL2P-B-20	20	104 244 983
FL2P-B-25	25	104 244 991
FL2P-B-30	30	104 245 006
FL2P-B-35	35	104 244 014
FL2P-B-50	50	104 245 030

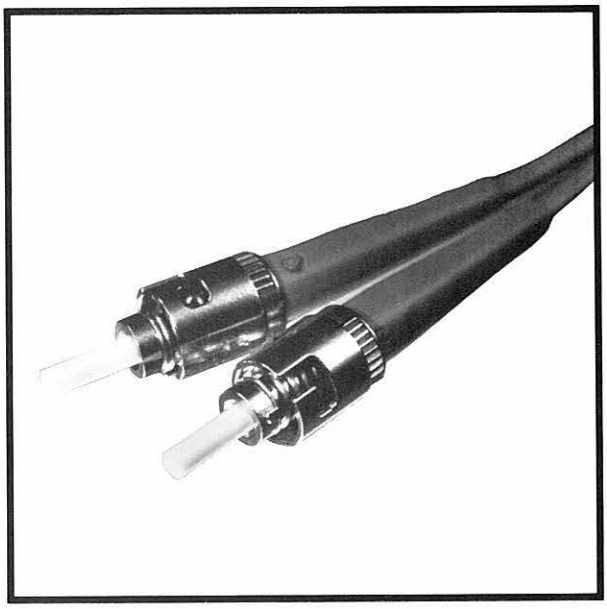
Fiber Interconnection Cable, FL1P-P, FL2P-P

Applications

The FL1P-P and FL2P-P Fiber Interconnection Cables are used to connect fiber optic equipment to lightguide cross connects and interconnects.

Description

The FL1P-P consists of 1860A (62.5/125-μm) single fiber cable with an ST (P2020A-C-125) Connector Plug on each end. The FL2P-P consists of 1861A (62.5/125-μm) dual fiber cable with ST connector plugs on each end. Both the FL1P-P and FL2P-P cables are available in standard lengths up to 100 feet.



Specifications

FL1P-P Physical Specifications

Number Of Fibers: 1
Coated Fiber Diameter: 0.0089 in.
Outer Jacket Thickness: 0.094 in.
Weight: 6 oz/100 ft
Minimum Bend Radius: 0.5 in. short-term, 1.5 in. long-term without load
Operating Temperature: 32 to 130°F (0 to 55°C)

Optical Specifications

Approximate Connector Losses: 0.5 dB/mated connector
Minimum Bandwidth:
160 MHz-km at 850 nm
200 MHz-km at 1300 nm

FL2P-P Physical Specifications

Number Of Fibers: 2
Coated Fiber Diameter: 0.0089 in.
Outer Jacket Thickness: 0.0741 in. x 0.2206 in.
Weight: 19.6 oz/100 ft
Minimum Bend Radius: 0.5 in. short-term, 1.5 in. long-term
Operating Temperature: 32 to 130°F (0 to 55°C)

Optical Specifications

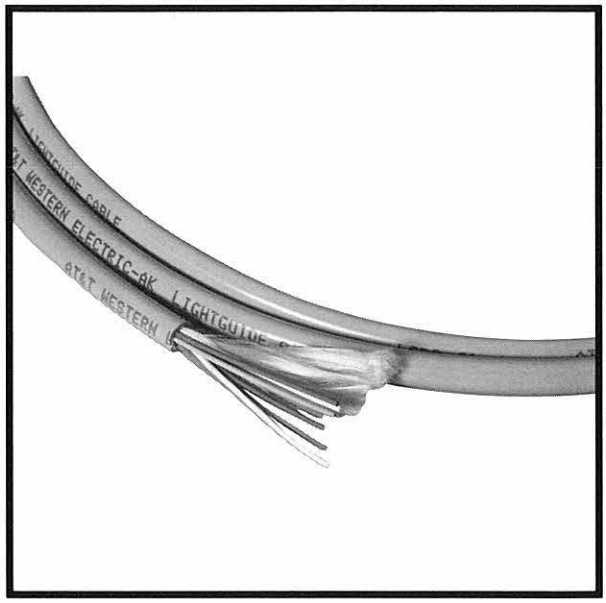
Approximate Connector Losses: 0.5 dB/mated connector
Minimum Bandwidth:
160 MHz-km at 850 nm
200 MHz-km at 1300 nm

Product Code	Length (Ft)	Comcode	Product Code	Length (Ft)	Comcode
FL1P-P-02	2	104 264 981	FL2P-P-02	2	104 266 408
FL1P-P-04	4	104 264 999	FL2P-P-04	4	104 266 416
FL1P-P-06	6	104 265 004	FL2P-P-06	6	104 266 424
FL1P-P-08	8	104 265 012	FL2P-P-08	8	104 266 432
FL1P-P-10	10	104 265 020	FL2P-P-10	10	104 266 440
FL1P-P-15	15	104 265 038	FL2P-P-15	15	104 266 457
FL1P-P-20	20	104 265 046	FL2P-P-20	20	104 266 465
FL1P-P-25	25	104 265 053	FL2P-P-25	25	104 266 473
FL1P-P-30	30	104 265 061	FL2P-P-30	30	104 266 481
FL1P-P-35	35	104 265 079	FL2P-P-35	35	104 266 499
FL1P-P-40	40	104 265 087	FL2P-P-40	40	104 266 507
FL1P-P-50	50	104 265 103	FL2P-P-50	50	104 266 523
FL1P-P-75	75	104 245 137	FL2P-P-75	75	104 246 556
FL1P-L-100	100	104 245 145	FL2P-P-100	100	104 246 564

Lightguide Building Cable, LGBC Series

Applications

Lightguide Building Cable is used for both vertical and horizontal applications in buildings. It is UL listed for riser (PVC jacket) or plenum (fluoropolymer jacket) applications in accordance with sections 770-6 or 770-7 of the National Electrical Code (NEC), respectively.



Description

Lightguide Building Cable consists of 2, 4, 6, 12, 18, 24, or 36 individual 62.5/125-μm fibers, each with a color-coded PVC buffer. LGBC cables are reinforced with KEVLAR® yarn for superior strength, and contain no metallic elements.

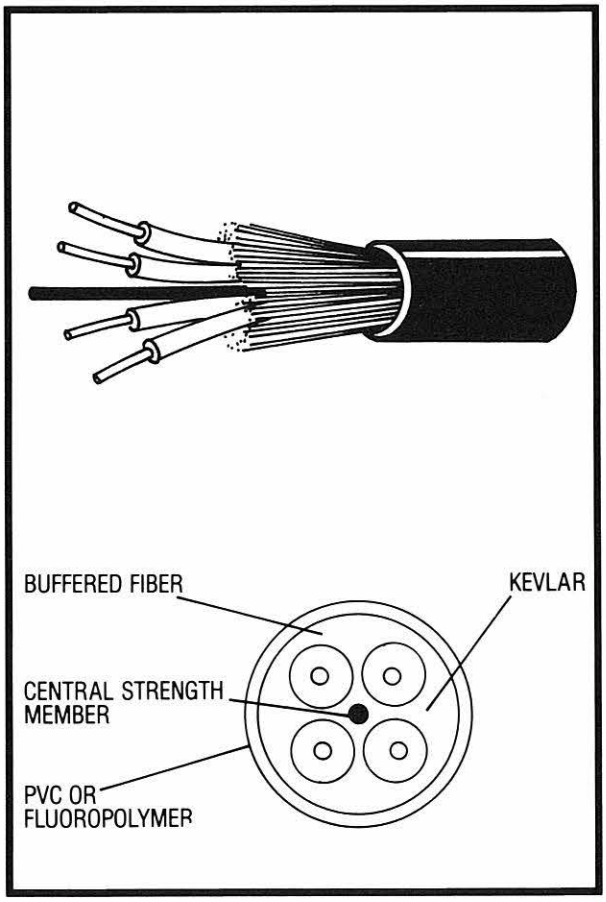
Specifications

LGBC Physical Specifications

Minimum Bend Radius: 3 in.
Operating Temperature: -14 to 131 °F (-10 to 55 °C)

LGBC Optical Specifications

Maximum Mean Fiber Loss:
4.0 dB/km at 850 nm (typical)
1 dB/km at 1300 nm
Minimum Bandwidth:
160 MHz-km at 850 nm (typical)
500 MHz-km at 1300 nm



PVC Jacket (Riser Classified)

Product Code	Max. Length* (Ft/Reel) C	D	Cable, Outside Diameter (In.)	Weight (Lb/100 Ft)	Pulling Tension, Max. (Lb)	Comcode
LGBC-002A-LRX	4,000	7,000	0.175	1.2	100	104 272 406
LGBC-004A-LRX	4,000	7,000	0.175	1.2	100	104 272 414
LGBC-006A-LRX	2,500	7,000	0.210	1.6	125	104 272 422
LGBC-012A-LRX	1,500	5,000	0.275	1.6	150	104 272 430
LGBC-018B-LRX	-	3,300	0.410	5.2	150	105 237 655
LGBC-024B-LRX	-	3,000	0.465	6.2	150	104 275 250
LGBC-036B-LRX	-	3,000	0.465	6.9	150	105 240 436

Fluoropolymer Jacket (Plenum Classified)

Product Code	Max. Length* (Ft/Reel) C	D	Cable, Outside Diameter (In.)	Weight (Lb/100 Ft)	Pulling Tension, Max. (Lb)	Comcode
LGBC-002A-LPX	3,280	7,000	0.195	1.4	100	104 272 489
LGBC-004A-LPX	3,280	7,000	0.195	1.4	100	104 272 497
LGBC-006A-LPX	1,500	6,500	0.250	2.2	125	104 272 505
LGBC-012A-LPX	1,000	4,000	0.320	3.3	150	104 272 513
LGBC-018B-LPX	-	3,300	0.420	6.0	150	105 237 648
LGBC-024B-LPX	-	3,000	0.485	7.8	150	105 240 345
LGBC-036B-LPX	-	3,000	0.485	8.5	150	105 240 402

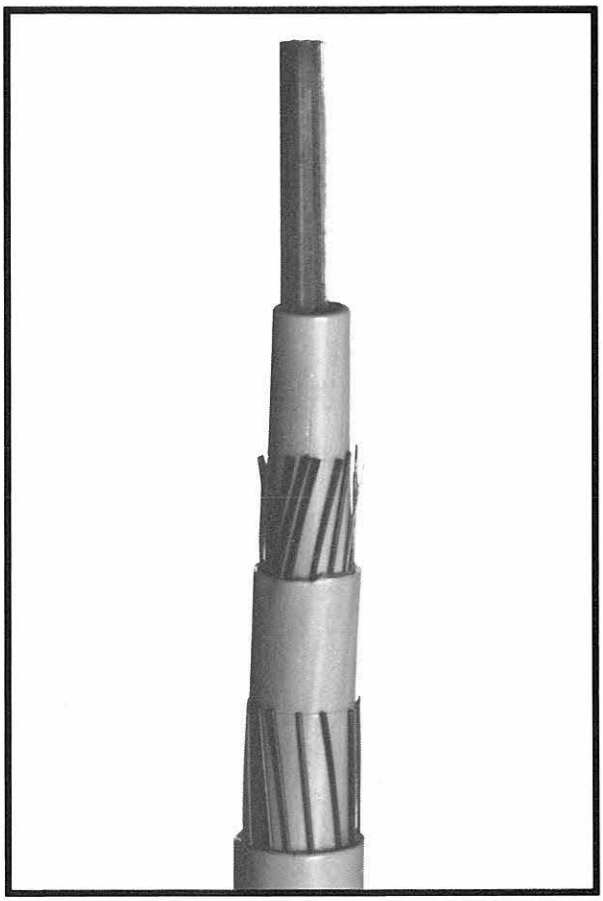
*Reel Dimensions:

	Width	Diameter	Weight
C =	13 in	18 in	10 lbs
D =	16 in	32 in	65 lbs

Lightguide Riser Cable, 3AEX

Applications

The 3AEX Lightguide Riser Cable is used in the riser subsystem and meets the requirements of section 770-6 of the National Electrical Code (NEC).



Description

The 3AEX lightguide cable has a core consisting of from 2 to 144 multimode, 62.5/125-μm fibers, with 136 fibers guaranteed. The fibers are set side by side and laminated between pressure-sensitive adhesive tapes. The cable has an air-core ribbon structure with a cross-ply flame-retardant PVC sheath.

The cable core is protected by a tape heat barrier covered with an inner sheath layer of PVC, a vapor barrier, an inner layer of steel support strands, an intermediate jacket of PVC, polyester tape wrap, an outer layer of steel support strands, and an outer jacket of orange PVC.

This cable can be ordered with array connectors and factory Sheath Termination Hardware (see Section 6). It should be used only for applications that require a high fiber count. (Lightguide Building Cable can be used for other applications.)

Specifications

Physical Specifications

Number Of Fibers: 2 to 136
Cable Diameter: 0.49 in.
Weight: 110 lb/1000 ft
Minimum Bend Radius: 10 in. with load, 5 in. without load
Operating Temperature: -40 to 170°F

Optical Specifications

Fiber Loss:*
- 3.7 to 4.7 dB/km at 825 nm
- 0.95 to 2.7 dB/km at 1300 nm

Bandwidth:*
- 150 to 300 MHz-km at 850 nm
- 300 to 1,000 MHz-km at 1300 nm

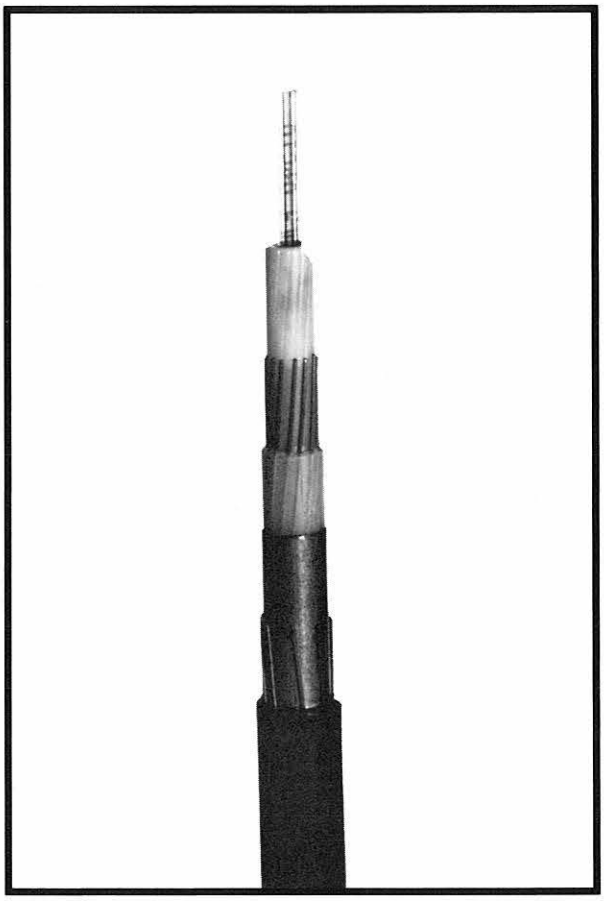
Product Code	No. of Fibers	Comcode	Product Code	No. of Fibers	Comcode
3AEX-002	2	103 998 720	3AEX-050	50	103 998 969
3AEX-004	4	102 998 738	3AEX-052	52	103 998 977
3AEX-006	6	103 972 746	3AEX-054	54	103 998 985
3AEX-008	8	103 998 753	3AEX-056	56	103 998 993
3AEX-010	10	103 998 761	3AEX-058	58	103 999 009
3AEX-012	12	103 998 779	3AEX-060	60	103 999 017
3AEX-014	14	103 998 787	3AEX-062	62	103 999 025
3AEX-016	16	103 998 795	3AEX-064	64	103 999 033
3AEX-018	18	103 998 793	3AEX-066	66	103 999 041
3AEX-020	20	103 998 811	3AEX-068	68	103 999 058
3AEX-022	22	103 998 829	3AEX-070	70	103 999 066
3AEX-024	24	103 998 837	3AEX-072	72	103 999 074
3AEX-026	26	103 998 845	3AEX-074	74	103 999 090
3AEX-028	28	103 998 852	3AEX-078	78	103 999 108
3AEX-030	30	103 998 860	3AEX-080	80	103 999 116
3AEX-032	32	103 998 878	3AEX-082	82	103 999 124
3AEX-034	34	103 998 886	3AEX-084	84	103 999 132
3AEX-036	36	103 998 894	3AEX-086	86	103 999 140
3AEX-038	38	103 998 902	3AEX-088	88	103 999 157
3AEX-040	40	103 998 910	3AEX-090	90	103 999 165
3AEX-042	42	103 998 928	3AEX-102	102	103 999 223
3AEX-044	44	103 998 936	3AEX-112	112	103 999 272
3AEX-046	46	103 998 944	3AEX-124	124	103 999 330
3AEX-048	48	103 998 951	3AEX-136	136	103 885 380

* Customers may order this cable with a specific bandwidth or fiber loss within the ranges specified.

Lightguide Cable, 3BAX

Applications

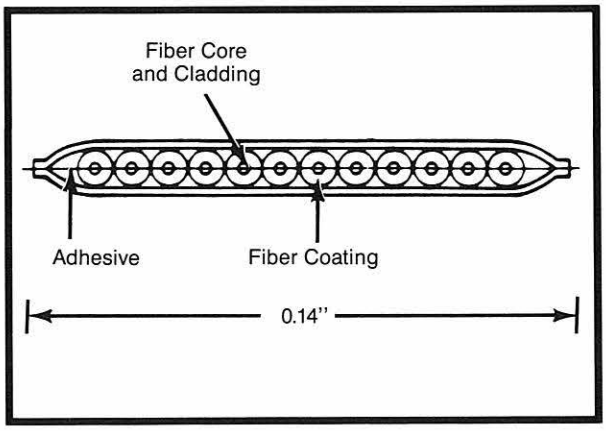
The 3BAX Lightguide Cable is used for underground conduit, buried, or aerial applications where lightning and rodent hazards are not present, and in PVC ducts in areas where lightning susceptibility is small.



Description

The 3BAX Lightguide Cable has a core consisting of from 2 to 144 multimode, 62.5/125-μm ribbon fibers, with 136 fibers guaranteed. These fibers are set side by side and laminated between pressure-sensitive adhesive tapes. The core is filled with a special compound and protected by a sheath consisting of two layers of polyethylene with steel strength strands embedded in each layer of polyethylene.

This cable can be ordered with array connectors and factory Sheath Termination Hardware (see Section 6).



Specifications

Physical Specifications

Number Of Fibers: 2 to 136
Cable Diameter: 0.49 in.
Weight: 100 lb/1000 ft
Minimum Bend Radius: 10 in. with load, 5 in. without load
Operating Temperature: -40 to 170°F

Optical Specifications

Fiber Loss:*
- 3.7 to 4.7 dB/km at 825 nm
- 0.95 to 2.7 dB/km at 1300 nm

Bandwidth:*
- 150 to 300 MHz-km at 850 nm
- 300 to 1,000 MHz-km at 1300 nm

Warning

The National Electric Codes (NEC) of 1987 prohibit the use of outside plant fiber optic telephone cables within the building, since they are not fire-resistant and do not pass any of the fire tests. If these cables are utilized within a building beyond a fifty (50) foot radius from the building cable entrance, they must be enclosed in metallic conduit.

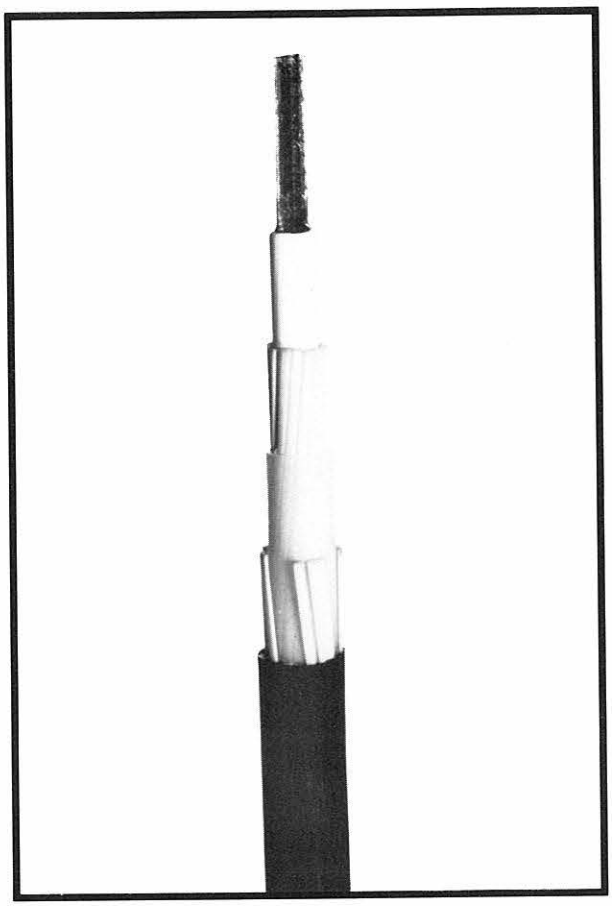
Product Code	No. of Fibers	Comcode	Product Code	No. of Fibers	Comcode
3BAX-002	2	104 000 237	3BAX-070	70	103 999 645
3BAX-004	4	104 000 245	3BAX-072	72	103 999 652
3BAX-006	6	104 000 252	3BAX-074	74	103 999 660
3BAX-008	8	104 000 260	3BAX-076	76	103 999 678
3BAX-010	10	104 000 278	3BAX-078	78	103 999 686
3BAX-012	12	103 999 397	3BAX-080	80	103 999 694
3BAX-014	14	103 999 405	3BAX-082	82	103 999 702
3BAX-016	16	103 999 413	3BAX-084	84	103 999 710
3BAX-018	18	103 999 421	3BAX-086	86	103 999 728
3BAX-020	20	103 999 439	3BAX-088	88	103 999 736
3BAX-022	22	103 999 447	3BAX-090	90	103 999 744
3BAX-024	24	103 881 207	3BAX-092	92	103 999 751
3BAX-026	26	103 999 454	3BAX-094	94	103 999 769
3BAX-028	28	103 999 462	3BAX-096	96	103 999 777
3BAX-030	30	103 999 470	3BAX-098	98	103 999 785
3BAX-032	32	103 999 488	3BAX-100	100	103 999 793
3BAX-034	34	103 999 496	3BAX-102	102	103 999 801
3BAX-036	36	103 885 521	3BAX-104	104	103 999 819
3BAX-038	38	103 999 504	3BAX-106	106	103 999 827
3BAX-040	40	103 999 512	3BAX-108	108	103 999 835
3BAX-042	42	103 999 520	3BAX-110	110	103 999 843
3BAX-044	44	103 999 538	3BAX-112	112	103 999 850
3BAX-046	46	103 999 546	3BAX-114	114	103 999 868
3BAX-048	48	103 885 513	3BAX-116	116	103 999 876
3BAX-050	50	103 999 553	3BAX-118	118	103 999 884
3BAX-052	52	103 999 561	3BAX-120	120	103 999 892
3BAX-054	54	103 999 579	3BAX-122	122	103 999 900
3BAX-056	56	103 999 587	3BAX-124	124	103 999 918
3BAX-058	58	103 999 595	3BAX-126	126	103 999 926
3BAX-060	60	103 885 505	3BAX-128	128	103 999 934
3BAX-062	62	103 999 603	3BAX-130	130	103 999 942
3BAX-064	64	103 999 611	3BAX-132	132	103 999 959
3BAX-066	66	103 999 629	3BAX-134	134	103 999 967
3BAX-068	68	103 999 637	3BAX-136	136	103 885 497

* Customers may order this cable with a specific bandwidth or fiber loss within the ranges specified.

Lightguide Cable, 3BFX

Applications

The 3BFX Lightguide Cable is used for underground, buried, or aerial applications. Its nonmetallic, fiberglass-reinforced sheath provides more than adequate lightning resistance in high lightning areas.



Description

The 3BFX Lightguide Cable has a core consisting of 4 to 144 multimode, 62.5/125-μm ribbon fibers, with 136 fibers guaranteed. The fibers are set side by side and laminated between pressure-sensitive adhesive tapes. The core is filled with a special compound and covered by a nonmetallic sheath, consisting of fiberglass strength strands embedded in polyethylene.

This cable can be ordered with array connectors and factory Sheath Termination Hardware (see Section 6).

Specifications

Physical Specifications

Number Of Fibers: 4 to 136
Cable Diameter: 0.5 in.
Weight: 0.1 lb/ft
Maximum Pulling Tension: 600 lb
Operating Temperature: -40 to 170°F

Optical Specifications

Fiber Loss:*
3.7 to 4.7 dB/km at 825 nm
0.95 to 2.7 dB/km at 1300 nm
Bandwidth:*
150 to 300 MHz-km at 850 nm
300 to 1,000 MHz-km at 1300 nm

Warning

The National Electric Codes (NEC) of 1987 prohibit the use of outside plant fiber optic telephone cables within the building, since they are not fire-resistant and do not pass any of the fire tests. If these cables are utilized within a building beyond a fifty (50) foot radius from the building cable entrance, they must be enclosed in metallic conduit.

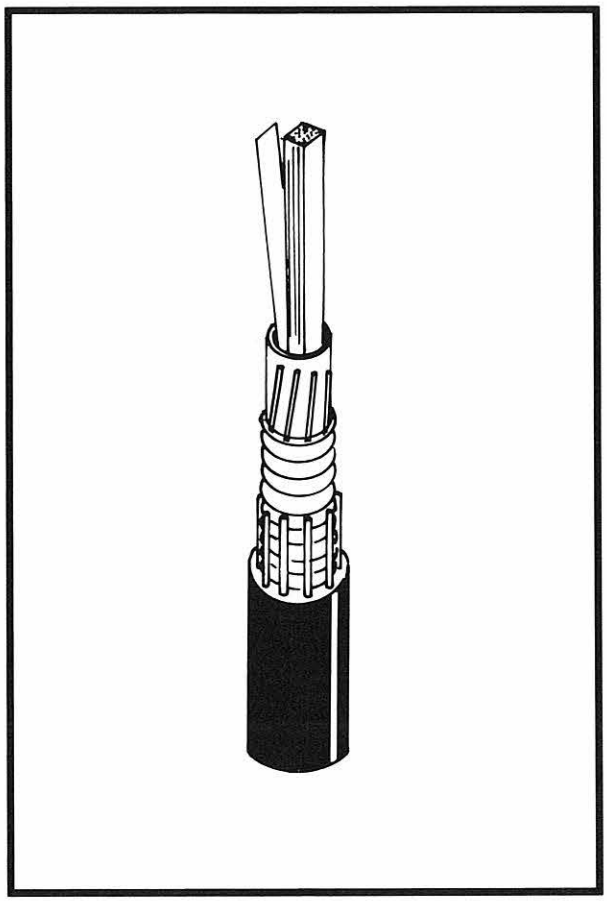
Product Code	No. of Fibers	Comcode	Product Code	No. of Fibers	Comcode
3BFX-002	2	105 166 532	3BFX-070	70	105 167 365
3BFX-004	4	105 166 540	3BFX-072	72	105 167 381
3BFX-006	6	105 166 557	3BFX-074	74	105 167 456
3BFX-008	8	105 166 565	3BFX-076	76	105 167 597
3BFX-010	10	105 166 573	3BFX-078	78	105 167 613
3BFX-012	12	105 166 581	3BFX-080	80	105 167 621
3BFX-014	14	105 166 599	3BFX-082	82	105 167 647
3BFX-016	16	105 166 607	3BFX-084	84	105 167 670
3BFX-018	18	105 166 615	3BFX-086	86	105 167 696
3BFX-020	20	105 166 904	3BFX-088	88	105 167 720
3BFX-022	22	105 166 920	3BFX-090	90	105 167 746
3BFX-024	24	105 166 946	3BFX-092	92	105 167 753
3BFX-026	26	105 166 953	3BFX-094	94	105 167 787
3BFX-028	28	105 166 961	3BFX-096	96	105 167 811
3BFX-030	30	105 166 979	3BFX-098	98	105 167 837
3BFX-032	32	105 166 987	3BFX-100	100	105 167 860
3BFX-034	34	105 166 995	3BFX-102	102	105 167 951
3BFX-036	36	105 167 001	3BFX-104	104	105 167 977
3BFX-038	38	105 167 035	3BFX-106	106	105 167 985
3BFX-040	40	105 167 084	3BFX-108	108	105 168 009
3BFX-042	42	105 167 092	3BFX-110	110	105 168 017
3BFX-044	44	105 167 100	3BFX-112	112	105 168 033
3BFX-046	46	105 167 118	3BFX-114	114	105 168 041
3BFX-048	48	105 167 126	3BFX-116	116	105 168 058
3BFX-050	50	105 167 217	3BFX-118	118	105 168 066
3BFX-052	52	105 167 258	3BFX-120	120	105 168 074
3BFX-054	54	105 191 845	3BFX-122	122	105 168 082
3BFX-056	56	105 191 852	3BFX-124	124	105 168 090
3BFX-058	58	105 191 860	3BFX-126	126	105 168 124
3BFX-060	60	105 167 274	3BFX-128	128	105 168 132
3BFX-062	62	105 167 290	3BFX-130	130	105 168 157
3BFX-064	64	105 167 308	3BFX-132	132	105 168 165
3BFX-066	66	105 167 332	3BFX-134	134	105 168 181
3BFX-068	68	105 167 357	3BFX-136	136	105 168 199

* Customers may order this cable with a specific bandwidth or fiber loss within the ranges specified.

Lightguide Cable, 3BHX

Applications

The 3BHX Lightguide Cable is used for underground, buried, or aerial applications where extra protection is needed from lightning or wildlife.



Description

The 3BHX Lightguide Cable has a core consisting of 4 to 144 multimode, 62.5/125-μm ribbon fibers, with 136 fibers guaranteed. The fibers are arranged side by side and laminated between pressure-sensitive adhesive tapes. The core is filled with a special compound and covered by a sheath that includes two layers of polyethylene with steel strength strands embedded in each layer, and a layer of corrugated, bonded stainless steel and copper underneath the outer layer of steel reinforcement wires.

This cable can be ordered with array connectors and factory Sheath Termination Hardware (see Section 6).

Specifications

Physical Specifications

Number Of Fibers: 4 to 136
Cable Diameter: 0.5 in.
Weight: 0.12 lb/ft
Maximum Pulling Tension: 600 lb
Operating Temperature: -40 to 170°F

Optical Specifications

Fiber Loss:*
3.7 to 4.7 dB/km at 825 nm
0.95 to 2.7 dB/km at 1300 nm
Bandwidth:*
150 to 300 MHz-km at 850 nm
300 to 1,000 MHz-km at 1300 nm

Warning

The National Electric Codes (NEC) of 1987 prohibit the use of outside plant fiber optic telephone cables within the building, since they are not fire-resistant and do not pass any of the fire tests. If these cables are utilized within a building beyond a fifty (50) foot radius from the building cable entrance, they must be enclosed in metallic conduit.

Product Code	No. of Fibers	Comcode	Product Code	No. of Fibers	Comcode
3BHX-004	4	105 081 814	3BHX-072	72	105 082 150
3BHX-006	6	105 081 822	3BHX-074	74	105 082 168
3BHX-008	8	105 081 830	3BHX-076	76	105 082 176
3BHX-010	10	105 081 848	3BHX-078	78	105 082 184
3BHX-012	12	105 081 855	3BHX-080	80	105 082 192
3BHX-014	14	105 081 863	3BHX-082	82	105 082 200
3BHX-016	16	105 081 871	3BHX-084	84	105 082 218
3BHX-018	18	105 081 889	3BHX-086	86	105 082 226
3BHX-020	20	105 081 897	3BHX-088	88	105 082 234
3BHX-022	22	105 081 905	3BHX-090	90	105 082 242
3BHX-024	24	105 081 913	3BHX-092	92	105 082 259
3BHX-026	26	105 081 921	3BHX-094	94	105 082 267
3BHX-028	28	105 081 939	3BHX-096	96	105 082 275
3BHX-030	30	105 081 947	3BHX-098	98	105 082 283
3BHX-032	32	105 081 954	3BHX-100	100	105 082 291
3BHX-034	34	105 081 962	3BHX-102	102	105 082 309
3BHX-036	36	105 081 970	3BHX-104	104	105 082 317
3BHX-038	38	105 081 988	3BHX-106	106	105 081 657
3BHX-040	40	105 081 996	3BHX-108	108	105 081 640
3BHX-042	42	105 082 002	3BHX-110	110	105 081 665
3BHX-044	44	105 082 010	3BHX-112	112	105 081 673
3BHX-046	46	105 082 028	3BHX-114	114	105 081 681
3BHX-048	48	105 082 036	3BHX-116	116	105 081 699
3BHX-050	50	105 082 044	3BHX-118	118	105 081 707
3BHX-052	52	105 082 051	3BHX-120	120	105 081 715
3BHX-054	54	105 082 069	3BHX-122	122	105 081 723
3BHX-056	56	105 082 077	3BHX-124	124	105 081 731
3BHX-058	58	105 082 085	3BHX-126	126	105 081 749
3BHX-060	60	105 082 093	3BHX-128	128	105 081 756
3BHX-062	62	105 082 101	3BHX-130	130	105 081 764
3BHX-064	64	105 082 119	3BHX-132	132	105 081 772
3BHX-066	66	105 082 127	3BHX-134	134	105 081 780
3BHX-068	68	105 082 135	3BHX-136	136	105 081 798
3BHX-070	70	105 082 143			

* Customers may order this cable with a specific bandwidth or fiber loss within the range specified.

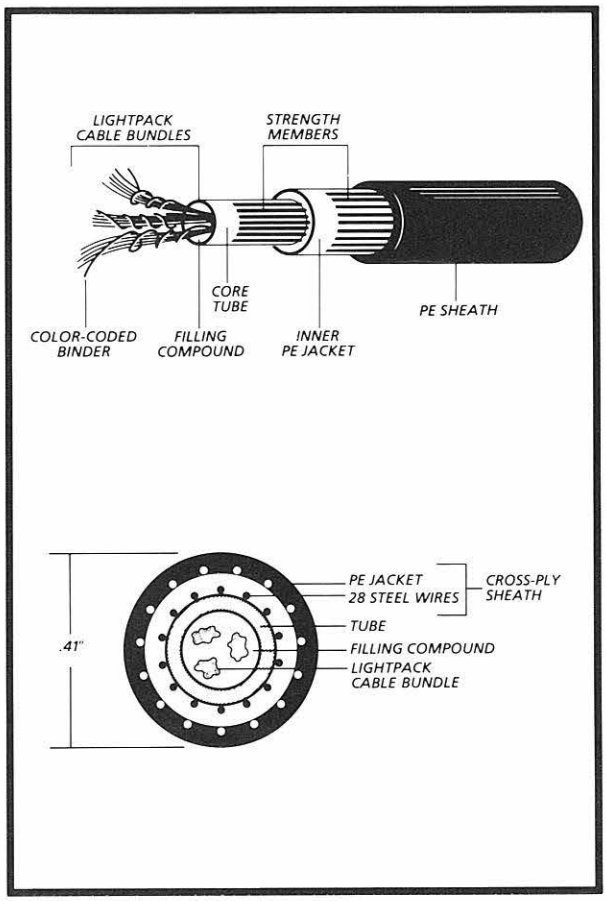
Lightpack Cable, 3DAX

Applications

The 3DAX is the standard LIGHTPACK cable. Like the 3BAX Lightguide Cable, it is used for underground conduit, buried, or aerial applications where lightning and rodent hazards are not present, and in PVC ducts where lightning susceptibility is small.

Description

The 3DAX LIGHTPACK Cable has a core consisting of from 4 to 96 multimode, 62.5/125-μm fibers. The fibers are separated into color-coded binder groups surrounded by a plastic core tube, which is filled with a special compound. The metallic crossply sheath includes an inner jacket and an outer polyethylene jacket, with steel strength strands embedded in each jacket layer.



Specifications

Physical Specifications

Number Of Fibers: 4 to 96
Cable Diameter: 0.42 in.
Weight: 0.08 lb/ft
Maximum Pulling Tension: 600 lb
Operating Temperature: -40 to 170°F

Optical Specifications

Fiber Loss:*
3.7 to 4.7 dB/km at 825 nm
0.95 to 2.7 dB/km at 1300 nm
Bandwidth:*
150 to 300 MHz-km at 850 nm
300 to 1,000 MHz-km at 1300 nm

Product Code	No. of Fibers	Comcode	Product Code	No. of Fibers	Comcode
3DAX-004	4	104 309 786	3DAX-052	52	105 140 818
3DAX-006	6	105 054 811	3DAX-054	54	105 140 826
3DAX-008	8	105 054 829	3DAX-056	56	105 140 842
3DAX-010	10	105 054 845	3DAX-058	58	105 140 867
3DAX-012	12	105 054 878	3DAX-060	60	105 140 883
3DAX-014	14	104 268 768	3DAX-062	62	105 140 891
3DAX-016	16	104 268 776	3DAX-064	64	105 140 909
3DAX-018	18	104 268 784	3DAX-066	66	105 140 917
3DAX-020	20	104 268 792	3DAX-068	68	105 140 933
3DAX-022	22	104 268 800	3DAX-070	70	105 140 941
3DAX-024	24	104 268 818	3DAX-072	72	105 140 958
3DAX-026	26	104 268 826	3DAX-074	74	105 279 681
3DAX-028	28	104 268 834	3DAX-076	76	105 279 699
3DAX-030	30	104 268 842	3DAX-078	78	105 279 707
3DAX-032	32	104 268 859	3DAX-080	80	105 279 715
3DAX-034	34	104 268 867	3DAX-082	82	105 279 723
3DAX-036	36	104 268 875	3DAX-084	84	105 279 731
3DAX-038	38	104 268 883	3DAX-086	86	105 279 749
3DAX-040	40	104 268 891	3DAX-088	88	105 279 756
3DAX-042	42	104 268 909	3DAX-090	90	105 279 764
3DAX-044	44	104 268 917	3DAX-092	92	105 279 772
3DAX-046	46	104 268 925	3DAX-094	94	105 279 780
3DAX-048	48	104 268 933	3DAX-096	96	105 279 798
3DAX-050	50	105 140 792			

* Customers may order this cable with a specific bandwidth or fiber loss within the ranges specified.

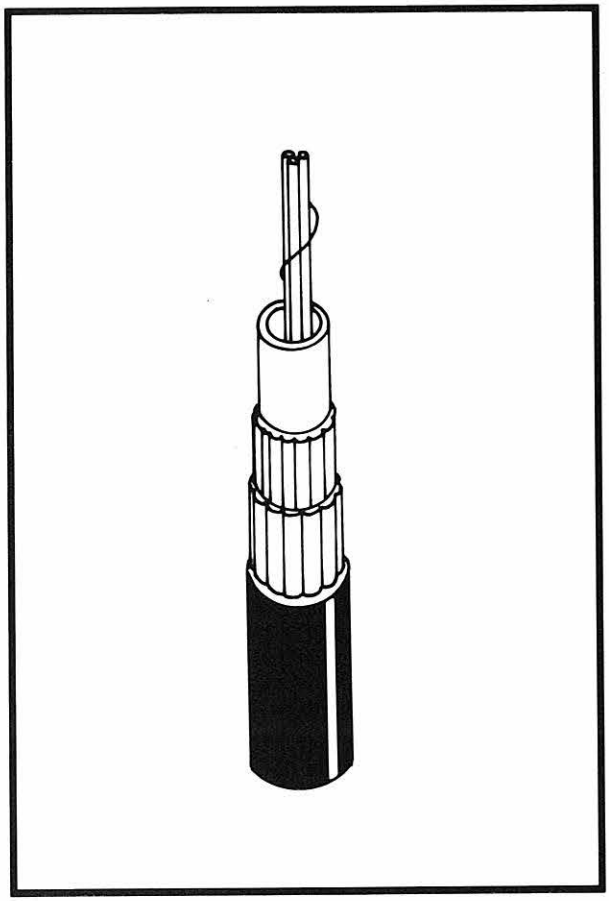
Warning

The National Electric Codes (NEC) of 1987 prohibit the use of outside plant fiber optic telephone cables within the building, since they are not fire-resistant and do not pass any of the fire tests. If these cables are utilized within a building beyond a fifty (50) foot radius from the building cable entrance, they must be enclosed in metallic conduit.

Lightpack Cable, 3DFX

Applications

The 3DFX LIGHTPACK Cable is used for underground conduit, buried, or aerial applications. Its nonmetallic, fiberglass-reinforced sheath provides more than adequate lightning resistance in high lightning areas.



Description

The 3DFX LIGHTPACK Cable has a core consisting of 4 to 96 multimode, 62.5/125-μm fibers. The fibers are separated into color-coded binder groups surrounded by a plastic core tube. The core is filled with a special compound and covered by a nonmetallic crossply sheath that consists of fiberglass strength strands embedded in polyethylene.

Specifications

Physical Specifications

Number Of Fibers: 4 to 96
Cable Diameter: 0.43 in.
Weight: 0.08 lb/ft
Maximum Pulling Tension: 600 lb
Operating Temperature: -40 to 170°F

Optical Specifications

Fiber Loss:*
3.7 to 4.7 dB/km at 825 nm
0.95 to 2.7 dB/km at 1300 nm
Bandwidth:*
150 to 300 MHz-km at 850 nm
300 to 1,000 MHz-km at 1300 nm

Product Code	No. of Fibers	Comcode	Product Code	No. of Fibers	Comcode
3DFX-004	4	105 168 215	3DFX-052	52	105 168 538
3DFX-006	6	105 168 231	3DFX-054	54	105 168 546
3DFX-008	8	105 168 249	3DFX-056	56	105 168 553
3DFX-010	10	105 168 264	3DFX-058	58	105 168 561
3DFX-012	12	105 168 272	3DFX-060	60	105 168 579
3DFX-014	14	105 168 298	3DFX-062	62	105 168 587
3DFX-016	16	105 168 322	3DFX-064	64	105 168 595
3DFX-018	18	105 168 348	3DFX-066	66	105 168 603
3DFX-020	20	105 168 355	3DFX-068	68	105 168 611
3DFX-022	22	105 168 371	3DFX-070	70	105 168 629
3DFX-024	24	105 168 389	3DFX-072	72	105 168 637
3DFX-026	26	105 168 397	3DFX-074	74	105 280 077
3DFX-028	28	105 168 405	3DFX-076	76	105 280 085
3DFX-030	30	105 168 413	3DFX-078	78	105 280 093
3DFX-032	32	105 168 421	3DFX-080	80	105 280 101
3DFX-034	34	105 168 439	3DFX-082	82	105 280 119
3DFX-036	36	105 168 447	3DFX-084	84	105 280 127
3DFX-038	38	105 168 454	3DFX-086	86	105 280 135
3DFX-040	40	105 168 462	3DFX-088	88	105 280 143
3DFX-042	42	105 168 470	3DFX-090	90	105 280 150
3DFX-044	44	105 168 488	3DFX-092	92	105 280 168
3DFX-046	46	105 168 504	3DFX-094	94	105 280 176
3DFX-048	48	105 168 512	3DFX-096	96	105 280 184
3DFX-050	50	105 168 520			

* Customers may order this cable with a specific bandwidth or fiber loss within the ranges specified.

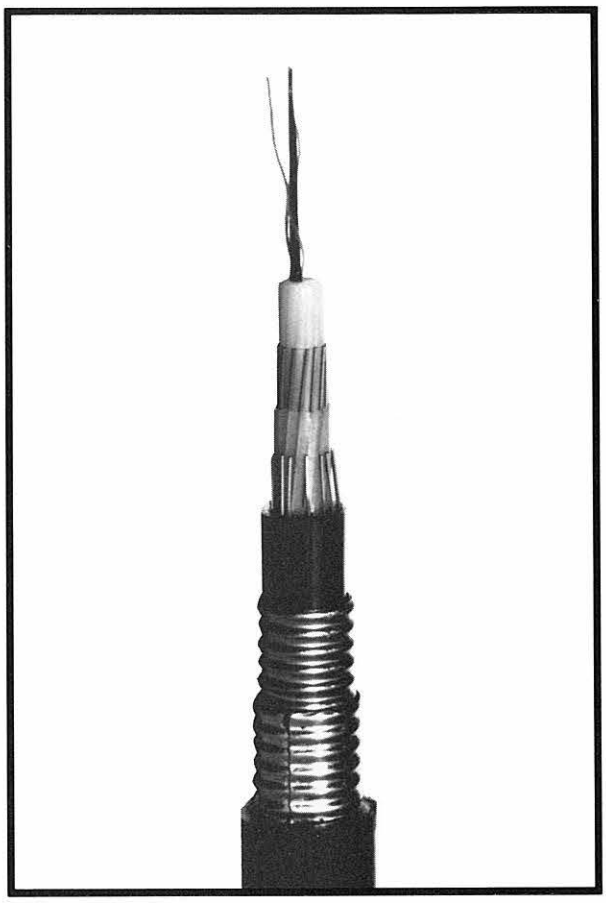
Warning

The National Electric Codes (NEC) of 1987 prohibit the use of outside plant fiber optic telephone cables within the building, since they are not fire-resistant and do not pass any of the fire tests. If these cables are utilized within a building beyond a fifty (50) foot radius from the building cable entrance, they must be enclosed in metallic conduit.

Lightpack Cable, 3DHX

Applications

The 3DHX LIGHTPACK Cable is used for underground conduit, buried, or aerial applications where extra protection is needed from lightning or wildlife.



Description

The 3DHX LIGHTPACK Cable has a core consisting of from 4 to 96 multimode, 62.5/125-μm fibers. The fibers are separated into color-coded binder groups surrounded by a plastic core tube, which is filled with FLEXGEL filling compound. The sheath includes an inner jacket and an outer jacket of polyethylene with steel strength strands embedded in each jacket layer, and a layer of corrugated, bonded stainless steel and copper under the outer jacket.

Specifications

Physical Specifications

Number Of Fibers: 4 to 96
Cable Diameter: 0.43 in.
Weight: 0.1 lb/ft
Maximum Pulling Tension: 600 lb

Optical Specifications

Fiber Loss:*
3.7 to 4.7 dB/km at 825 nm
0.95 to 2.7 dB/km at 1300 nm
Bandwidth:*
150 to 300 MHz-km at 850 nm
300 to 1,000 MHz-km at 1300 nm

Product Code	No. of Fibers	Comcode	Product Code	No. of Fibers	Comcode
3DHX-004	4	105 080 253	3DHX-052	52	105 080 501
3DHX-006	6	105 080 261	3DHX-054	54	105 080 519
3DHX-008	8	105 080 287	3DHX-056	56	105 080 527
3DHX-010	10	105 080 295	3DHX-058	58	105 080 535
3DHX-012	12	105 080 303	3DHX-060	60	105 080 543
3DHX-014	14	105 080 311	3DHX-062	62	105 080 550
3DHX-016	16	105 080 329	3DHX-064	64	105 080 568
3DHX-018	18	105 080 337	3DHX-066	66	105 080 576
3DHX-020	20	105 080 345	3DHX-068	68	105 080 584
3DHX-022	22	105 080 352	3DHX-070	70	105 080 592
3DHX-024	24	105 080 360	3DHX-072	72	105 080 600
3DHX-026	26	105 080 378	3DHX-074	74	105 280 192
3DHX-028	28	105 080 286	3DHX-076	76	105 280 200
3DHX-030	30	105 080 394	3DHX-078	78	105 280 218
3DHX-032	32	105 080 402	3DHX-080	80	105 280 226
3DHX-034	34	105 080 410	3DHX-082	82	105 280 242
3DHX-036	36	105 080 428	3DHX-084	84	105 280 259
3DHX-038	38	105 080 436	3DHX-086	86	105 280 267
3DHX-040	40	105 080 444	3DHX-088	88	105 280 416
3DHX-042	42	105 080 451	3DHX-090	90	105 280 432
3DHX-044	44	105 080 469	3DHX-092	92	105 280 457
3DHX-046	46	105 080 477	3DHX-094	94	105 280 481
3DHX-048	48	105 080 485	3DHX-096	96	105 280 499
3DHX-050	50	105 080 493			

* Customers may order this cable with a specific bandwidth or fiber loss within the ranges specified.

Warning

The National Electric Codes (NEC) of 1987 prohibit the use of outside plant fiber optic telephone cables within the building, since they are not fire-resistant and do not pass any of the fire tests. If these cables are utilized within a building beyond a fifty (50) foot radius from the building cable entrance, they must be enclosed in metallic conduit.

Section 2: Closures, Cross Connects, and Interconnects

Contents

Fiber Components

Introduction to Closures, Cross Connects, and Interconnects

Wire Closures

Wherever two cables are physically joined in the campus subsystem, or where groups of conductors are spliced or branched off a large cable (referred to as a branch splice) in the riser subsystem, the outer sheath of a cable is removed, exposing the conductors to environmental damage and breakage. The housing used to hold and protect a splice from harmful elements in the environment is called a closure. PDS closures are available for wire cable in aerial, buried, and building applications.

Wire Cross-Connect Hardware

Wire cross-connect hardware is used to terminate and interconnect cables and to route circuits throughout the distribution system.

The basic components of the 110 cross connect are the wiring block and the connecting block. The 110 Wiring Block is a fire-retardant, molded plastic piece on which cable pairs from the distribution system are terminated. The 110C Connecting Block is a 1-piece, fire-retardant, molded plastic housing containing solder-plated clips that terminate 24-gauge conductors without removing the insulation. Connecting blocks come in 3-, 4-, and 5-pair sizes and fasten onto a wiring block. They connect the distribution system cables terminated on a wiring block to F Cross-Connecting Wire or patch cords, both of which are used to interconnect circuits at the cross connect.

There are two basic types of 110 cross connects: the 110(A) connector system, which requires short lengths of jumper wires (see "F Cross-Connecting Wire" in Section 1) to link the cable pairs at two circuit termination points, and the 110(P) patch panel system, which uses patch cords (see "Patch Cords" in Section 1) to connect circuits.

The AT&T 110(A) connector system is adaptable to any building terminal design or layout. It requires that the jumper wire be installed and removed by a trained technician using a special tool (see Section 6). Terminating each conductor involves cutting it down on the cross connect. 110(A) Wiring Blocks secure and organize 25 cable pairs each, and have legs that hold them away from the wall and allow cables to be run vertically in the space between the block and the wall. They come in 100- and 300-pair sizes. The 188B1 Backboard is mounted between wiring blocks to hold and arrange the jumper cables terminated on the blocks. The 88A Retainer attaches to the leg of a wiring block to help hold and arrange cables on the top and bottom of the wiring block column. Designation strips snap in on alternate rows of the 110(A) Wiring Block to identify cable count and label circuits.

The AT&T 110(P) patch panel system provides for easy rearrangement of circuits by simply pushing on and pulling off patch cords, thus making administration of cross connects accessible for nontechnical personnel. 110(P) Terminal Blocks are preassembled vertical arrays of 110(P) Wiring Blocks with additional horizontal jumper troughs for routing patch cords. They come in 100-, 300-, and 900-pair sizes. 110 patch panel backboards are mounted between 110(P) Terminal Blocks to provide a vertical path for running patch cords between them. A 110 patch panel modular frame is available for mounting as many as ten 900-pair terminal blocks while aesthetically dressing cables and cable connections.

To meet the needs of large entrance facilities, the Large Building Entrance Terminal Frame System accommodates up to 7200 incoming pairs.

Code System for 110 Connector System

The options available with 110 Terminal Blocks are designated by a 9-character alphanumeric code.

CODE	110-	L	L	N	N	N	N	L	L	L
POSITION		1	2	3	4	5	6	7	8	9

Position	Meaning	Options
1	Type of wiring blocks	A - 110 wiring blocks with legs P - 110 wiring blocks and horizontal troughs on a backpanel
2	Size of connecting blocks	A - 5-pair B - 4-pair C - 3-pair E - one-third 3-pair, two-thirds 4-pair
3	Production Series	1
4-6	Numbers of pairs terminated	75 100 300 900
7-9	Unwired or with connectorized in/out units	CT - Connectorized Top (Female) CTM - Connectorized Top (Male) FT - Field Termination CB - Connectorized Bottom (Female) CBM - Connectorized Bottom (Male) STM - Stub Top (Male) SBM - Stub Bottom (Male) STF - Stub Top (Female) SBF - Stub Bottom (Female) CTH - Connectorized Top Hybrid (Both Male and Female) CT/FT - Top 1/3 of pairs connectorized; lower 2/3 of pairs field terminated SL - Stub Left SR - Stub Right

Example: A 110-AA1-900CT is a terminal block composed of a 110 wiring block with legs and 5-pair connecting blocks that terminate 900 pairs and has a female connectorized top.

Fiber Closures and Related Equipment

As with wire cable, wherever two fiber cables must be physically joined (rather than terminated at a cross connect or interconnect field), the outer sheaths of the cables must be removed so that the individual bare fibers in the cables can be spliced together. Once the outer sheath is removed from the cables, splices are susceptible to environmental damage and breakage. Therefore, these splices must be carefully protected, using equipment specifically designed for optical fibers.

The UCB1 Lightguide Closure is an aluminum housing that provides protection for splices. Lightguide organizers are installed within the UCB1 Lightguide Closure to organize and protect the splices. Grommet and Grip Kits anchor, seal, and bond the fiber cable at the closure entrance ports. For splicing outside cables or ribbon riser cables, a UC-type grommet kit is needed; a BC-type kit is required for splicing lightguide building cables. If the UCB1 Lightguide Closure is being used in a corrosive environment, it is placed inside an additional housing, the 51D3-LG2 Lightuide Closure, for extra protection.

Optical Cross Connects and Interconnects

Optical cross connects, like wire cross connects, provide a centralized location for circuit administration. They allow you to reroute circuits, add new circuits, and remove old ones, using fiber jumpers (patch cords) that are terminated with connectors on each end. Permanent cables, such as feeder cables and riser cables, are terminated at the interconnect.

Optical interconnects, although sometimes used for circuit administration, are generally used to interconnect fibers from different cables directly, without using fiber jumpers. Interconnects are generally installed when rearrangements are not expected and when the amount of optical power loss is of primary importance. (Interconnects allow for a lower optical power loss than cross connects since the optical signal passes through one connection as compared with two connections in a cross connect.)

Both cross-connect and interconnect modules are built from the same basic components: lightguide interconnection units (LIUs), cabinets that protect and organize the cables; connector panels, which mount connector couplings in the LIU; and couplings, the hardware that receive the connectors. Some additional components (vertical and horizontal troughs for routing fiber jumpers), however, are required for cross-connect modules.

Each LIU can be ordered separately or with a factory-equipped fanout, appropriate connector panels, and couplings. The fanout, which provides a transition from array-connectorized ribbon cable to 12 individually jacketed connectorized fibers, is used when a ribbon from a riser or outside cable is brought directly into an LIU and then spliced to the fanout. The fanout's transition piece and the completed splice are held in place and protected by a 1A1 Holder. Like the LIU, the fanout, connector panels, couplings, and holder can be ordered separately.

If an outside ribbon cable is brought into an LIU, the cable is secured and grounded above the column of LIUs using an 8A1 Clamp. If the cable is being routed to two adjacent columns of LIUs, a 1A1 Adapter is used to guide and protect the fibers from the 8A1 Clamp into the columns. (The clamp and adapter must be ordered separately).

Because cross connects and interconnects are constructed from modular units, new modules can be added as needed, provided there is enough space in the satellite closet or equipment room.

Backboard, 110 Patch Panel System

Applications

The 110 Patch Panel System Backboard provides a vertical path for running patch cords or jumpers between 110 Patch Panel System Terminal Blocks.

Description

The backboard is a metal panel equipped with distributing rings that provide the vertical paths for running patch cords.

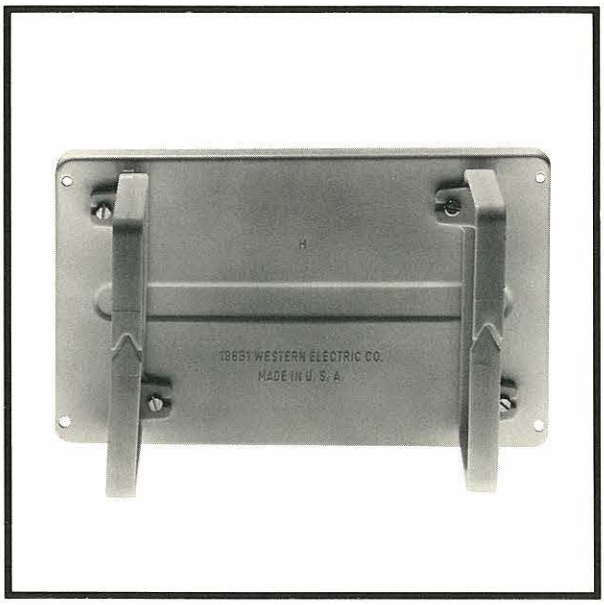
Specifications

Product Code	Length (In.)	Width (In.)	Depth (In.)	Comcode
188C2 (used with 900-pair wiring blocks)	61.75	8.5	8	104 031 794
188D2 (used with 300-pair wiring blocks)	24	8.5	8	104 032 404
188E2 (used with supplementary horizontal wiring runs)	24	8.5	8	104 031 802

Backboard, 188B1

Applications

The 188B1 Backboard is used with 110(A) Wiring Blocks to arrange jumper wires run between blocks. The backboard is placed between fields where it serves as a horizontal trough for the wires and provides space to change the direction of jumpers. One backboard is used for each vertical column of 110(A) Wiring Blocks.



Description

The 188B1 Backboard is made of metal and has two closed, formed, plastic distribution rings.

Specifications

Physical Specifications

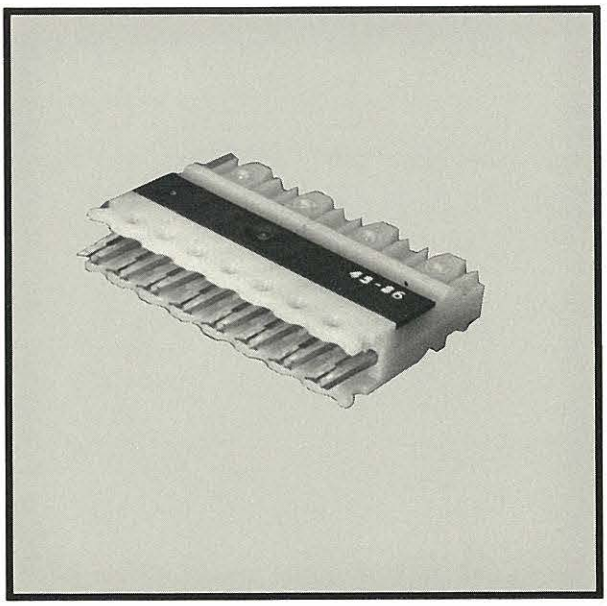
Height: 6.5 in.
Width: 10.75 in.
Depth: 0.5 in.

Product Code	Comcode
188B1	102 689 569

Connecting Block, 110C

Applications

The 3-pair (110C-3), 4-pair (110C-4), and 5-pair (110C-5) 110C Connecting Blocks fasten onto the 110 Wiring Block to provide an electrically tight connection between cable conductors terminated on the wiring block and F Cross-Connecting Wire or patch cords. Clips on the connecting blocks terminate 24-gauge PIC or PVC wires without removing the insulation.



Description

The connecting block consists of a 1-piece, fire-retardant, molded plastic housing containing solder-plated quick clips, which cut through the insulation on conductors as they are pushed onto the wiring block. It is double-ended, one end to accept 24-gauge F Cross-Connecting Wire and the other to terminate the cable conductors. The front of the connecting block is color-coded, allowing rapid pair identification and termination.

Specifications

Physical Specifications

Height: 0.25 in.
Width: 0.9 in. (3-pair), 1.2 in. (4-pair), 1.5 in. (5-pair)
Depth: 1 in.

Product Code	Pair Size	Comcode
110C-3	3	103 801 239
110C-4	4	103 801 247
110C-5	5	103 801 254

Designation Strips, 188UT1-50

Applications

The 188UTI-50 Designation Strips are used to provide a means for labeling circuits on a 110 Wiring Block. The strips snap into alternate wiring rows on the wiring block to identify cable count and to conceal and protect cable conductors.

Description

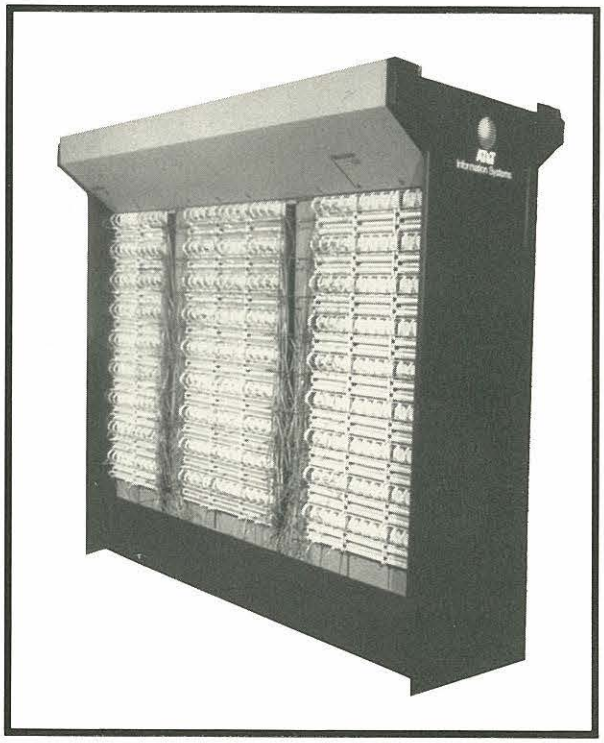
The clear strips accept color-coded, slip-in circuit labels, either preprinted or blank. The strips do not interfere with running, tracing, or removing jumper wires.

Product Code	Comcode
188UTI-50	103 895 504

Frame, 110 Patch Panel System

Applications

The 110 Patch Panel System Frame is used as a structure for mounting 900-pair 110(P) Terminal Blocks and the associated 110(P) backboards.



Description

The 110 frame is a double-sided aluminum frame equipped with mounting brackets, designed for quick assembly, that accommodates a total of five units per side. The units can be a combination of wiring blocks and backboards. The frame accommodates a total of 9000 pairs when all 110(P) Terminal Blocks are mounted.

An overhead cable support structure is available separately. Mounted directly on top of the frame, it provides support for all cables routed to and from the frame. Panels to enclose the frame can also be ordered separately. (See also 1-, 2-, 3-, and 4-Pair Patch Cords for the 110 patch panel system in Section 1.)

Specifications

Physical Specifications

Height: 76.5 in.
Width: 43.5 in.
Depth: 16 in.

Product Code	Description	Comcode
1110A2	Mounting frame	104 032 495
1110C1	Cable support structure	104 175 120
3110A1	End panel (aluminum)	104 186 192
2110A1	Top panel	104 176 276
2110B1	Bottom panel	104 176 284

Large Building Entrance Terminal Frame System

Applications

The Large Building Entrance Terminal Frame System is used to terminate telephone network cables from the central office. Accommodating up to 7200 incoming pairs, it is designed to meet the needs of large entrance facilities where wall space is at a premium.

Description

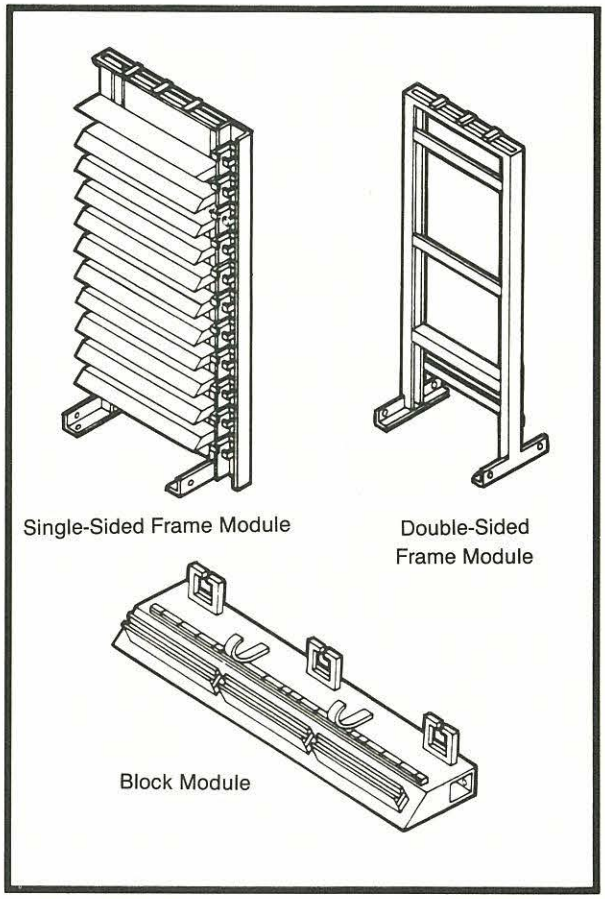
This terminal frame system consists of three main components: the frame module, the block module, and the protectors.

The assembled frame module includes a lightweight, welded steel frame available in four different designs: single-sided (3600-pair), double-sided horizontal or vertical (6600-pair), or double-sided horizontal (7200-pair).

The block module, formed and welded of 13-gauge steel, can be ordered either wired with 110-type connecting blocks or unwired, and either prestubbed or without stubs. It is available either with the stubs exiting the module at the back (horizontal module) or with the stubs exiting at the end (vertical module).

The protectors are 189- (for 110 block use) or 190-type (wall-mount) protector panels (see Section 5).

Both vertical and horizontal jumper troughs are available with the Large Building Entrance Terminal Frame System. Single-sided frame modules use a vertical jumper trough. Two types of horizontal jumper troughs are available: an open pan-type trough is recommended for installations of three frame modules or more equipped with block modules. The trough provides express routing for long jumpers. A ring-type horizontal jumper trough is required on installations where protectors and block modules are mounted on a frame module to provide orderly jumper routing between protector panels and block modules.



Specifications

Frame Module Physical Specifications

Height: 7 ft
Width: 34 in.
Depth: 12 to 24 in.

Block Module Physical Specifications

Height: 2.5 in.
Width: 33.75 in.
Depth: 8 in.

Description	Comcode
Double-sided (unprotected) frame module	103 357 588
189-Type (protected) frame module	842 824 160
190-Type (protected) frame module	843 823 972
Vertical (300-pair) block module*	103 357 513
Horizontal (300-pair) block module*	103 357 521
Inverted horizontal (300-pair) block module*	103 357 539
300-pair block module	843 823 956
Blank block module	103 361 390
Horizontal (ring-type) trough module	103 357 570
Horizontal (ring-type) trough module	843 824 178
Horizontal (express jumper) trough module	843 824 202
Vertical trough module	843 823 964

* These block modules come equipped with a 25-foot stub cable but have no cable connector.

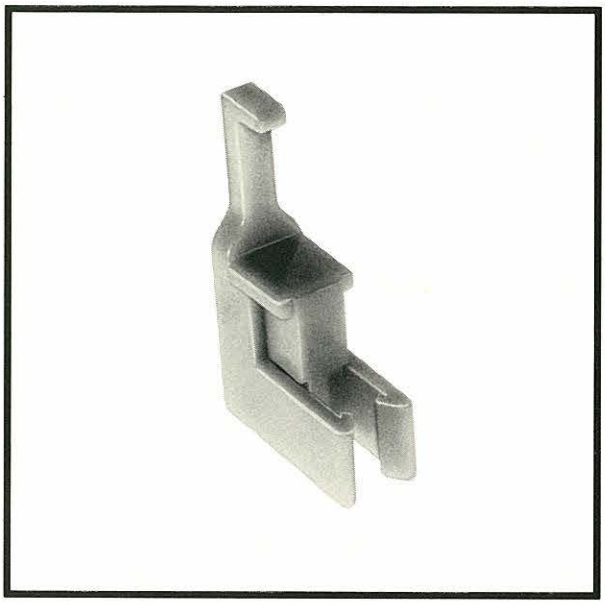
Retainer, 88A

Applications

The 88A Retainer is used to arrange jumper wires on the 110 Wiring Block.

Description

The 88A Retainer is a molded plastic L-shaped part that attaches to the leg of the wiring block, either at the top or the bottom, to form a ring.



Specifications

Physical Specifications

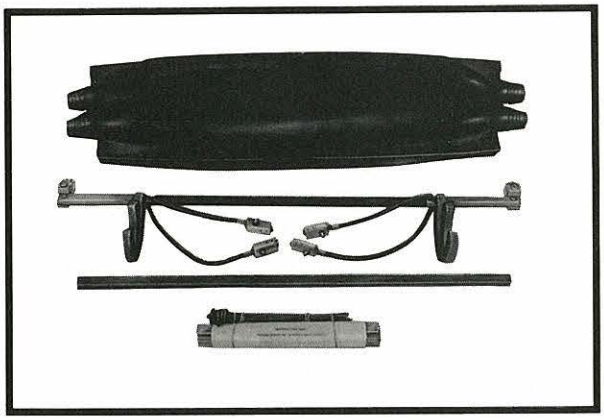
Height: 2 in.
Width: 1 in.
Depth: 0.5 in.

Product Code	Comcode
88A	102 421 476

Splice Closure, Aerial, 18-Type

Applications

The 18-Type Aerial Splice Closure is used to enclose branch and in-line splices in PIC cable used in non-pressurized aerial installations.



Description

This flexible plastic enclosure contains all the pieces necessary for a normal installation except bond clamps; it is available in three sizes.

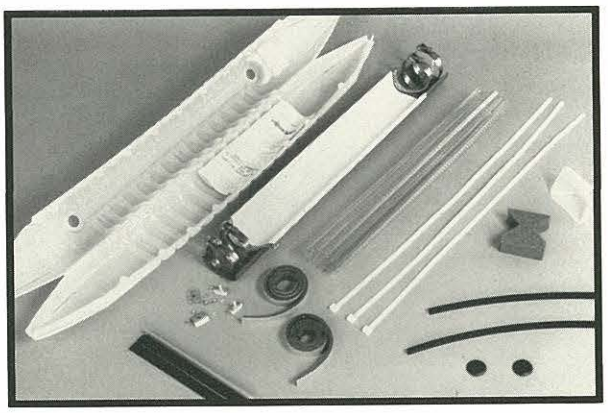
Specifications

Product Code	Size (In.)	Cable Diameter, Maximum (In.)	Splice Diameter (In.)	Comcode
18A1E	29.7 x 4.1 x 7.9	0.5 to 1	3.3	104 373 667
18B1E	33.2 x 6.2 x 10.3	1 to 2.2	5.8	104 373 634
18C1E	31.2 x 7.5 x 12.4	2.2 to 3	7.1	104 373 642

Splice Closure, Buried, 16-Type

Applications

The 16-Type Buried Splice Closure is used to enclose splices ranging from 50 to 900 pairs of waterproof cable.



Description

This closure contains all pieces necessary to finish a splice except the D Encapsulant (see Section 6). The closure has a polypropylene plastic cover with a 1-piece "living" hinge, projecting ends, and no-trim edges.

Specifications

Product Code	Size (In.)	Cable Diameter, Max., Straight (In.)	Cable Diameter, Max., Branch (In.)	Comcode
16AA2	26 x 2.5 x 3.5	1.4	—	103 198 073
16A2	30 x 3.3 x 3.7	1.2	1.7	102 456 977
16BB2	33 x 4.8 x 4.3	2.5	3.7	103 198 081
16B2	42 x 4.8 x 4.3	2.5	3.7	102 456 985
16C2	42 x 4.8 x 5.3	2.5	3.7	102 456 992
16D2	42 x 6.3 x 6.1	3.4	5	102 903 309
16E2	42 x 6.3 x 7.1	3.4	5	102 756 640

Splice Closure, Buried, 2200 Series

Applications

The 2200 Series Buried Splice Closure is used to enclose waterproof cable splices in direct buried or manhole applications. It can be used with cables ranging in size from 25 to 3000 pairs.

Description

A 2200 Series closure includes an outer shell, a splice organizer, and an inner bladder. D Encapsulant to fill the closure must be ordered separately (see Section 6). A special pressure indicator is included with each closure to provide a simple and effective means for checking the quality of the completed closure.

Specifications

Product Code	Length	Inside Diameter (In.)	Sheath Opening (In.)	Cable Diameter, Max. (In.)	Comcode
2200-3/12	33	3	12	1.7	104 171 236
2200-4/12	33	4	12	2.7	104 171 251
2200-4/21	42	4	21	2.7	104 171 244
2200-6/12	33	6	12	3.7	104 171 269
2200-6/21	42	6	21	3.7	104 171 277
2200-8/21	42	7.5	21	5	104 171 285
2200-9/21	42	9	21	6.5	104 171 293
2200-10/21	42	10.25	21	6.5	104 175 500

Splice Closure, 2000 Series

Applications

The 2000 Series Splice Closure is used in buildings, premises vaults, and cable entrance applications, and has passed both vertical and horizontal tests for flammability as specified in PUB 55006. It can also be ordered as a pressurized closure system designed for all applications, including aerial installations and the most stringent requirements of underground pressurized plant.

Description

Each closure consists of two reinforced plastic covers that fit over the cable end plates and are held together by snap-catch fasteners and reusable rubber seals. An alignment bar, sheath retention clamps, and a bonding and grounding system are included.

Specifications

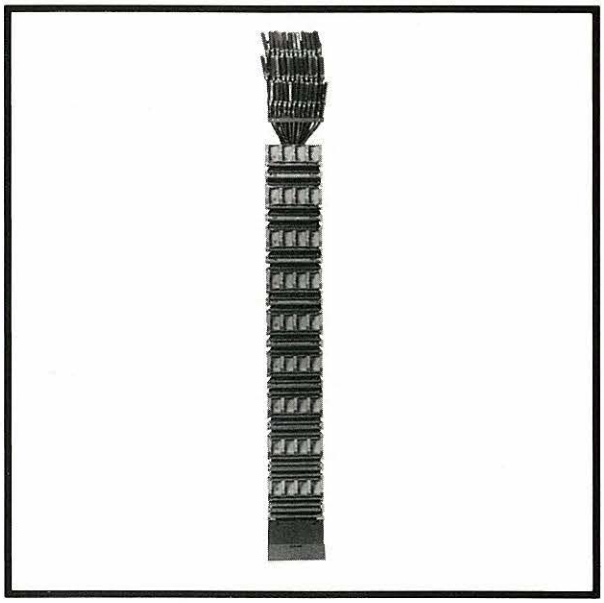
Product Code	Description	Diameter (In.)	Sheath Opening (In.)	Overall Length (In.)	Comcode
2000 FR 5/20	Cover	5.5	20	29.5	104 205 620
2000 FR 5/28	Cover	5.5	28	37.5	104 205 646
2000 FR 7/20	Cover	7	20	29.5	104 205 661
2000 FR 7/28	Cover	7	28	37.5	104 205 687
2000 FR 8/20	Cover	8.5	20	29.5	104 205 703
2000 FR 8/28	Cover	8.5	28	37.5	104 205 729
2000 FR 8/36	Cover	8.5	36	45.5	104 205 745

Product Code	Description	Number of Openings	Standard or Split	Cable Diameter, Maximum (In.)	Comcode
2000 FR5-1E	Endplate	1	—	2.2	104 206 289
2000 FR5-2E	Endplate	2	—	1.6 (2)	104 206 297
2000 FR5-9G	Endplate	9	Standard	1	104 341 078
2000 FR5-9GS	Endplate	9	Split	1	104 341 086
2000 FR7-1E	Endplate	1	—	3	104 206 305
2000 FR7-2E	Endplate	2	—	2.2	104 206 313
2000 FR7-12G	Endplate	12	Standard	1	104 382 601
2000 FR7-12GS	Endplate	12	Split	1	104 382 619
2000 FR8-1E	Endplate	1	—	3	104 206 321
2000 FR8-2E	Endplate	2	—	3.5	104 206 339
2000 FR8-3E	Endplate	3	—	1.6 (2), 2.8 (1)	104 206 347
2000 FR8-18G	Endplate	18	Standard	1	104 208 376
2000 FR8-18GS	Endplate	18	Split	1	104 208 384

Terminal Blocks, 110 Patch Panel System

Applications

The 110 Patch Panel System Terminal Blocks are used to terminate connectorized cable pairs.



Description

The terminal blocks are made up of prewired 100-, 300-, and 900-pair sizes and consist of 110 Wiring Blocks and special horizontal jumper troughs for arranging patch cords. Connecting blocks in 3-, 4-, or 5-pair sizes may be specified to match the pairs per link ratio of the system in use. Transparent designation labeling strips allow you to insert custom-printed circuit labels. Field-terminated terminal blocks, which allow direct termination of building cables, are also available.

Code System for 110 Connector System

The options available with 110 Terminal Blocks are designated by a 9-character alphanumeric code.

CODE	110-	L	L	N	N	N	N	L	L	L
POSITION		1	2	3	4	5	6	7	8	9

Position	Meaning	Options
1	Type of wiring blocks	A - 110 wiring blocks with legs P - 110 wiring blocks and horizontal troughs on a backpanel
2	Size of connecting blocks	A - 5-pair B - 4-pair C - 3-pair E - one-third 3-pair, two-thirds 4-pair
3	Production Series	1
4-6	Numbers of pairs terminated	75 100 300 900
7-9	Unwired or with connectorized in/out units	CT - Connectorized Top (Female) CTM - Connectorized Top (Male) FT - Field Termination CB - Connectorized Bottom (Female) CBM - Connectorized Bottom (Male) STM - Stub Top (Male) SBM - Stub Bottom (Male) STF - Stub Top (Female) SBF - Stub Bottom (Female) CTH - Connectorized Top Hybrid (Both Male and Female) CT/FT - Top 1/3 of pairs connectorized; lower 2/3 of pairs field terminated SL - Stub Left SR - Stub Right

Product Code	Height (In.)	Width (In.)	Depth (In.)	Comcode
110-PA1-900CT	82	8.5	6.25	103 823 894
110-PB1-900CT	82	8.5	6.25	103 804 837
110-PC1-900CT	82	8.5	6.25	103 804 878
110-PE1-900CT	82	8.5	6.25	104 374 343
110-PA1-900CTM	82	8.5	6.25	104 374 228
110-PB1-900CTM	82	8.5	6.25	104 374 285
110-PC1-900CTM	82	8.5	6.25	104 374 335
110-PE1-900CTM	82	8.5	6.25	104 374 350
110-PC1-900CTH	82	8.5	6.25	104 049 101
110-PA1-900FT	59	8.5	6.25	104 374 236
110-PB1-900FT	59	8.5	6.25	103 804 845
110-PC1-900FT	59	8.5	6.25	103 804 886
110-PE1-900FT	59	8.5	6.25	103 823 910
110-PE1-900CT/FT	82	8.5	6.25	104 173 174
110-PA1-900CB	113.5	8.5	6.25	104 374 202
110-PB1-900CB	113.5	8.5	6.25	104 173 158
110-PC1-900CB	113.5	8.5	6.25	104 166 590
110-PA1-900CBM	113.5	8.5	6.25	104 374 210
110-PB1-900CBM	113.5	8.5	6.25	104 374 277
110-PC1-900CBM	113.5	8.5	6.25	104 374 327
110-PAI-300CT	33	8.5	6.25	103 823 886
110-PB1-300CT	33	8.5	6.25	103 804 811
110-PC1-300CT	33	8.5	6.25	103 804 852
110-PE1-300CT	33	8.5	6.25	104 017 066
110-PA1-300CTM	33	8.5	6.25	104 374 194
110-PB1-300CTM	33	8.5	6.25	104 374 269
110-PC1-300CTM	33	8.5	6.25	104 374 319
110-PA1-300CB	27.375	8.5	6.25	104 374 558
110-PB1-300CB	27.375	8.5	6.25	104 374 244
110-PC1-300CB	27.375	8.5	6.25	104 374 293
110-PA1-300CBM	27.375	8.5	6.25	104 374 186
110-PB1-300CBM	27.375	8.5	6.25	104 374 251
110-PC1-300CBM	27.375	8.5	6.25	104 374 301
110-PA1-300FT	24	8.5	6.25	104 374 716
110-PB1-300FT	24	8.5	6.25	104 175 829
110-PC1-300FT	24	8.5	6.25	103 804 860
110-PE1-300FT	24	8.5	6.25	103 823 902
110-PE1-300CT/FT	24	8.5	6.25	104 173 166
110-AC1-300STM/6	10.75	10.75	3.25	104 049 085
110-AC1-300SBM/6	10.75	10.75	3.25	104 374 178
110-AC1-300STF/6	10.75	10.75	3.25	104 049 077
110-AC1-300SBF/6	10.75	10.75	3.25	104 374 160
110-AB1-300FT	10.75	10.75	3.25	104 049 051
110-AC1-300FT	10.75	10.75	3.25	104 049 069
110-AB1-100FT	3.625	10.75	3.25	103 823 845
110-AC1-100FT	3.625	10.75	3.25	103 826 780
110-AE1-75FT	3.625	10.75	3.25	104 049 093
110-BC1-100SR	3.625	8.5	1.4	103 823 878
110-BC1-100SL	3.625	8.5	1.4	103 823 860

Wiring Block, 110

Applications

The 110 Wiring Block is used to terminate cable pairs and permits a neat, organized arrangement of cables behind the block.

Description

The 110 Wiring Block is a fire-retardant molded plastic block with horizontal index strips that secure and organize 25 cable pairs each. The index strips are marked with five tip colors that help the installer locate pairs quickly and they accommodate 24-gauge cable conductors. The blocks can be mounted directly on wall surfaces without backboards. When mounted side by side, the wiring blocks form the required vertical jumper wire paths without the use of any other parts.

Specifications

Physical Specifications

Pair Size: 100, 300
Height: 3.625 in. (100-pair), 10.75 in. (300-pair)
Width: 10.75 in.
Depth: 3.25 in.

Product Code	Description	Comcode
110 AW1-100	100-pair	103 804 894
110 AW1-300	300-pair	103 804 902

Adapter, 1A1

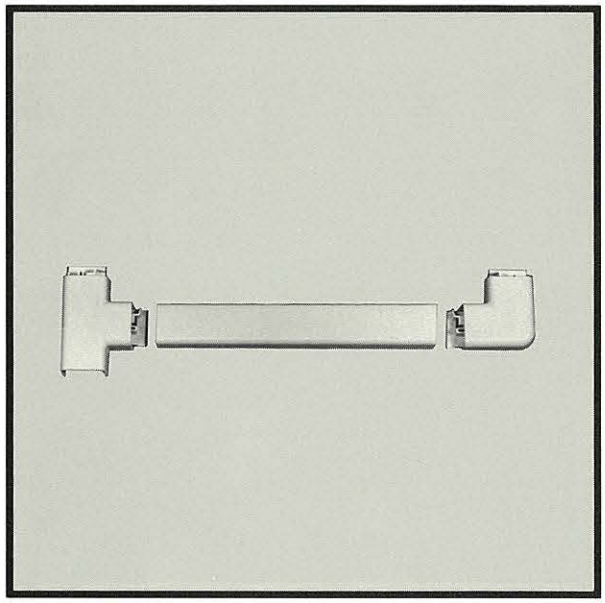
Applications

The 1A1 Adapter is used to guide and protect fibers running from the 8A1 Clamp into two adjacent columns of 100A Lightguide Interconnection Units.

Description

The 1A1 Adapter includes a conduit, a T-section, a 90° bend, two guides, and two mounting screws.

Product Code	Comcode
1A1 Adapter	105 034 482



Bar, 42-Inch

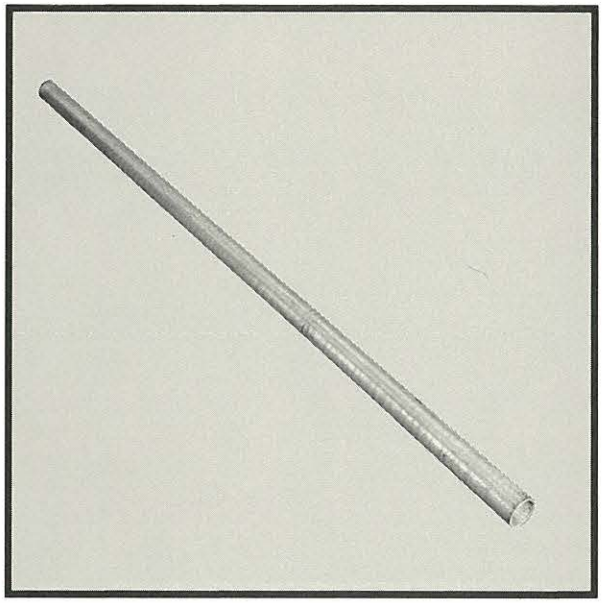
Applications

The 42-Inch Bar is used as a base for aerial and Cable Entrance Facility installations of the UCB1 Lightguide Closure and the 51D3-LG2 Lightguide Closure. It is not used in buried applications.

Description

The bar is 42 inches long and is made of galvanized steel.

Product Code	Comcode
F83AK8548	843 816 323



Bracket, Base Support

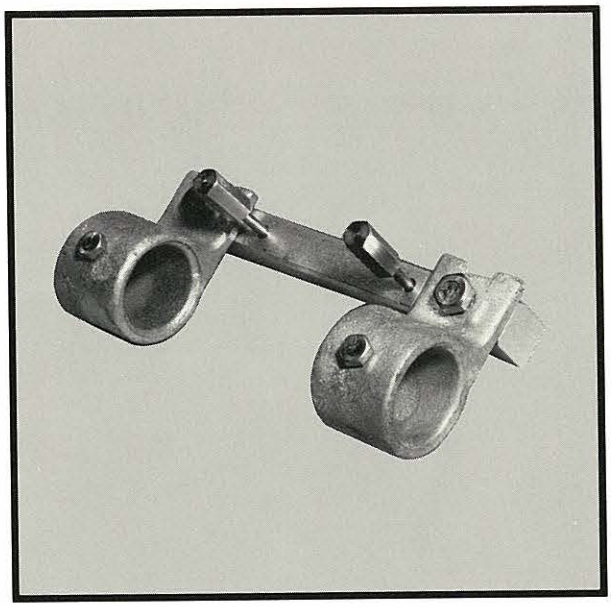
Applications

The Base Support Bracket is used to support a UCB1 Lightguide Closure or a 51D3-LG2 Lightguide Closure when attached to a 42-Inch Bar.

Description

The Base Support Bracket is a metal holder with an opening wide enough to slide the 42-Inch Bar through; a screw is used to secure the bar to the bracket. A tab extends from the top of the bracket and a screw is inserted through it to secure the bracket to the closure.

Product Code	Comcode
F83AK8547	103 894 051



Bracket, Hanger

Applications

The Hanger Bracket is used to attach a UCB1 Lightguide Closure or a 51D3-LG2 Lightguide Closure to the 42-Inch Bar.

Description

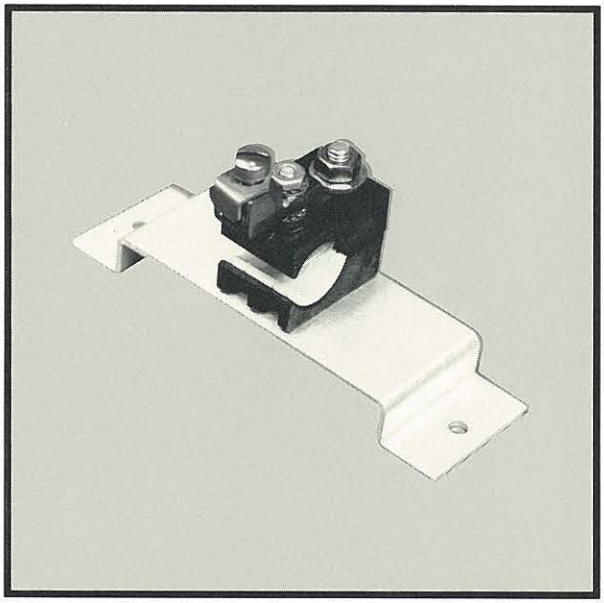
The Hanger Bracket is a stainless steel bracket, 2 inches in diameter. Two brackets are needed for each closure.

Product Code	Comcode
F79AK8524	900 511 338

Clamp, 8A1

Applications

The 8A1 Clamp is used to secure and ground one lightguide cable with or without factory Sheath Termination Hardware. It is installed either above or below a column of 100A Lightguide Interconnection Units (LIUs) for top or bottom entry.



Description

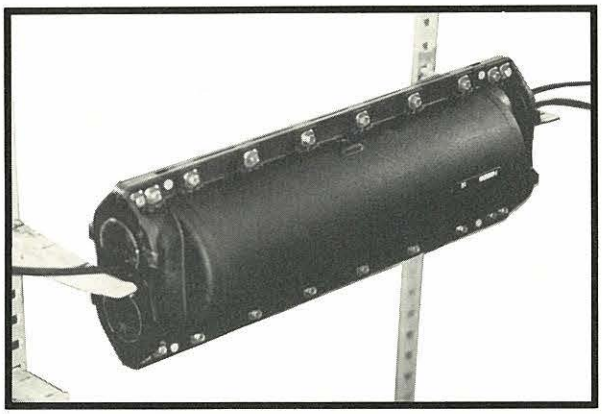
The 8A1 Clamp consists of a preassembled mounting bracket, two plastic half-clamps, a grounding connector, inserts for different cable sizes, a split-lock connector (ground log), and a B Bond Clamp.

Product Code	Comcode
8A1 Clamp	104 206 966

Closure, 51D3-LG2 Lightguide

Applications

The 51D3-LG2 Lightguide Closure is a protective cover used to safeguard the UCB1 Lightguide Closure in buried and corrosive aerial environments. The 51D3-LG2 closure can be buried directly in the ground. (See description in this section for "Closure, UCB1 Lightguide.")



Description

The 51D3-LG2 closure is a fiberglass-reinforced polypropylene enclosure; the complete closure includes an instruction sheet, a liner, a funnel, two blank grommets, two brackets, two cable ties, two foam tapes, B sealant, two stoppers, and a 42-inch long galvanized bar. To complete the protection of the inner closure, the 51D3-LG2 closure should be filled with 10,000 grams of D Encapsulant (see Section 6).

Specifications

Physical Specifications

Length: 28 in.
Inside Diameter: 7 in.

Product Code	Comcode
51D3-LG2	103 921 938

Closure, UCB1 Lightguide

Applications

The UCB1 Lightguide Closure is used to enclose the lightguide organizers containing fiber splices and to protect them from moisture, whether from direct contact with water or from the diffusion of water vapor.(See description in this section for "Closure, 51D3-LG2 Lightguide.")

Description

The UCB1 is a sealed aluminum housing that was developed to meet the needs of all lightguide splicing requirements, regardless of the type of system or cable design. It can be used as a stand-alone product in noncorrosive aerial and building applications.

The UCB1 includes an instruction sheet, a cover, a laser warning label, a closure gasket, a base subassembly, two clamps, two blank plugs, a wooden paddle, 21 hex-head cap screws, B sealant, two washers, two foam blocks, and an external grounding package. Cables entering from either side of the base are anchored, bonded, and sealed outside the splicing cavity of the closure. This cavity can be reentered without disturbing the cable ends or bonding system.

Specifications

Physical Specifications

Length: 22.5 in.
Width: 5.5 in.
Height: 5 in.

Product Code	Comcode
UCB1	103 921 946

Connector Panel, 10A Lightguide

Applications

The 10A Lightguide Connector Panel snaps into the 100A Lightguide Interconnection Unit to support six flex-ferrule ST (C2000A-2) Connector Couplings.

Description

The 10A panel features a staggered coupler mounting arrangement to allow maximum finger space around connectors. The panel is equipped with two fasteners, consisting of a plunger and a grommet, for easy installation into the 100A Lightguide Interconnection Unit.

Specifications

Physical Specifications

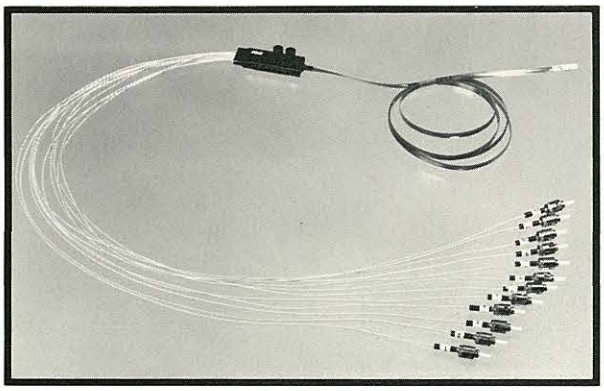
Length: 3.9 in.
Width: 1.5 in.
Depth: 0.25 in.

Product Code	Comcode
10A	104 141 858

Fanout

Applications

The Fanout is used in the 100A Lightguide Interconnection Unit or in the LGX Lightguide Cross-Connect Frame to provide an easy transition from array-connectorized cable to 12 individual fibers at the connector panels.



Description

The Fanout is a pretested ribbon cable that has a 1009C Array Connector on one end and 12 individual connectorized fibers on the other end. Each fiber has a special strengthened buffer for added protection during handling.

Specifications

Fanout Physical Specifications

Length: 72 in. (48 in. of ribbon, 24 in. of separated fibers)

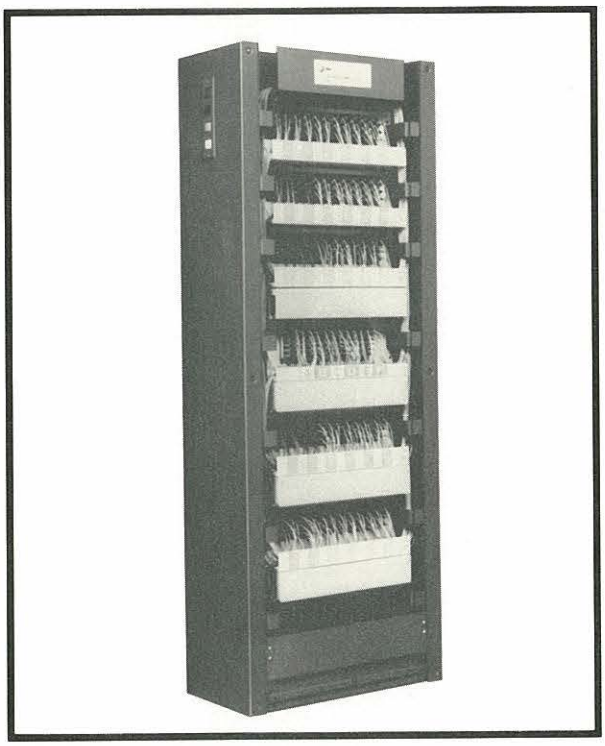
Product Code	Description	Comcode
10B1/48/24	Fanout accepting 62.5/125-μm fibers equipped with ST (P2020A-C-125) Connector Plugs	104 325 089

Frame, LGX Lightguide Cross-Connect

Applications

The LGX Lightguide Cross-Connect Frame is used to provide a termination and cross-connection point for fiber optic circuits. It is also designed for cable termination and grounding, ribbon or individual fiber splicing, and fiber and jumper storage. In addition, splice-only and express-through situations are easily accommodated.

The LGX frame is ideal where a large number of fibers must be terminated and the flexibility of reassigning circuits is desirable.



Description

The LGX cross-connect frame has the capacity for 576 fiber terminations in a single bay, and growth capability of up to 20 bays in a lineup. It is designed with ample jumper routing capacity to allow easy administration of reassignments and to avoid congestion. The complete LGX frame includes the following parts:

- A Network Bay Frame, which is the basis for the LGX frame. It includes the cable duct, mounting hardware for equipment cables, vertical jumper retainers, and horizontal express troughs.
- A 9A1 Clamp, which has all the hardware needed to ground one cable equipped with Sheath Termination Hardware and secure it to the LGX frame.
- A 9A2 Clamp, which has all the hardware needed to ground one cable without Sheath Termination Hardware and secure it to the LGX frame.
- An LST1A-72 LG Terminating Shelf, which can terminate up to 72 fibers. It will accept up to twelve 10A Lightguide Connector Panels, and includes guides for routing fibers and jumpers.
- An LSS1A-72 LG Stranded Shelf, which can splice and terminate up to 72 fibers. It will accept up to twelve 10A Lightguide Connector Panels, and is equipped with three splicing trays and splice holders for splicing. Each tray will hold 26 splices.
- An LSR1A-72 LG Ribbon Shelf, which can splice 12 fiber ribbons and mount six 3-type fanouts. It includes a connector enclosure stand and six connector enclosures.
- An LSR1A-144 LG Ribbon Shelf, which can splice eighteen 12-fiber ribbons and mount twelve 3-type fanouts. It includes a connector enclosure stand and 12 connector enclosures.
- An LSR1B-72 LG Ribbon Shelf, which can splice eighteen 12-fiber ribbons and mount six 10-type fanouts. Connectors are mounted on 10A Lightguide Connector Panels. It includes a connector stand and six connector enclosures.
- An LSR1B-144 LG Ribbon Shelf, which can splice eighteen 12-fiber ribbons and mount twelve 10-type fanouts. Connectors are mounted on 10A Lightguide Connector Panels. It includes a connector stand and 12 connector enclosures.
- An LCJ1A-72 LG Jumper Storage Cabinet, which stores jumper slack on the front of the LGX frame.
- An LCR1A-216 LG Ribbon Cabinet, which provides splicing capability only for up to 18 array splices. It includes a connector enclosure stand and six connector enclosures.
- An LCS1A-72 LG Stranded Cabinet, which provides splicing capability only for up to 78 fiber splices. It includes three splicing trays and splice holders for splicing.

Specifications

LGX Frame Physical Specifications

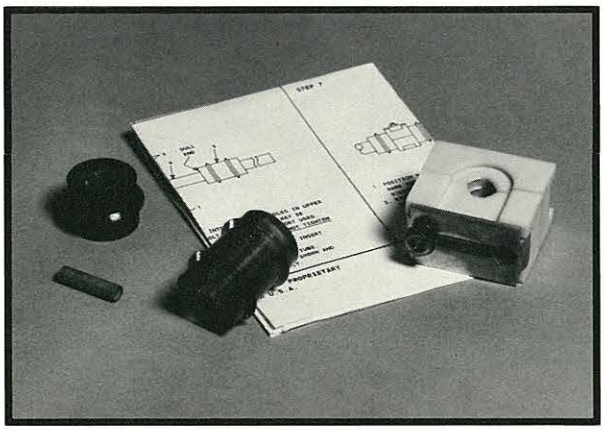
Height: 84 in.
Width: 26 in.
Depth: 15 in.

Product Code	Description	Height (In.)	Comcode
ED6C320-50 G1	LGX frame	84	601 096 878
ED8C501-50 G1	Network bay frame	84	
9A1	Clamp	—	104 370 549
9A2	Clamp	—	104 370 556
LST1A-72	LG terminating shelf	8	105 039 457
LSS1A-72	LG stranded shelf	12	105 039 440
LSR1A-72	LG ribbon shelf	12	105 039 416
LSR1A-144	LG ribbon shelf	20	105 029 408
LSR1B-72	LG ribbon shelf	12	105 039 432
LSR1B-144	LG ribbon shelf	20	105 039 424
LCJ1A-72	LG jumper storage cabinet	4	105 039 374
LCR1A-216	LG ribbon cabinet	4	105 039 382
LCS1A-72	LG stranded cabinet	4	105 039 390

Grommet and Grip Kits, UC-Type

Applications

A UC-Type Grommet and Grip Kit is used to anchor, seal, and bond a lightguide cable sheath to a UCB1 Lightguide Closure.



Description

One kit is required for each outside cable or ribbon riser cable that enters a closure. A single kit consists of a cable seal, two grommets, and a grip assembly. A kit is ordered to correspond to the approximate diameter of the cable with which it is to be used.

Specifications

Product Code	Cable Type	Cable Outside Diameter (In.)	Comcode
UC-STH* Grommet & Grip Kit	Lightguide cable (3AEX, 3BAX, 3BFX, 3BHX) or LIGHTPACK cable (3DAX, 3DFX, 3DHX) with factory Sheath Termination Hardware	0.48	103 922 027
UC-41 Grommet & Grip Kit	LIGHTPACK cable with 48 fibers without factory Sheath Termination Hardware Kit	0.41	103 922 035
UC-48* Grommet & Grip Kit	Lightguide cable (3AEX, 3BAX, 3BFX, 3BHX) or LIGHTPACK cable (3DAX, 3DFX, 3DHX) without factory Sheath Termination Hardware	0.48	103 922 043

* The UC-STH and UC-48 kits are *not* interchangeable because the UC-STH factory Sheath Termination Hardware has an outside diameter unique from any other cable design.

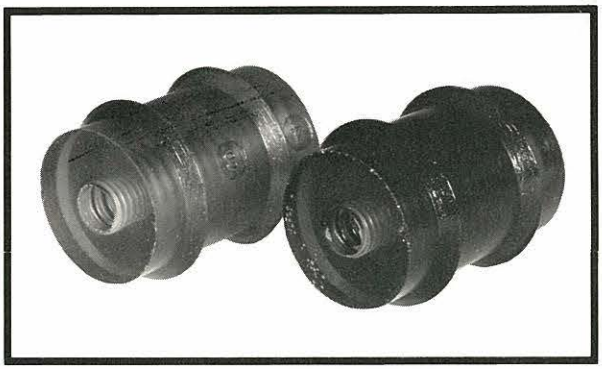
Grommet Kits, BC Series

Applications

The BC Series Grommet Kits are used to anchor and seal a Lightguide Building Cable (LGBC) sheath to a UCB1 Lightguide Closure.

Description

One kit is required for each cable sheath type that enters the closure. Each kit consists of an inboard grommet, an outboard grommet, and two screws.



Product Code	Description	Comcode
BC12-1	Handles 1 LGBC-012A cable	104 316 716
BC12-2	Handles 2 LGBC-012A cables	104 316 708
BC6-3	Handles 3 LGBC-006A cables	104 316 690
BC4-6	Handles 6 LGBC-004A cables	104 316 658

Grommet Kits, UC-Type

Applications

A UC-Type Grommet Kit is used to anchor, seal, and bond a lightguide cable sheath to a 51D3-LG2 Lightguide Closure.

Description

One kit is required for each cable sheath that enters a closure. Each kit consists of a single grommet, and a kit is ordered to correspond to the approximate diameter of the cable with which it is to be used.

Specifications

Product Code	Cable Type	Cable Outside Diameter (In.)	Comcode
UC-41 Grommet Kit	LIGHTPACK cable with 48 fibers with or without factory Sheath Termination Hardware	0.41	104 145 560
UC-48 Grommet Kit	Lightguide cable (3AEX, 3BAX, 3BFX, 3BHX) or LIGHTPACK cable (3DAX, 3DFX, 3DHX) with or without factory Sheath Termination Hardware	0.48	104 145 537

Holder, 1A1

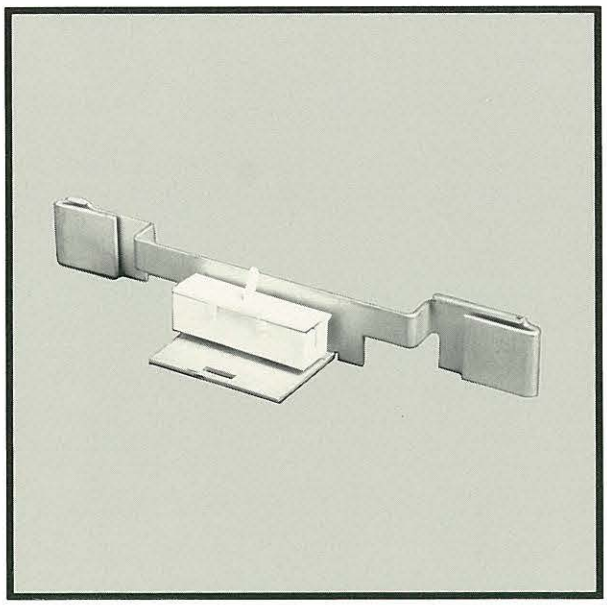
Applications

The 1A1 Holder is used to mount Fanouts inside the 100A Lightguide Interconnection Unit (LIU).

Description

The 1A1 Holder includes one array connector enclosure and a fanout mounting screw.

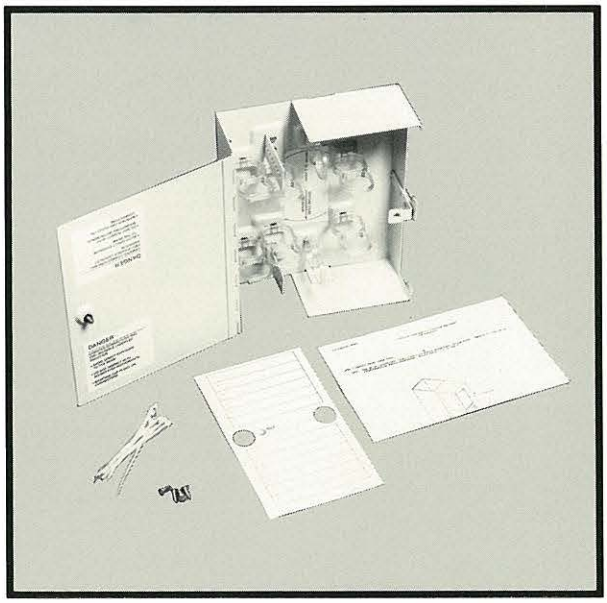
Product Code	Comcode
1A1 Holder	105 034 474



Interconnection Unit, 100A Lightguide

Applications

The 100A Lightguide Interconnection Unit (LIU) is a modular closure used to provide cross-connect and/or interconnect capability for lightguide cables in buildings.



Description

The 100A LIU terminates a maximum of 12 stranded-type fibers. It has two sections, each containing three plastic split rings for routing fibers through the unit, and two rings for routing cables; termination posts at the top and bottom secure the cables entering from overhead or below. The six retainer rings in the slack storage section are arranged in a racetrack configuration; they hold the fibers so they meet the 1.5-inch minimum bend radius. The LIU has two "windows" into which two 10A connector panels are inserted for mounting connectorized fibers (six fibers per panel). The LIU also includes a decal for circuit administration and record-keeping purposes and a set of installation instructions describing procedures for constructing a cross-connect or interconnect module and recommendations for building a cross-connect field.

Specifications

Physical Specifications

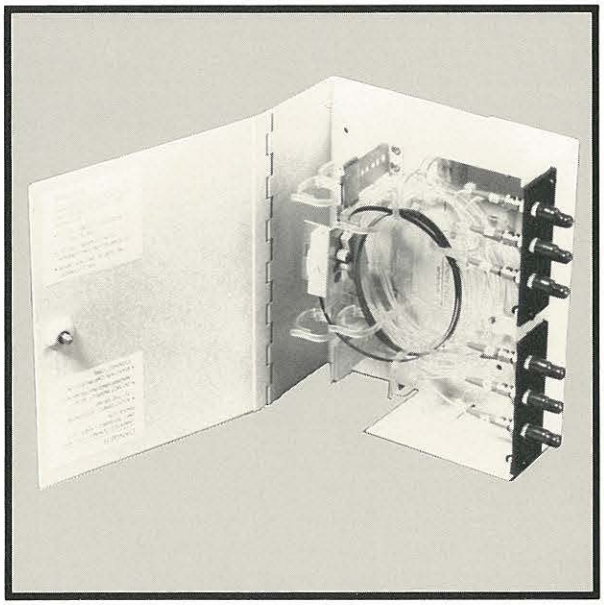
Height: 8.75 in.
Width: 7.5 in.
Depth: 3 in.

Product Code	Comcode
100A LIU	104 141 841

Interconnection Unit, 100A Lightguide, with Factory-Installed Fanout

Applications

The 100A Lightguide Interconnection Unit (LIU) with Factory-Installed Fanout is used to provide an easy transition from array-connectorized ribbon cable to 12 individual fibers at the connector panels.



Description

The 100A LIU with fanout consists of the 100A LIU cabinet equipped with a 1A1 Holder and a pretested ribbon cable that has a 1009C Array Connector on one end and 12 individually jacketed and connectorized fibers on the other end. Each fiber has a special strengthened buffer for added protection during handling. The Fanout may also be ordered with ST (P2020A-C-125) Connector Plugs.

Specifications

Fanout Physical Specifications

Length: 72 in. (48 in. of ribbon, 24 in. of separated fibers)

Product Code	Description	Comcode
110B1 LIU	LIU with fanout accepting 62.5/125-μm fibers equipped with ST (P2020A-C-125) Connector Plugs	104 325 618

Lightguide Organizers, UC-Type

Applications

The UC-Type Lightguide Organizers are used in the UCB1 Lightguide Closure to organize and store various lightguide splices.

Description

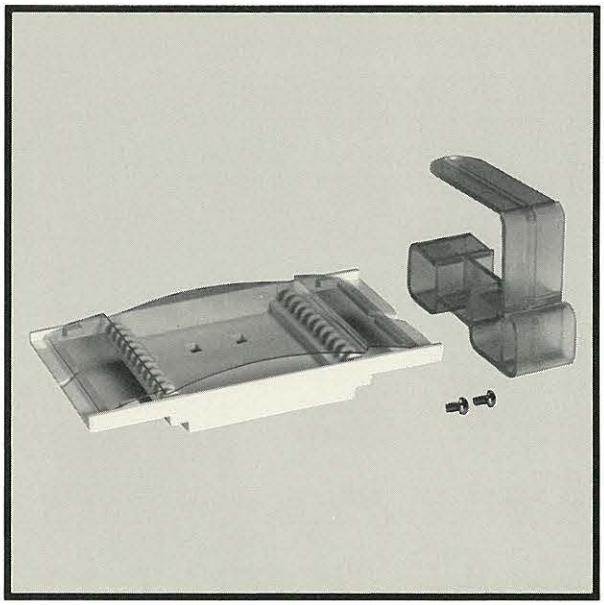
There are three UC-type organizers used in PDS:

- UC-RR, ribbon-to-ribbon cable splice (array or rapid ribbon), which consists of an instruction sheet, a platform, a platform mounting bracket, a sectionalized splice box, a protective cover, and two screws. It stores from 18 to 48 inches of ribbon and up to 12 array or rapid ribbon splices.
- UC-RS/M1, ribbon-to-stranded enhanced rotary splice, which consists of the ribbon organizer hardware (UC-RR), two fiber storage leaves, and mounting hardware for stranded cable splicing.

  The UC-RS/M1 organizer includes an instruction sheet, a platform, a platform mounting bracket, a platform cover, seven screws, two storage leaves and two storage leaf extensions, a storage leaf cover, and eight 17-inch protection tubes.

  Each storage leaf separates and organizes 60 inches of fiber and 18 splices. The total splice capacity is 12 array or rapid ribbon splices plus 36 enhanced rotary splices of individual fibers.
- UC-SS/M1, stranded-to-stranded enhanced rotary splice, which consists of three fiber storage leaves and mounting hardware for splicing.

  The UC-SS/M1 organizer includes an instruction sheet, five screws, three storage leaves, two storage leaf extensions, one storage leaf cover, and twelve 17-inch protection tubes.



Each leaf can accommodate 18 enhanced rotary splices and will hinge together for easy stacking and accessibility for re-entry. The UC-SS/M1 can also be used for ribbon cable(s) when spliced on a fiber-to-fiber basis.

Product Code	Description	Comcode
UC-RR	Ribbon-to-Ribbon	103 921 961
UC-RS/M1	Ribbon and Stranded	105 040 653
UC-SS/M1	Stranded-to-Stranded	105 040 661

Trough, 1A4 Lightguide

Applications

The 1A4 Lightguide Trough is used to arrange fiber patch cords run vertically from one 100A Lightguide Interconnection Unit to another in a multi-unit fiber cross connect.

Description

The 1A4 Lightguide Trough is a vertical aluminum trough that is shipped with two mounting screws.

Specifications

Physical Specifications

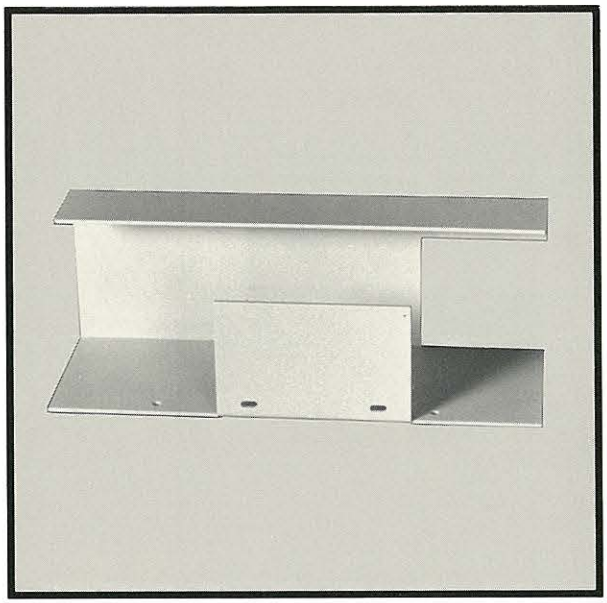
Height: 8.75 in.
Width: 4 in.

Product Code	Comcode
1A4	104 141 866

Trough, 1A6 Lightguide

Applications

The 1A6 Lightguide Trough is used to arrange patch cords run horizontally between 100A Lightguide Interconnection Units or 1A4 Troughs (cross-connect modules).



Description

The 1A6 Lightguide Trough is a horizontal aluminum trough that is shipped with two mounting screws.

Specifications

Physical Specifications

Height: 4 in.
Width: 11.5 in.
Depth: 4 in.

Product Code	Comcode
1A6	104 141 874

Section 3: Connectors, Plugs, and Jacks

Contents

Introduction to Connectors, Plugs, and Jacks

Connectors, plugs, and jacks, whether they are wire or fiber, provide the essential connecting points between cables and equipment.

Wire, Plugs, and Jacks

The standard plug for the AT&T Premises Distribution System is the 8-pin modular plug. It is already part of most of the modular cords used in PDS, but it can also be attached in the field.

The standard jack in PDS is the 8-pin modular jack or information outlet. Though the term "jack" refers only to the receptacle that receives the plug, it is often used as a synonym for the entire outlet. A connecting block is another term for an information outlet or jack. Here, however, the emphasis is on the fact that the outlet is the place where the 4-pair inside wire is connected onto a 110-type connecting block or a quick-connect terminal.

PDS offers both flush-mounted and surface-mounted connecting blocks used as information outlets. Flush-mounted connecting blocks preserve the aesthetic appearance of a wall and are easily installed in prewired environments where plasterboard has not yet been placed. Surface-mounted connecting blocks are easier and more economical to install in environments where plasterboard, and perhaps even a decorative wall surface, is already in place. The AT&T Universal Information Outlet can be either flush-mounted or surface-mounted, according to the needs of a specific application. PDS components also include plugs and jacks for field termination of cable, and faceplates and covers as decorative accessories.

Fiber Connectors, Plugs, and Couplings

There are two kinds of connectors used for optical fiber in the AT&T Premises Distribution System: array connectors and ST connectors. Array connectors are used to align and protect each fiber in a ribbon cable when two ribbon cables are being joined. Factory-terminated fiber ribbon cables have ribbon leads, called "arrays," each terminated with an array connector, which consists of two grooved silicon chips. A bridging silicon chip with precision-etched grooves is used to align each array of the cable; a second chip fits on top of the butted ribbon array, and two spring clips clamp the two arrays together. If the array connectors are factory-installed on both ribbon cables being spliced, then the splice can be made using the 1030B Tool Kit (see Section 6). If the cables are unconnectorized, then a 1009C Array Connector must be field-installed on each ribbon before two ribbons are spliced together.

A connector plug is used to terminate fibers whenever a fiber cable consisting of individual fibers (as opposed to ribbons) is being installed at a cross-connect or interconnect module, or is being connected to optical or electrical equipment. The ST Connector Plug (P2020A-C-125) is used for most applications. When the ST connector plug is used at an optical fiber cross connect, it is inserted into the ST Connector Coupling (C2000A-2), which is mounted on the 10A Connector Panel in the 100A Lightguide Interconnection Unit (see Section 2). The plug or connector can be installed in the field using the appropriate tool kit (see Section 6).

Connecting Block, Flush-Mounted, 102A

Applications

The 102A Connecting Block, like the 105AF Connecting Block, is used to terminate one 4-pair inside cable and provides a point for plugging in a terminal with up to eight conductors. Two 102A Connecting Blocks can be mounted in the same electrical box.

Description

The 102A is a flush-mounted connecting block, consisting of an 8-position, 8-conductor jack attached to a 110-type insulation displacement terminal for easy termination of inside wiring. It is designed for use with the 400A or 65B Faceplate.

Product Code	Color	Comcode
102A-50	Ivory	103 083 200
102A-54	Brown	103 327 714

Connecting Block, Flush-Mounted, 105AF

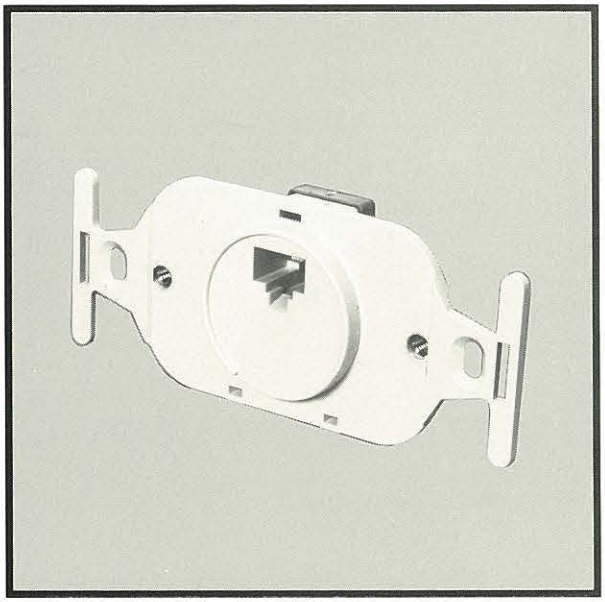
Applications

The 105AF Connecting Block, like the 102A Connecting Block, is used to terminate one 4-pair inside cable and provides a point for plugging in a terminal with up to eight conductors.

Description

The 105AF is a flush-mounted connecting block, consisting of an 8-position, 8-conductor jack attached to quick-connect terminals for easy termination of inside wiring. It is designed for use with a standard single electrical outlet faceplate.

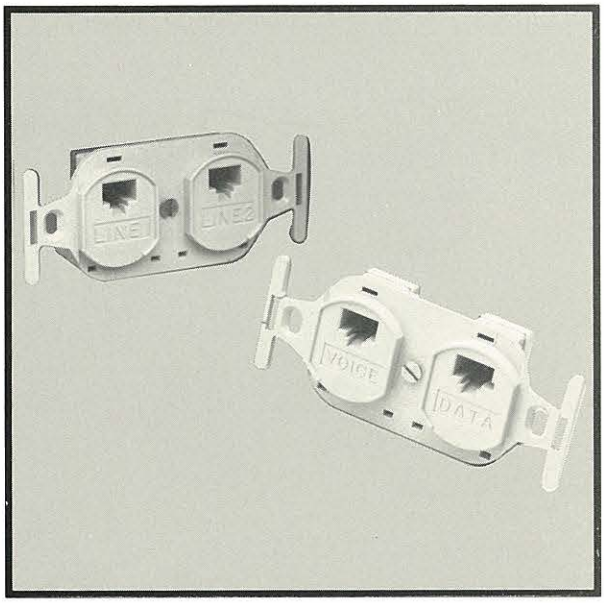
Product Code	Comcode
105AF-50	103 762 423



Connecting Block, Flush-Mounted, 106AFD

Applications

The 106AFD Connecting Block is used to terminate two 4-pair inside cables and provides a point for plugging in two terminals with up to eight conductors each.



Description

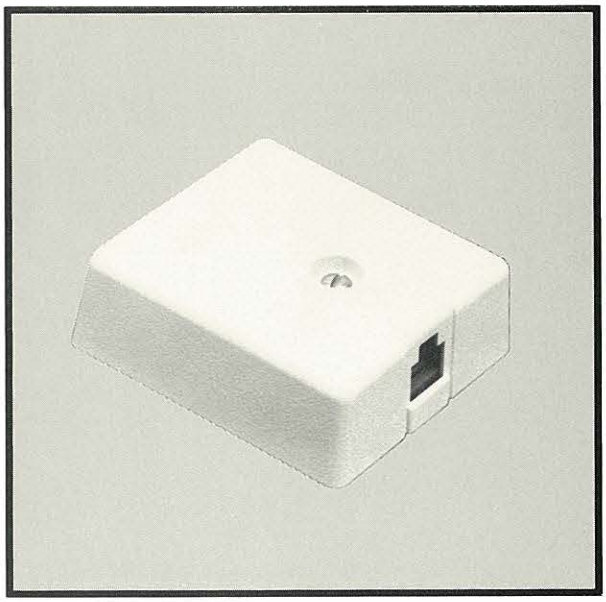
The 106AFD is a flush-mounted connecting block, consisting of two 8-position, 8-conductor jacks attached to quick-connect terminals for easy termination of inside wiring. It is designed for use with a standard electrical outlet box and a standard duplex electrical outlet faceplate.

Product Code	Comcode
106AFD-50	103 762 431

Connecting Block, Surface-Mounted, 103A

Applications

The 103A Connecting Block is used to terminate one 4-pair inside cable and provides a point for plugging in a terminal with up to eight conductors.



Description

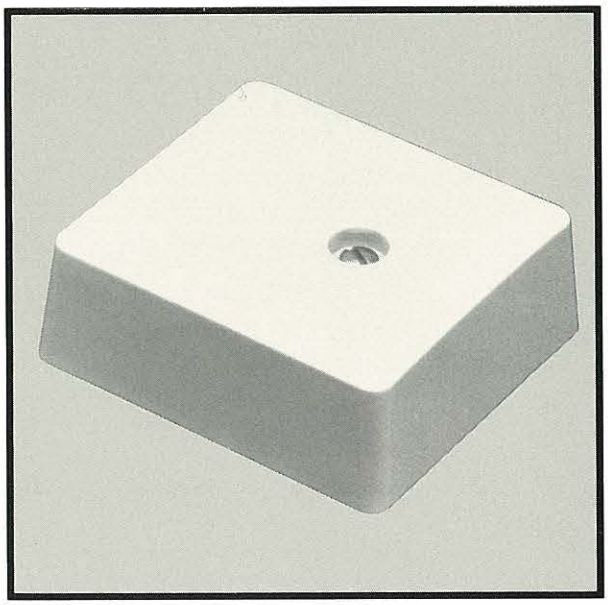
The 103A consists of an 8-position, 8-conductor jack connected to a 110-type insulation displacement connector.

Product Code	Comcode
103A-50	103 104 220

Connecting Block, Surface-Mounted, 103B

Applications

The 103B Connecting Block, mounted on the floor, is used to terminate flat undercarpet cable. The cover of the 103B serves as a template for cutting the carpet. Once the connecting block is installed and the carpet has been cut, the 103B cover is discarded and the 172A Decorative Cover is installed.



Description

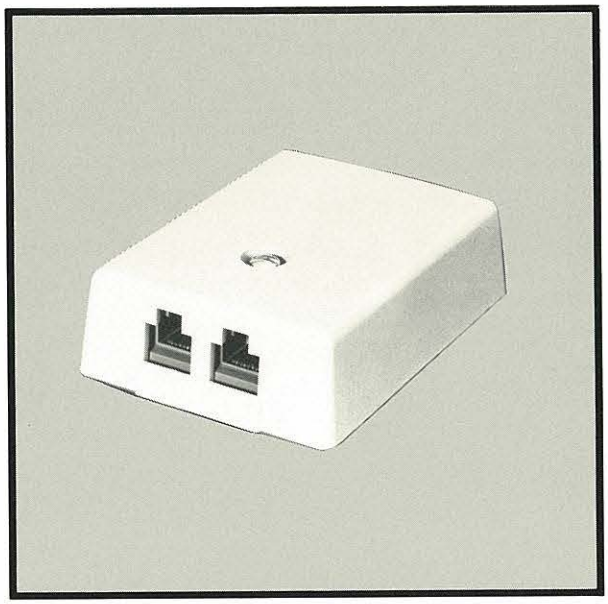
The 103B consists of an 8-conductor jack connected to a 110-type insulation displacement connector. Its cover has no jack opening.

Product Code	Comcode
103B-50	103 759 429

Connecting Block, Surface-Mounted, 104A

Applications

The 104A Connecting Block is used to terminate two 4-pair inside cables and provides a point for plugging in two terminals, each with up to eight conductors.



Description

The 104A consists of two 8-position, 8-conductor jacks attached to 110-type insulation displacement connectors.

Product Code	Comcode
104A-50	103 116 943

Connecting Block, Surface-Mounted, 121A

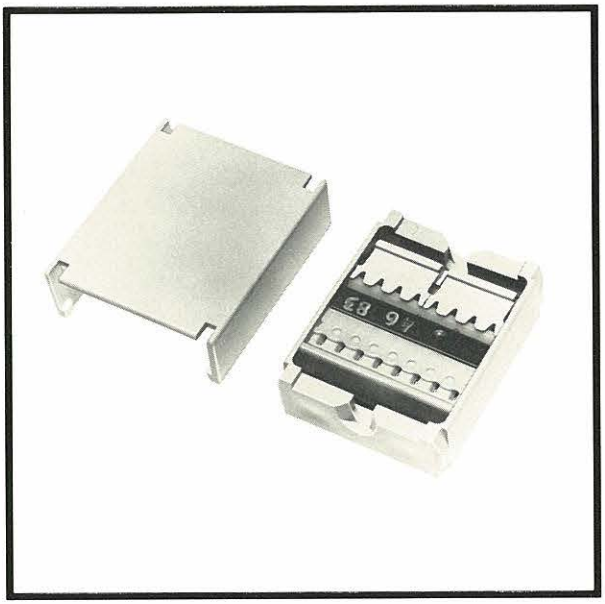
Applications

The 121A is used to terminate either round or flat 4-pair inside cable and provides a port for plugging in two terminals, each with up to eight conductors.

Description

The 121A Connecting Block consists of two 8-conductor jacks attached to connectors that accept either round inside wire or flat undercarpet cable.

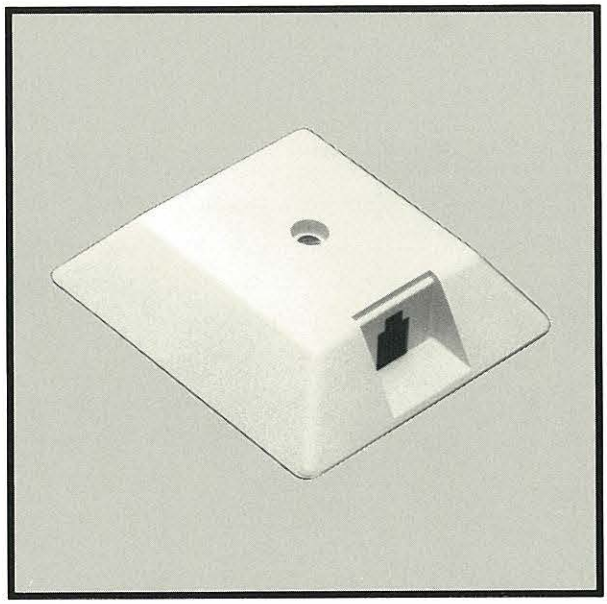
Product Code	Comcode
121A-50	103 810 362



Cover, Decorative, 172A

Application

The 172A Decorative Cover is used to replace the cover on the 103B Connecting Block after the 103B has been installed and the carpet has been cut.



Description

The 172A is a plastic cover with sloping sides to make it unobtrusive under carpet.

Product Code	Comcode
172A-50	103 761 581

Faceplate, 65B

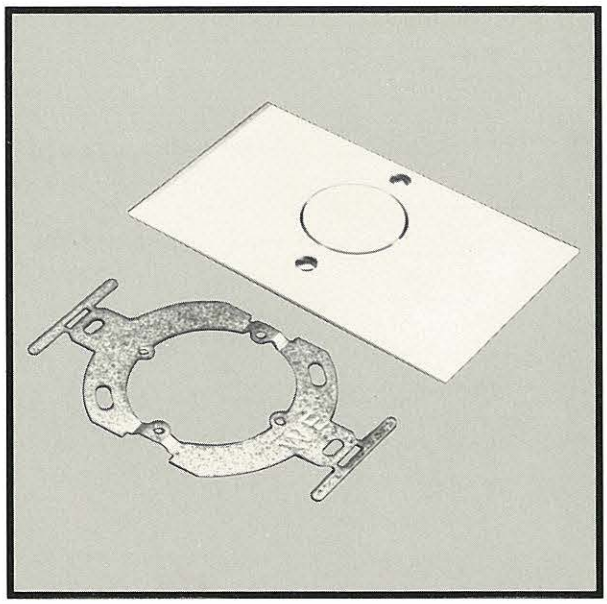
Application

The 65B Faceplate is used to cover a hole in the wall containing a standard electrical outlet box or an 800 Series station wire box, when the hole does not contain an active jack.

Description

The 65B Faceplate Kit consists of a rectangular faceplate, a steel mounting bracket, and thread cutting screws for attaching the faceplate to an 800 Series wire box. Its circular center is removable so that a 102A Connecting Block can be mounted.

Product Code	Color	Comcode
65B-50 65B-54	Ivory Brown	103 658 498 103 658 506



Faceplate, 400A

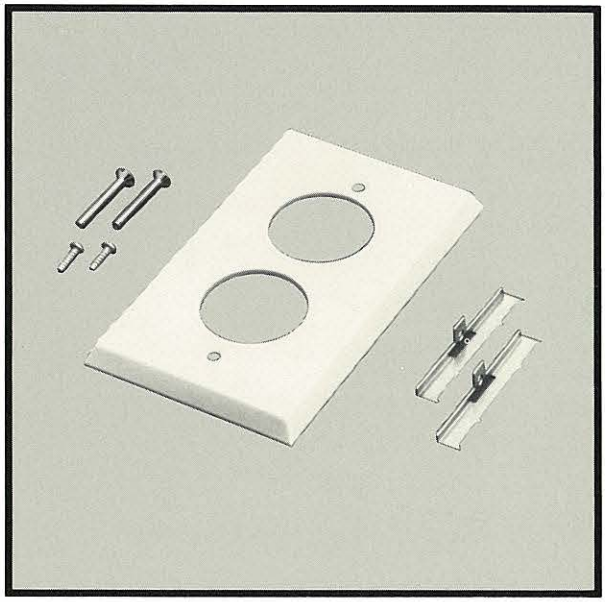
Applications

The 400A Faceplate is used with two 102A Connecting Blocks in a single electrical outlet box.

Description

The 400A Faceplate Kit includes a rectangular faceplate with two openings, two mounting brackets, and four screws for attaching the faceplate to an electrical outlet box.

Product Code	Color	Comcode
400A-50	Ivory	103 111 209
400A-54	Brown	103 167 789



4-Pair Modular Plug

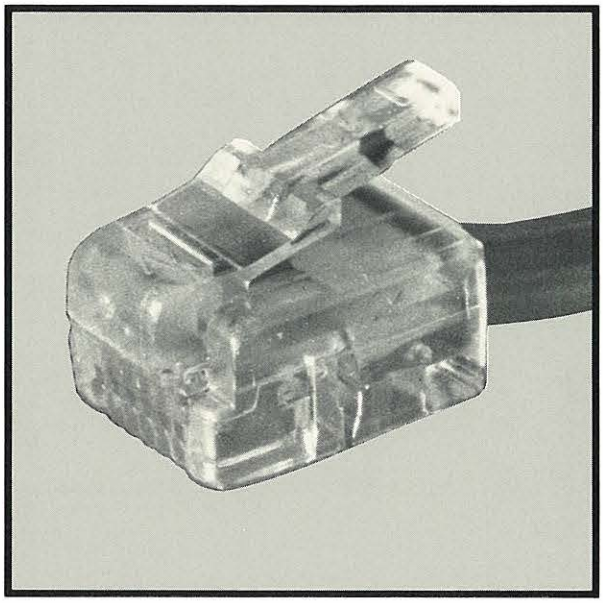
Applications

The 4-Pair Modular Plug is used to provide a means for field terminating 24-gauge, 4-pair inside cable with solid or stranded copper conductors.

Description

The 4-Pair Modular Plug is an 8-position plug with a clear plastic body.

Product Code	Comcode
MOD-4P	403 617 699



Universal Information Outlet (UIO)

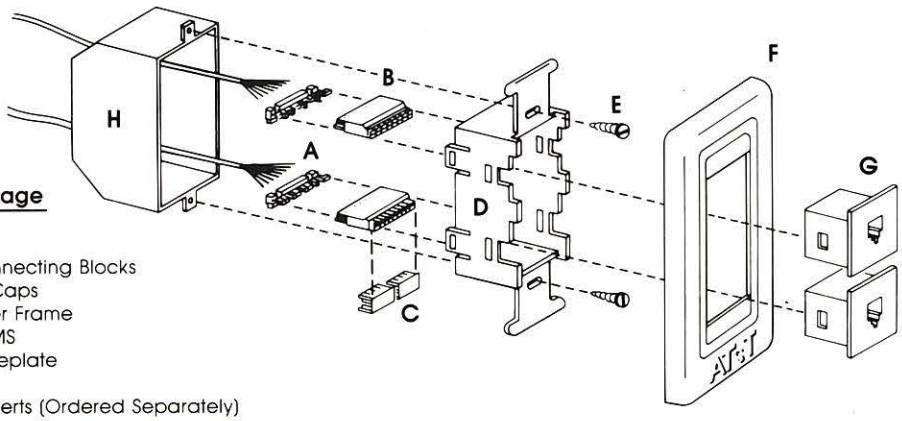
Applications

The Universal Information Outlet (UIO) is used to terminate 4-pair cable and to provide a point for plugging in a voice or data terminal.

Description

The UIO consists of a wall unit, either flush- or surface-mounted, into which two modular inserts can be placed. There are three such inserts available: an 8-position jack insert, a 6-position jack insert, and a blank cover insert.

Product Code	Description	Comcode
743A	Basic UIO package, including a duplex inner frame, a 411A duplex faceplate, two index strips, two 110C-4 connecting blocks, two protective caps, two FHMS screws, and an instruction sheet	104 201 736
400A	Surface-mounted frame	105 178 677
401A	8-position jack insert	105 038 137
401B	6-position jack insert	105 038 145
401C	Blank cover insert	105 190 904



Basic UIO Package

A 2 Index Strips
B 2 110C-4 Connecting Blocks
C 2 Protective Caps
D 1 Duplex Inner Frame
E 2 Screws, FHMS
F 1 Duplex Faceplate

G 2 Modular Inserts (Ordered Separately)
H 1 Single-Duplex Outlet Box, 3" H x 2" W x 2.5 " D (Provided by Customer)

Array Connector, 1009C

Applications

The 1009C Array Connector is used to connect ribbon fiber cables.

Description

The 1009C Array Connector consists of two 30-mil grooved silicon chips that align and connect one 12-fiber ribbon to another 12-fiber ribbon.

Product Code	Comcode
1009C	103 707 188

Connector Coupling, ST (C2000A-2)

Applications

The ST Connector Coupling (C2000A-2) mates fiber cables with ST Connector Plugs (P2020A-C-125). It will accept two ST connector plugs and is designed for use with the 10A Lightguide Connector Panel in the 100A Lightguide Interconnection Unit.

Description

The C2000A-2 connector coupling accommodates precision ceramic or plastic ST connector plugs and ensures the proper positioning of the fiber cables. It is threaded for mounting in a predrilled or pre-punched hole using a locknut. The coupler is based on a longitudinally split sleeve; the thickness of the sleeve's wall varies, causing its inside diameter to remain circular even when a cylindrical insert forces it open.

Product Code	Comcode
C2000A-2	104 148 028

Connector Plug, ST (P2020A-C-125)

Applications

The ST Connector Plug (P2020A-C-125) connects fiber cables to equipment, cross connects, or interconnects. ST connector plugs can be mounted on fibers in the field using the 1032A Tool Kit (see Section 6).

Description

The ST is a keyed ceramic or plastic-tipped connector plug that uses a bayonet-type "twist-lock" mounting arrangement. It will accept 125-μm outside diameter multimode fiber cables.

Specifications

Physical Specifications

Length: 0.89 in.

Product Code	Comcode
P2020A-C-125 (ceramic) P2020A-A-125 (plastic)	104 148 002 105 218 333

Surface Outlet, 10S2A

Applications

The 10S2A Surface Outlet is used to terminate a single fiber run horizontally from the satellite closet and provides a point for connecting an optical fiber cable to equipment located at individual workstations.

Description

The 10S2A Surface Outlet consists of a molded plastic cover and base and a mounting bracket for an ST (P2020A-C-125) Connector Plug. Molded plastic retaining rings are used to store slack in a 1-inch radius.

Specifications

Physical Specifications

Height: 4.9 in.
Width: 3.4 in.
Depth: 1.9 in.

Product Code	Comcode
10S2A	104 325 683

Section 4: Adapters

Contents

Introduction to Adapters

Adapters provide a means for joining otherwise incompatible plugs, connectors, and cables. The AT&T Premises Distribution System includes several kinds of adapters. Some adapters are designed to link otherwise incompatible cables; each of these adapters is equipped with connectors for its specific purpose. For example, adapters intended to link a 25-pair cable to several 4-pair cables are equipped with a ribbon or 50-pin connector on one end and modular jacks on the other. Other adapters have jacks on each end or identical connectors on each end. "T" adapters, which have a plug and two jacks, enable a single information outlet to serve two devices.

Adapter, 1A-4P

Applications

The 1A-4P Adapter is used to link a connectorized undercarpet cable to a 4-pair mounting cord at the work location.

Description

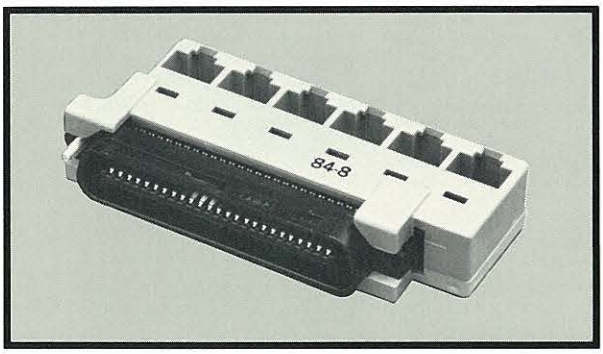
The 1A-4P Adapter consists of a double-ended 8-conductor jack. It has an adhesive pad on its side to facilitate mounting. The 1A-4P can be housed in the 304 Housing (see Section 6).

Product Code	Comcode
1A-4P	403 384 712

Adapter, 258

Applications

The 258 Adapter is used to distribute the pairs from a 25-pair cable to six 8-conductor modular jacks, of which all eight pins are connected.



Description

The 258 Adapter has a 50-pin male or female miniribbon connector wired to six 8-conductor modular jacks. It is available with the jacks either perpendicular to or parallel with the miniribbon connector. The 50-pin connector and modular jacks are housed in a plastic cover.

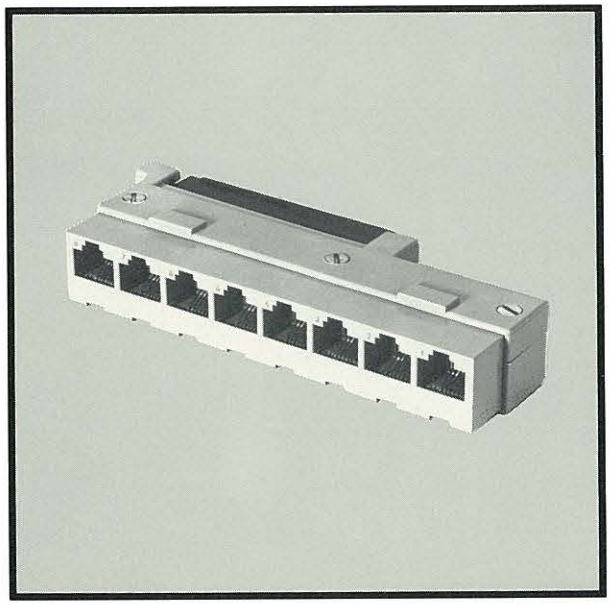
Product Code	50-Pin Connector	Connector/Jacks	Comcode
258A	Male	Perpendicular	102 605 136
258AF	Female	Perpendicular	103 796 561
258B	Male	Parallel	103 923 025
258BF	Female	Parallel	104 226 774

Adapter, 356A

Applications

The 356A Adapter is used to join connectorized 25-pair cable to 4-pair cable equipped with modular plugs. It can be used to link clusters of balun adapters onto 110 hardware in a satellite closet, equipment room, or computer center.

The 356A cannot be used with devices that require connections to all eight pins of the modular jacks. It should not be used in the horizontal subsystem on the station side because many stations sets and some data types require use of 4-pair cable and because PDS does not support the use of zone wiring (25-pair cable in the horizontal subsystem).



Description

The 356A Adapter incorporates a 50-pin male ribbon connector and eight 8-position jacks, of which the first 6 pins are connected.

Product Code	Comcode
356A	104 158 829

Adapter, 367A Bridging

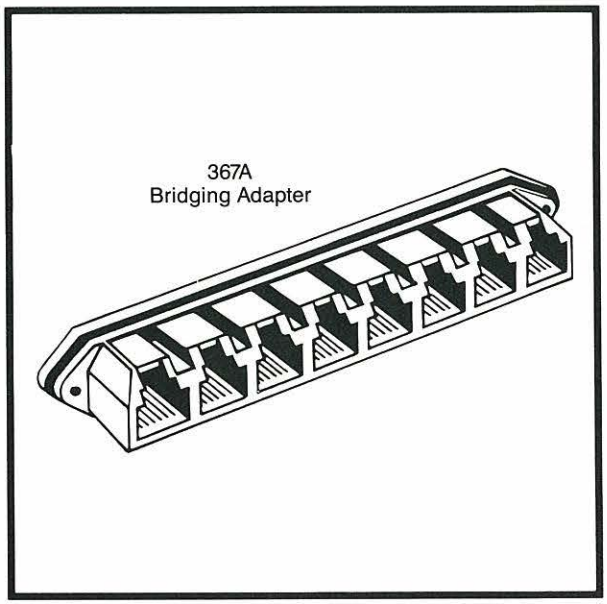
Applications

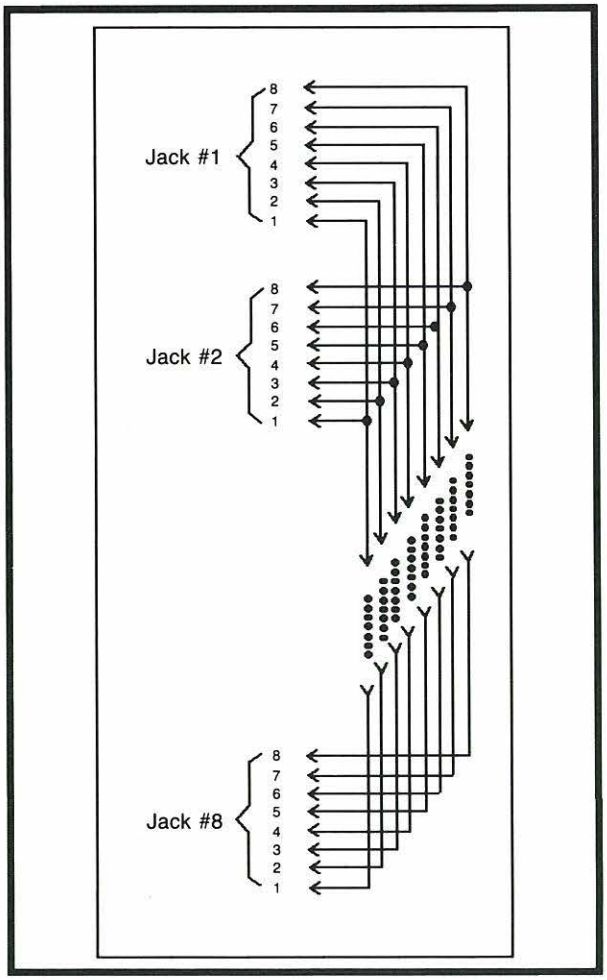
The 367A Bridging Adapter is used to connect up to seven workstations to an IBM® System 36/38 via an AT&T 365A Adapter.

Description

The 367A has eight 8-conductor jacks housed in a plastic body.

Product Code	Comcode
367A	105 275 606





Adapter, 400B

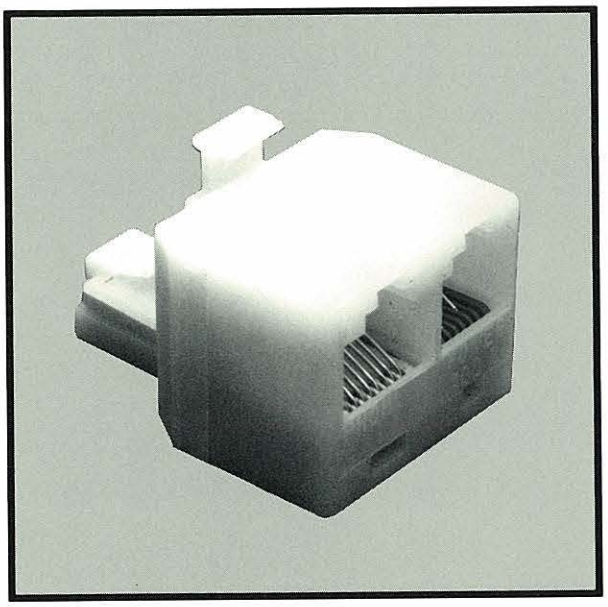
Applications

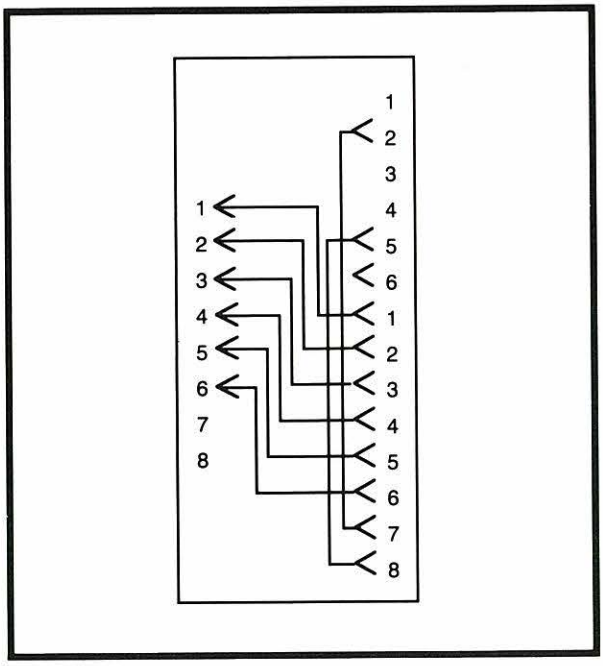
The 400B Adapter is a modular "T" adapter used to provide local power to terminals and Asynchronous Data Units.

Description

The 400B Adapter has an 8-position, 6-conductor modular plug. It also has two jacks: a 6-position, 2-conductor modular jack and an 8-position, 8-conductor modular jack. The plug and jacks are housed in a plastic body.

Product Code	Comcode
400B	103 848 859





Adapter, 400C

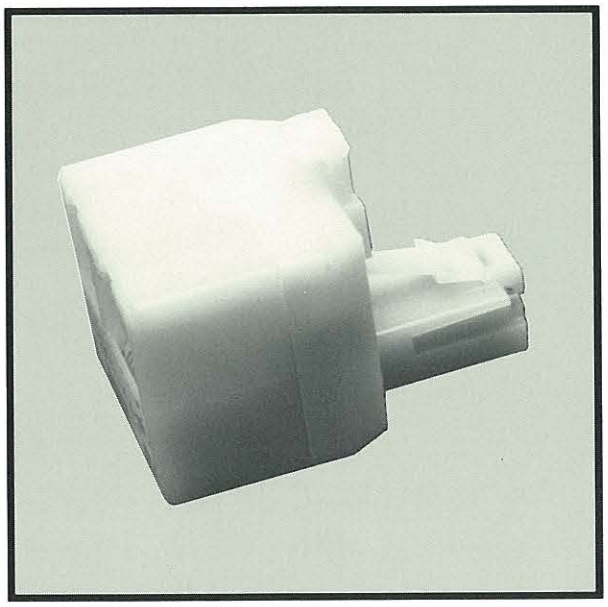
Applications

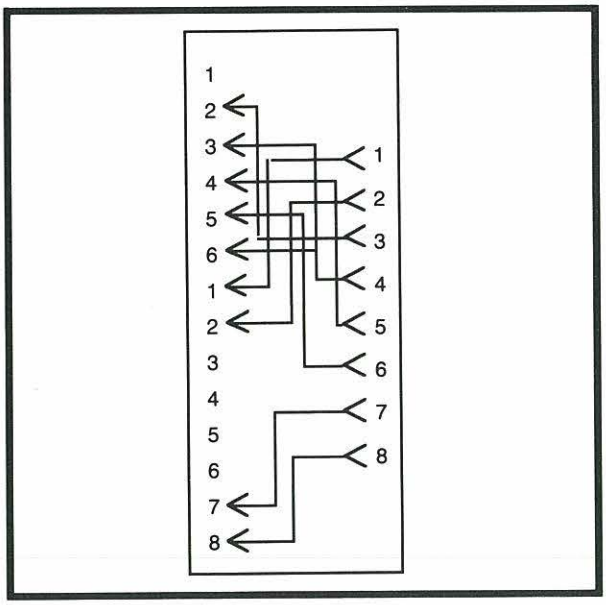
The 400C Adapter is a modular "T" adapter used to split 4-pair D inside wire from an information outlet into two 2-pair outputs. One 2-pair output can be used for a 3-pair mounting cord from a voice device; the other for a 4-pair mounting cord from a data device.

Description

The 400C Adapter has an 8-position, 8-conductor plug, and two jacks: an 8-position, 4-conductor jack, and a 6-position, 4-conductor jack. The plug and jacks are housed in a plastic body.

Product Code	Comcode
400C	103 732 830





Adapter, 400K

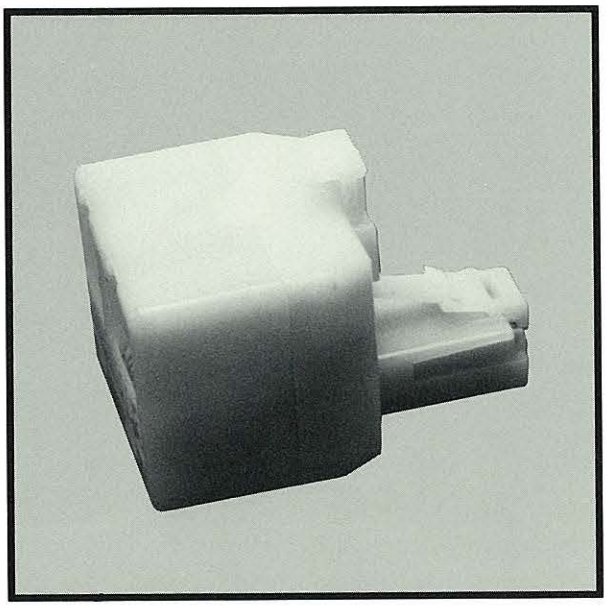
Applications

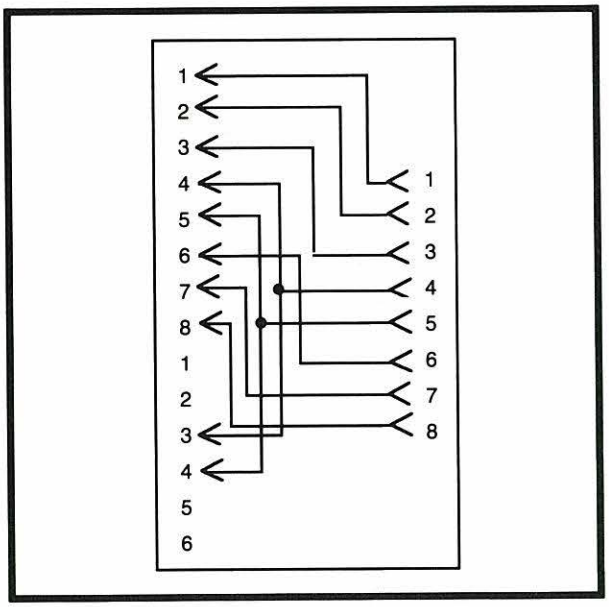
The 400K is a "T" Adapter used to split a 4-pair D inside wire into two outputs at an information outlet. It allows a 361A Adapter, 365A Adapter, or TELETYPE® SSI terminal to share an information outlet with a single-line analog telephone. (The 400K replaces the 450F Adapter.)

Description

The 400K Adapter has one plug and two jacks: one 8-position plug, one 8-position jack, and one 6-position, 2-conductor jack.

Product Code	Comcode
400K	105 307 177





Adapter, 451A

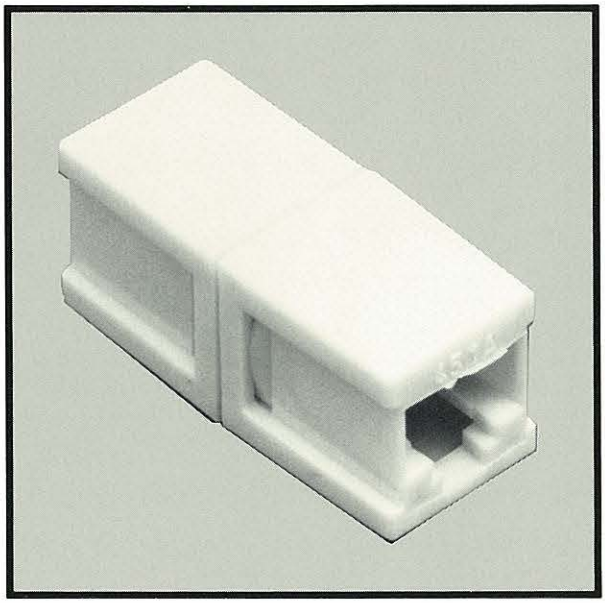
Applications

The 451A Adapter is used as an in-line splice for the D8W Mounting Cord or for plug-ended distribution cords where pin inversion is necessary to maintain polarity.

Description

The 451A is an in-line, double-ended modular jack that accepts two 8-position modular plugs.

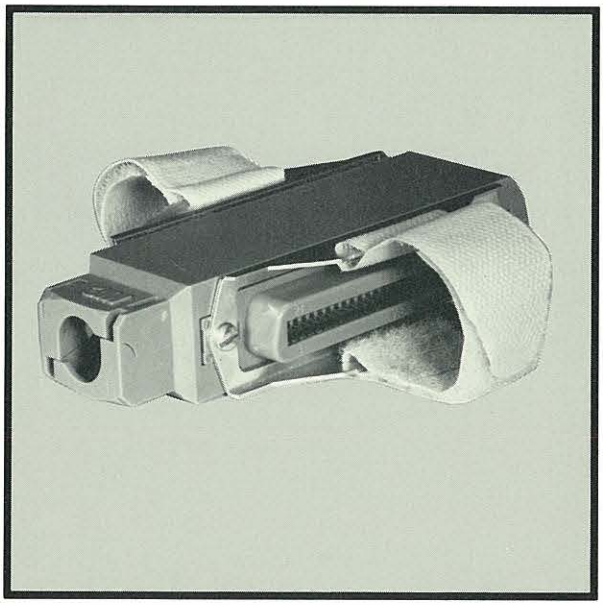
Product Code	Color	Comcode
451A-50	Ivory	103 786 240
451A-61	Gray	103 942 272



Adapter, Double-Ended, Feed-Through

Applications

The Double-Ended, Feed-Through Adapter is used to mate incompatible connectorized 25-pair cables. It provides two male or two female connectors so that cables with connectors of the same gender can be joined.



Description

The Double-Ended, Feed-Through Adapter comes in two configurations: two male connectors or two female connectors. A plastic housing holds and protects the two connectors.

Product Code	Connectors	Comcode
25	Female/Female	403 617 798
25	Male/Male	403 617 780

Adapter, Modular 4-Pair to 66M

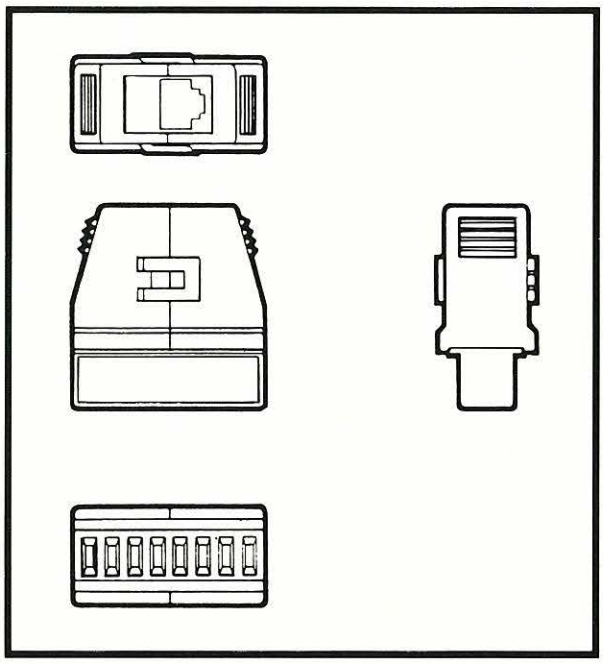
Applications

The Modular 4-Pair to 66M Adapter is used to connect a 353A or 361A Adapter to a 66 block. This product is intended for reuse situations only.

Description

This adapter has one standard RJ41 8-position modular jack for line input from a 2-, 3-, or 4-pair modular connection.

Product Code	Comcode
66M	403 608 367



Adapter, Modular Tap

Applications

The Modular Tap Adapter is used to provide access all pairs of an incoming 25-pair cable. It is designed for easy connection and disconnection and can be used for temporary or permanent installations.

Description

This adapter is available in two versions: the 00-899-25-2C has one RJ21 25-pair connector mounted on the front; this connector has direct access to consecutive pairs of the 25-pair cable tapping off the first and second positions of the twenty-five 8-position, 4-conductor modular jacks. The 00-899-50-4C has two RJ21 connectors mounted on the front; each of these connectors is factory wired to twenty-five 4-pair modular jacks to provide access in consecutive wiring sequence.

Specifications

Length: 11.16 in.
Width: 4.66 in.

Product Code	Comcode
00-899-25-2C	405 419 813
00-899-50-4C	405 491 531

Section 5: Electrical Protection Devices

Contents

Introduction to Electrical Protection Devices

Electrical protection devices protect the personnel and equipment who come in contact with a distribution system against electrical surges and other potentially harmful electrical currents such as lightning or power wires.

To prevent this kind of harm, the AT&T Premises Distribution System includes protector panels that hold interchangeable plug-in or screw-in protector units to control the magnitude of high-voltage surges that pass through building wiring. Each protector unit contains two carbon-block or gas-tube protectors.

Carbon-block protector units (the 3B-A Series, 4B-C Series, and 2A1A units) consist of carbon blocks inside a housing. When the voltage on the conductor being protected exceeds a predetermined level, it is limited by arcing the air gap between the carbon blocks. If the voltage is short-lived, such as that caused by lightning, the protector returns to an open circuit condition. In cases where the voltage persists, however, arcing continues long enough to melt a lead alloy spacer inside the unit, permitting one spring-loaded carbon block to move up against the other and establish a direct path to ground.

Gas-tube protector units (the 3B-E Series, 4B-E Series, and 11A2A units), which provide better margins of voltage protection than carbon-block protectors, consist of a surge protector and a fusible disc mounted inside a housing. The gas-tube protector functions much like the air-gap protector, except that the gas-tube uses two metallic electrodes sealed in a glass envelope filled with inert gas. Gas-tube protector units are recommended for areas prone to frequent lightning, for special service circuits (alarm and data), and for trunk circuits where high reliability is critical.

Some of the carbon-block (the 4B-C Series) and gas-tube (the 4B-E Series) protector units include heat coils. In addition to controlling high-voltage surges, protector units with heat coils interrupt currents of low voltage but abnormally long duration, sometimes referred to as "sneak currents," and divert those currents to ground. Although not strong enough to trigger carbon-block or gas-tube voltage-surge limiters, sneak currents can otherwise overheat and damage equipment connected to a system.

The 188 Multipair Protector Panel and the 189 Multipair Protector Panel, both of which receive any of the plug-in units described above, contain built-in cross connects. Both incorporate a swivel "input" stub cable that allows service feed from top or bottom and acts as a fuse link. The stub cable on the 188 panel is factory-wired through the protector panel to a 110 quick-connect "output" termination field. In addition to the features provided by the 188 panel, the 189 panel also offers a greater selection of pair sizes; of input and output methods, including an optional built-in splice chamber; and a hinged cover.

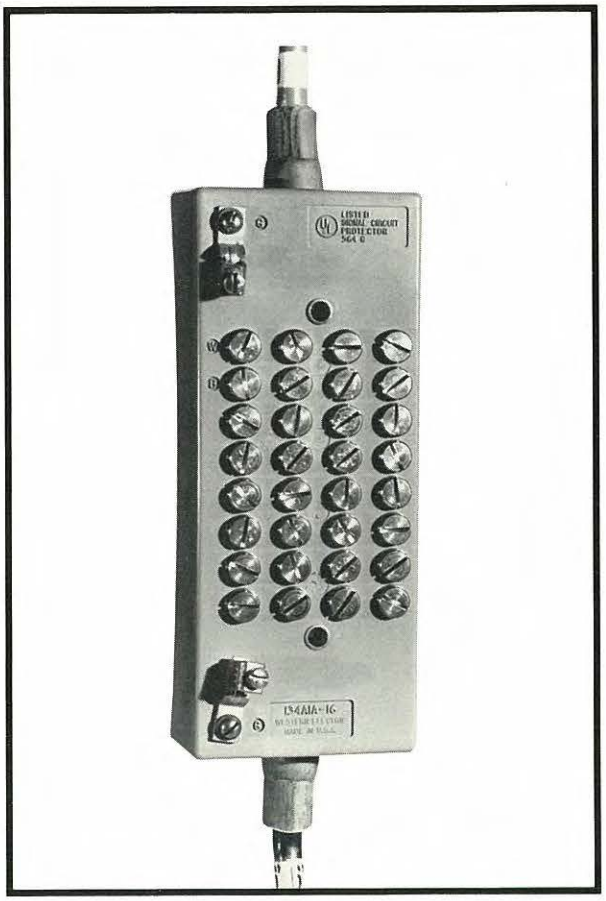
The 134 Multipair Protector Panel and the 190 Multipair Protector Panel are designed for applications where the cross-connect field is separated from the protectors. They are similar except that the 190 panel has a circuit disabling capability, while the 134 panel does not, and the 190 panel uses plug-in protector units, while the 134 panel uses screw-in units. Both the 134 and the 190 panels have a 26-gauge input stub and a 24-gauge output stub to the cross-connect field.

In addition to the protection provided by the panels above, the 428 protector safeguards devices connected to AC circuits.

Protector Panel, 134-Type Multipair

Applications

The 134-Type Multipair Protector Panel is used to provide indoor or outdoor station protection in buildings served by exposed cables.



Description

The 134-type panel consists of a fire-resistant, gas-tight, resin-filled terminal block equipped with 2A1A or 11A2A Individual Protector Units. It also has a 26-gauge input stub cable that serves as a fusible link, a 24-gauge output stub cable, and two ground lugs. The 134-type protector panel comes in 16-, 25-, 50-, and 100-pair sizes.

Specifications

Physical Specifications

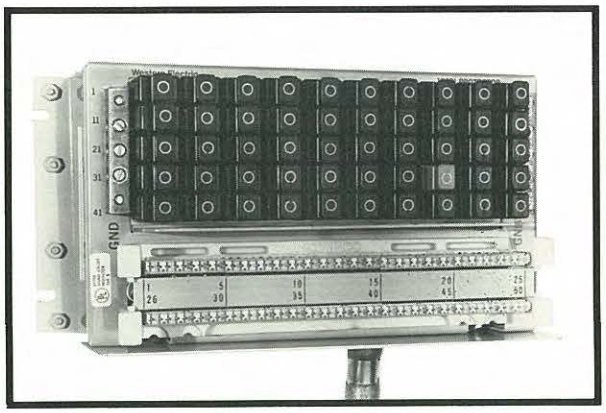
Height: 12.625 in. (16-pair), 14.75 in. (25-pair), 17.75 in. (50-pair), 30.5 in. (100-pair)
Width: 3.375 in. (all pair sizes)
Depth: 1.625 in. (all pair sizes)

Product Code	Type	Pair Size	Input (Ft)	Output (Ft)	Comcode
134A1A-16-6	Carbon	16	6	6	101 951 556
134A1A-16-12	Carbon	16	6	12	101 951 564
134A1A-25-6	Carbon	25	6	6	101 951 572
134A1A-25-12	Carbon	25	6	12	101 951 580
134A1A-50-6	Carbon	50	6	6	101 951 598
134A1A-50-12	Carbon	50	6	12	101 951 606
134A1A-50-25	Carbon	50	6	25	101 205 532
134A1A-100-6	Carbon	100	6	6	101 951 614
134A1A-100-12	Carbon	100	6	12	102 165 859
134A1A-100-25	Carbon	100	6	25	101 413 698
134E1A-16-6	Gas	16	6	6	103 389 789
134E1A-16-12	Gas	16	6	12	103 389 797
134E1A-25-6	Gas	25	6	6	103 389 805
134E1A-25-12	Gas	25	6	12	103 389 813
134E1A-50-6	Gas	50	6	6	103 389 821
134E1A-50-12	Gas	50	6	12	103 389 839
134E1A-50-25	Gas	50	6	25	103 389 847
134E1A-100-6	Gas	100	6	6	103 389 854
134E1A-100-12	Gas	100	6	12	103 389 862
134E1A-100-25	Gas	100	6	25	103 389 870

Protector Panel, 188-Type Multipair

Applications

The 188 Multipair Protector Panel is used to provide protection for communications equipment and circuits exposed to voltage surges and sneak currents. The 188 protector panel is designed for use with the 110-type cross connect.



Description

The 188 protector panel consists of a metal housing containing mountings for 3B or 4B Series Protector Units. It also has a 25-foot swivel input cable that allows cable to be fed from the top or bottom of the unit. The input cable is constructed of 26-gauge wire and acts as a fuse link, eliminating the need for a separate splice; it is wired through to a 110-type termination field and protector units are inserted into the protector panel, completing the circuit. The 188 protector panel comes in 50- and 100-pair sizes.

Specifications

Physical Specifications

Height: 5.375 in. (50-pair), 10.75 in. (100-pair)
Width: 10.75 in.
Depth: 4.5 in.

Product Code	Pair Size	Comcode
188B1-50	50	103 314 969
188B1-100	100	103 314 951

Protector Panel, 189-Type Multipair

Applications

The 189-Type Multipair Protector Panel is used to provide station protection for 25, 50, or 100 incoming service pairs; it also serves as a terminating field.

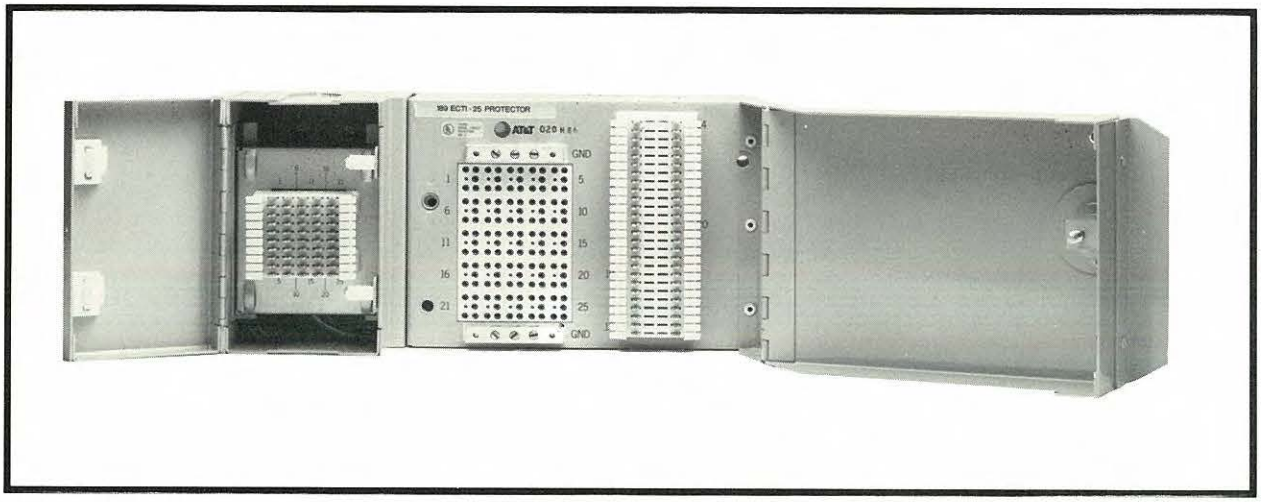
Description

The 189-type panel consists of a metal housing containing mountings for 3B or 4B Series Protector Units. The input options for the 189 panel include a swivel cable stub, which allows feed from top or bottom, or a built-in splice chamber with either a 710 connector or a 66-type connecting block, which eliminates the need for a separate splice. Output options include a 66-type block or RJ21-type connector, if both protection and a network interface are needed at the building entrance terminal. The 189 panel is also available with an optional hinged cover for security and mechanical protection, and comes in 25-, 50-, or 100-pair sizes.

Specifications

Physical Specifications

Height: 6 in. (25-pair), 10.25 in. (50-pair), 20.25 in. (100-pair)
Width: 8.5 in.
Depth: 4.6 in. (without cover), 4.82 in. (with cover)



With Hinged Cover

Product Code	Input			Output		Comcode
		Splice Chamber				
	Cable Stub	710 Connector	66 Block	66 Block	RJ21-Type Connector	
189BC1-25	Yes			Yes		103 623 633
189BC1-50	Yes			Yes		103 623 641
189BC1-100	Yes			Yes		103 623 658
189CC1-25	Yes				Yes	103 623 666
189CC1-50	Yes				Yes	103 623 674
189CC1-100	Yes				Yes	103 623 682
189DC1-25	Yes			Yes	Yes	104 305 073
189DC1-50	Yes			Yes	Yes	104 305 099
189DC1-100	Yes			Yes	Yes	104 305 081
189DCS1-25		Yes		Yes	Yes	104 305 016
189DCS1-50		Yes		Yes	Yes	104 305 032
189DCS1-100		Yes		Yes	Yes	104 305 024
189DCT1-25			Yes	Yes	Yes	104 305 040
189DCT1-50			Yes	Yes	Yes	104 305 065
189DCT1-100			Yes	Yes	Yes	104 305 057
189CCS1-25		Yes			Yes	105 041 685
189CCS1-50		Yes			Yes	105 041 669
189CCS1-100		Yes			Yes	105 040 596
189CCT1-25			Yes		Yes	105 041 693
189CCT1-50			Yes		Yes	105 041 677
189CCT1-100			Yes		Yes	105 040 604
189ECS1-25		Yes		Yes		104 305 107
189ECS1-50		Yes		Yes		104 305 123
189ECS1-100		Yes		Yes		104 305 115
189ECT1-25			Yes	Yes		104 305 131
189ECT1-50			Yes	Yes		104 305 156
189ECT1-100			Yes	Yes		104 305 149

NOTE: The numbers after the hyphen in the product code refer to the pair size of the protector.

Without Hinged Cover

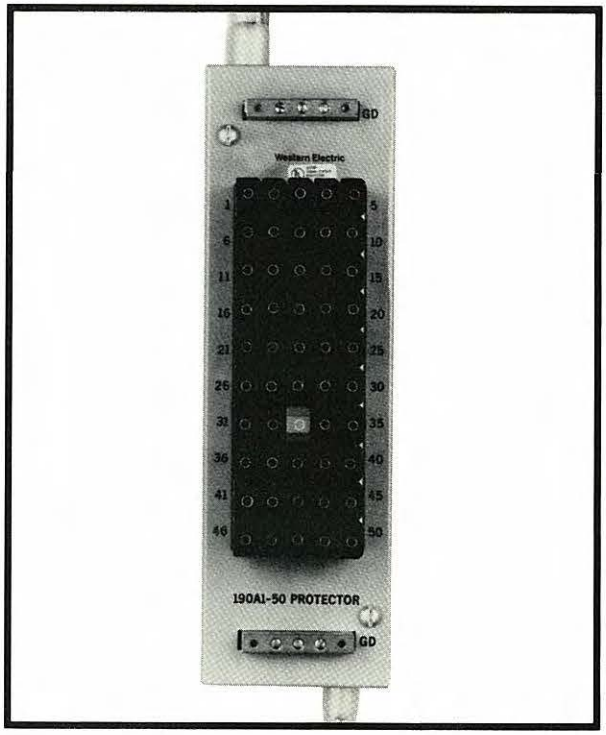
Product Code	Input			Output		Comcode
		Splice Chamber				
	Cable Stub	710 Connector	66 Block	66 Block	RJ21-Type Connector	
189B1-25	Yes			Yes		103 289 252
189B1-50	Yes			Yes		103 289 260
189B1-100	Yes			Yes		103 289 245
189C1-25	Yes				Yes	103 623 609
189C1-50	Yes				Yes	103 623 617
189C1-100	Yes				Yes	103 623 625
189ES1-25		Yes		Yes		105 216 162
189ES1-50		Yes		Yes		105 216 154
189ES1-100		Yes		Yes		105 216 147
189ET1-25			Yes	Yes		105 216 196
189ET1-50			Yes	Yes		105 216 188
189ET1-100			Yes	Yes		105 216 170

NOTE: The numbers after the hyphen in the product code refer to the pair size of the protector.

Protector Panel, 190-Type Multipair

Applications

The 190-Type Multipair Protector Panel is used to provide indoor station protection for exposed lines at building entrance terminals. It is intended for use where the cross connect is separated from the protectors.



Description

The 190-type panel consists of a metal housing containing mountings for 3B or 4B Series Protector Units. It also includes a fire-retardant molded plastic connecting block, a 25-foot, 26-gauge stub cable that serves as a fusible link, a 24-gauge terminating cable, and two connectors for external ground connections. The internal wiring design prevents protector bypass, and a cable pass-through feature allows for side-to-side and top-to-bottom installation. The 190-type protector panel come in 50- and 100-pair sizes.

Specifications

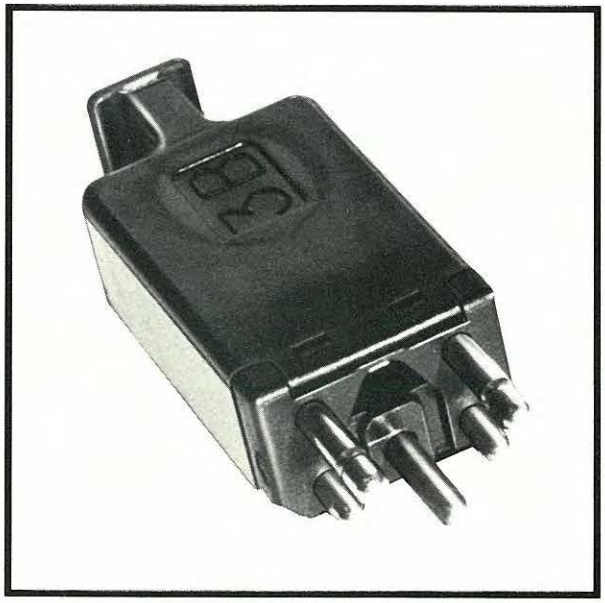
Height: 13 in. (50-pair), 24 in. (100-pair)
Width: 4 in.
Depth: 2.75 in.

Product Code	Comcode
190A1-50	102 995 073
190A1-100	102 995 099

Protector Unit, 3B-A Series Individual

Applications

The 3B-A Series Protector Unit is a carbon block device that plugs into the 188-, 189-, and 190-Type Multipair Protector Panels to provide overvoltage and surge protection for a communications circuit.



Description

The 3B-A protector uses 3-mil, surge-limiting carbon blocks to protect against voltage surges. It is molded of glass-reinforced, high-heat distortion plastic (polybutylene terephthalate) and has a 5-pin plug with gold-plated tip and ring pins for long-term reliable service. Each 3B-A is color coded for quick identification of its circuit application (see table below). The 3B-A meets or exceeds UL flame test requirements.

Specifications

Physical Specifications

Length: 1.6875 in.
Width: 0.75 in.
Depth: 0.5 in.

Electrical Specifications

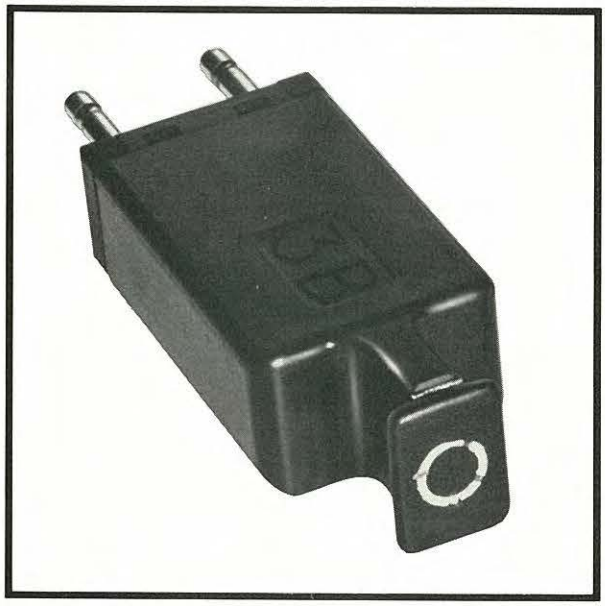
DC Breakdown Voltage at 2 kV/sec: Median 500V
Surge Breakdown Voltage at 100 V/μsec: Median 700V
Surge Breakdown Voltage: 1000V (maximum)
Insulation Resistance: 100 megohms

Product Code	Color	Application	Comcode
3B1A	Black	Standard service	102 381 779
3B2A	Green	Service denied	102 381 787
3B3A	Red	Special circuits (fire or burglar alarm, etc.)	102 381 795
3B4A	Yellow	PBX battery	102 381 803

Protector Unit, 3B-E Series Individual

Applications

The 3B-E Series Protector Unit is a gas tube device that plugs into the 188-, 189-, and 190-Type Multipair Protector Panels to provide overvoltage and surge protection for a communications circuit.



Description

The 3B-E protector uses a 201A narrow-gap, sealed-gas, surge arrester to protect against voltage surges. It is molded of glass-reinforced, high-heat distortion plastic (polybutylene terephthalate) and has a 5-pin plug with gold-plated tip and ring pins for long-term reliable service. Each 3B-E is color coded for quick identification of its circuit application (see table below). The 3B-E Series Protector Unit meets or exceeds UL flame test requirements.

Specifications

Physical Specifications

Length: 1.6875 in.
Width: 0.75 in.
Depth: 0.5 in.

Electrical Specifications

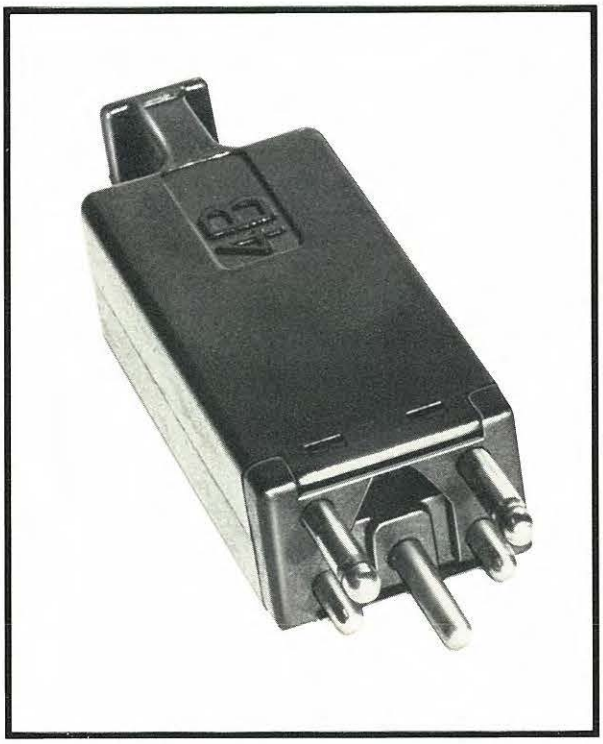
DC Breakdown Voltage at 2 kV/sec: 265-400V
Surge Breakdown Voltage at 100 V/μsec: 200-800V
Insulation Resistance: 100 megohms
DC Holdover Voltage (IEEE 465.1): 160-180V
Vented Breakdown Voltage (exceeds UL requirements): 1000V
DC Arc Voltage: 20V (typical)
Glow-to-Arc Transition Current (IEEE 465.1): 0.1A (typical)
Capacitance (PE-80): 10 pF
AC Discharge (PE-80): 65A (11 cycles at 60 Hz)

Product Code	Color	Application	Comcode
3B1-E	Black	Standard service	103 090 395
3B2-E	Green	Service denied	103 090 403
3B3-E	Red	Special circuits (fire or burglar alarm, etc.)	103 090 411
3B4-E	Yellow	PBX battery	103 090 429

Protector Unit, 4B-C Series Individual

Applications

The 4B-C Series Protector Unit is a carbon block device that plugs into the 188-, 189-, and 190-Type Multipair Protector Panels and is used to provide voltage surge and sneak current protection for a communications circuit.



Description

The 4B-C protector uses 3-mil carbon blocks to protect against voltage surges and heat coils for sneak current protection. It is molded of glass-reinforced, high-heat distortion plastic (polybutylene terephthalate), and has a 5-pin plug with gold-plated tip and ring pins for long-term reliable service. Each 4B-C is color coded for quick identification of circuit application. The 4B-C meets or exceeds UL flame test requirements.

Specifications

Physical Specifications

Length: 2 in.
Width: 0.75 in.
Depth: 0.5 in.

Electrical Specifications

DC Breakdown Voltage at 2 kV/sec: Median 500V
Surge Breakdown Voltage at 100 V/μsec:
Median 700V
Surge Breakdown Maximum Voltage: 1000V
Insulation Resistance: 100 megohms
Sneak Current at 68°F (20°C): 210 sec at 0.54 amps

Product Code	Color	Application	Comcode
4B1-C	Black	Standard service	102 904 893
4B2-C	Green	Circuits not presently in use	102 904 901
4B3-C	Red	Special circuits (fire or burglar alarm, etc.)	102 904 919

Protector Unit, 4B-E Series Individual

Applications

The 4B-E Series Protector Unit is a gas tube device that plugs into the 188-, 189-, and 190-Type Multipair Protector Panels and is used to provide voltage surge and sneak current protection for a communications circuit.

Description

The 4B-E protector uses a 201A narrow-gap, sealed-gas, surge arrester to protect against voltage surges and heat coils for sneak current protection. It is molded of glass-reinforced, high-heat distortion plastic (polybutylene terephthalate) and has a 5-pin plug with gold plated tip and ring pins for long-term reliable service. Each 4B-E is color coded for quick identification of its circuit application. The 4B-E protector meets or exceeds UL flame test requirements.

Specifications

Physical Specifications

Length: 2 in.
Width: 0.75 in.
Depth: 0.5 in.

Electrical Specifications

DC Breakdown Voltage at 2 kV/sec: 265-400V
Surge Breakdown Voltage at 100 V/μsec: 200-800V
Insulation Resistance (PE-80): 100 megohms
DC Holdover Voltage (IEEE 465.1): 160-180V
Vented Breakdown Voltage (exceeds UL requirements): 1000V
Arc Voltage: 20V (typical)
Glow-to-Arc Transition Current (IEEE 465.1): 0.1A (typical)
Capacitance (PE-80): 10 pF
AC Discharge (PE-80): 65 amps (11 cycles at 60 Hz)
Maximum Impulse Discharge (PE-80): 5K amps (8x20 μsec waveform)
Sneak Current at 68°F (20°C): 210 sec at 0.54 amps

Product Code	Color	Application	Comcode
4B1-E	Black	Standard service	103 090 437
4B2-E	Green	Circuits not presently in use	103 090 445
4B3-E	Red	Special circuits (fire or burglar alarm, etc.)	103 090 452

Protector Unit, 2A1A Individual

Applications

The 2A1A Individual Protector Unit is a screw-in device used in protector panels, terminal blocks, cable terminals, and connecting blocks for protection of cable conductors from lightning surges or contact with power lines.

Description

The 2A1A protector features a 3-mil carbon block housed in a brass cap to guard against corrosion; it is threaded to fit a 0.4375-inch well.

Specifications

Electrical Specifications

DC Breakdown Voltage at 2 kV/sec: Median 500V
Surge Breakdown Voltage at 100 V/μsec: Median 700V
Surge Breakdown Voltage Max: 1000V
Insulation Resistance: 100 megohms

Product Code	Comcode
2A1A	100 828 086

Protector Unit, 11A2A Individual

Applications

The 11A2A Individual Protector Unit is a screw-in device used in station protectors to provide voltage surge protection.

Description

The 11A2A protector features a gas tube that is housed in a brass cap to guard against corrosion; it is threaded to fit a 0.4375-inch protector well.

Specifications

Electrical Specifications

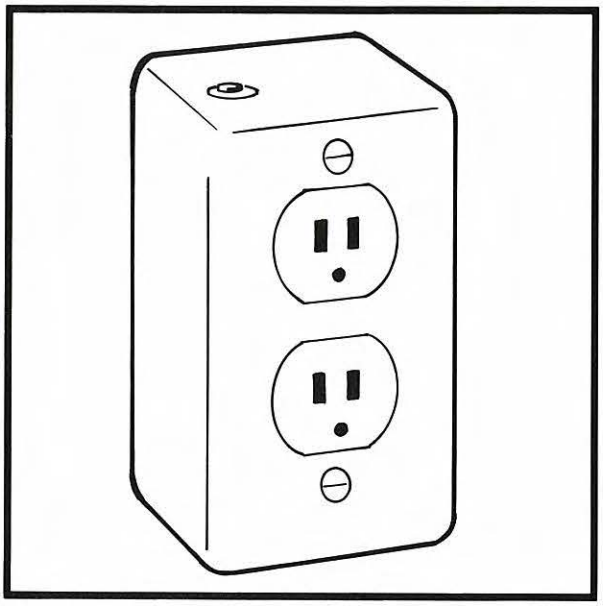
DC Breakdown Voltage at 2 kV/sec: 265-400V
Surge Breakdown Voltage at 100 V/μsec: 200-800V
Insulation Resistance (PE-80): 100 megohms
DC Holdover Voltage (IEEE 465.1): 160-180V
Vented Breakdown Voltage (exceeds UL requirements): 1000V
Arc Voltage: 20V (typical)
Glow-to-Arc Transition Current (IEEE 465.1): 0.1A (typical)
Capacitance (PE-80): 10 pF
AC Discharge (PE-80): 65 amps (11 cycles at 60 Hz)
Maximum Impulse Discharge (PE-80): 5K amps (8x20 μsec waveform)

Product Code	Comcode
11A2A	103 003 950

Protector Unit, 428 Power Line Surge

Applications

The 428 Power Line Surge Protector Unit is used to protect electronic equipment connected to an AC line against damage caused by voltage surges, spikes, and transients on the line.



Description

The 428 unit is a hybrid, self-restoring power line overvoltage surge protector that uses metal oxide varistors (MOVs) and a 3-electron gas tube to ground any overvoltages. The 428 protector plugs into a standard 120 Vac, 15 Amp outlet and has a measured response time of less than 5 nanoseconds. Its maximum surge capability is greater than 20,000 amps (8 by 20 microsecond waveform), and its clamp voltage is 390 Volts. It is recommended for use with communications systems that require 120-Vac, 60-Hz, 15 Amp, single-phase power.

Product Code	Comcode
428	403 856 115

Section 6: Tools and Support Hardware

Contents

Fiber Components

Miscellaneous Components

Introduction to Tools and Support Hardware

This section includes the tools, frames, housing, clips, clamps, tape, and other materials needed to install, support, and maintain an AT&T Premises Distribution System (PDS).

Adapter, 352A Test

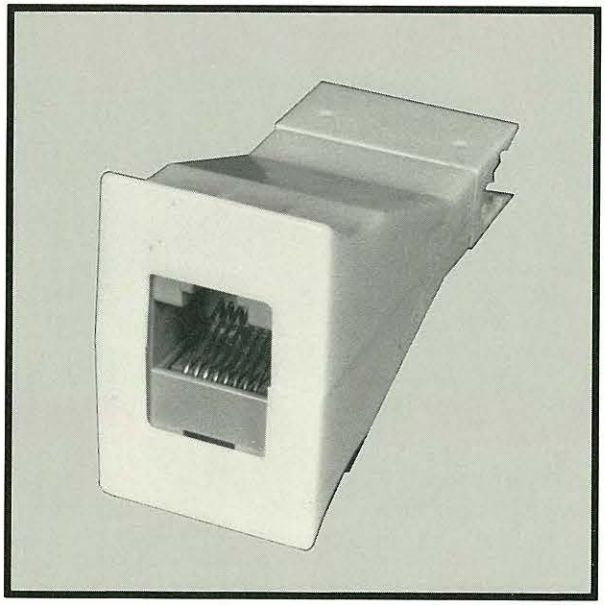
Applications

The 352A Test Adapter is used to connect an 8-pin modular plug to the front of a 110-type connecting block.

Description

The 352A is a plastic 3-pair adapter with a 110-type connector on one side and an 8-pin modular jack on the other.

Product Code	Comcode
352A	103-895-280



Bridging Clip, MBC

Applications

The MBC Bridging Clip is used to make simultaneous cross connections of 4-pair wires.

Description

This clip consists of an insulated, push-on module with a 2-position bridging clip. It comes in packages of four or eight.

Product Code	Comcode
MBC-4	900 709 221
MBC-8	900 709 239

Cable Label

Applications

Cable Label wraps around 4-pair distribution wire to provide a writing surface.

Description

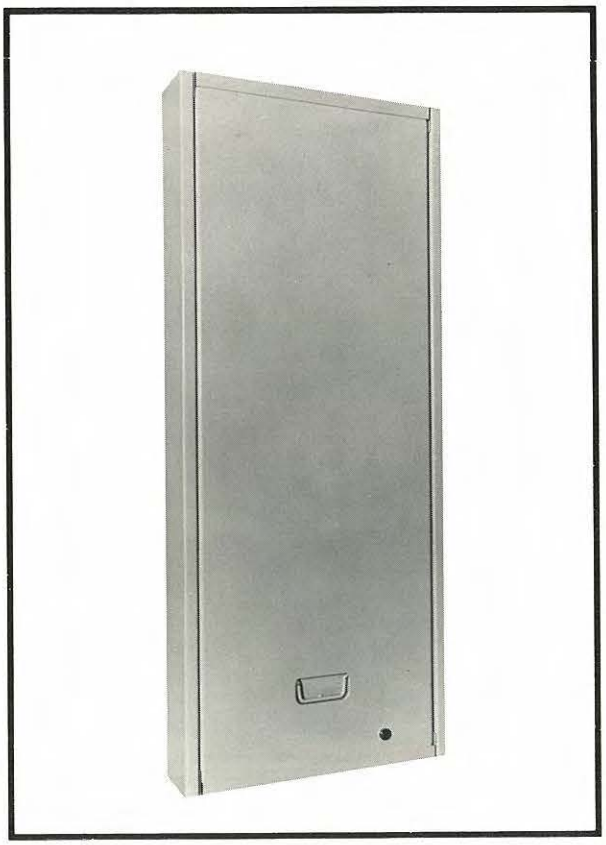
Cable Label is a durable, waterproof tape on which you can write with a felt-tip pen.

Comcode
403 591 084

Cable Terminal Sections, 3A/4A

Applications

The 3A and 4A Cable Terminal Sections form a wall-mounted metal enclosure that provides mechanical protection and security for indoor building distribution apparatus.



Description

The 3A Cable Terminal Sections consist of a lift-out door and top and bottom panels that are attached to a backboard at the factory. They are proportioned to accommodate standard 110-type apparatus and are equipped with a ground bar for ground leads. The backboard is made of plywood and is laminated on both sides with aluminum, which acts as a fire-retardant barrier and aids grounding. Multiple 3A sections can be mounted side-by-side to form an enclosure of any size.

The 4A Cable Terminal Sections must be ordered separately; they come in pairs and are the side panels used to enclose the 3A sections.

The D180991 Locking Kit of Parts may be used to provide light security and requires a 216C-Type Tool for entry. The D180992 Locking Kit of Parts provides greater security via a commercial key lock.

Specifications

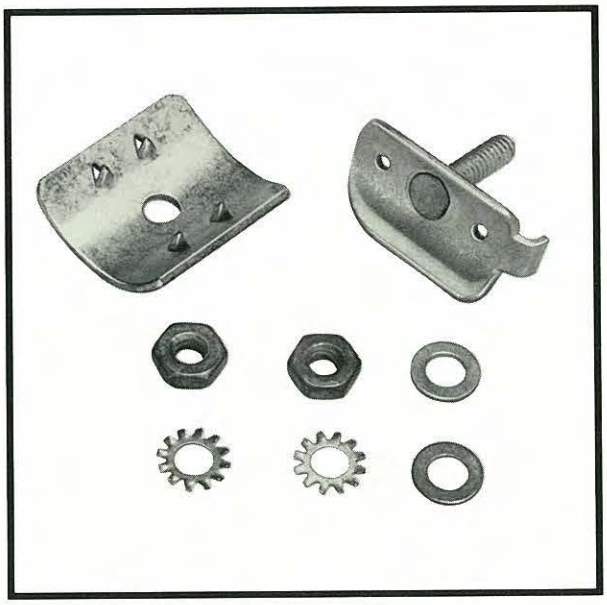
Product Code	Height (In.)	Width (In.)	Depth (In.)	Comcode
3AA1-32CTS	32	19.5	6.5	104 036 637
3AA1-32*	32	19.5	6.5	104 285 564
3AA1-52CTS	52	19.5	6.5	103 115 036
3AA1-52*	52	19.5	6.5	104 285 572
3AA1-72CTS	72	19.5	6.5	103 115 044
3AA1-72*	72	19.5	6.5	104 285 580
4A1-32CTS	32	1	6.5	104 036 645
4A1-52CTS	52	1	6.5	103 115 051
4A1-72CTS	72	1	6.5	103 115 069

* These cable terminal sections do not come equipped with a backboard and are designed for existing cross-connect fields.

Clamp, B Bond

Applications

The B Bond Clamp is used to make permanent electrical bonds to the aluminum shield of plastic sheath cables at wiring blocks and splices. This clamp may also be used with bonded sheaths and both single- and dual-jacketed sheaths. (For making temporary electrical bonds, see the "B Bond Clip" later in this section.)



Description

The B Bond Clamp consists of two formed metal plates; the inner plate is equipped with a stud. Two nuts, two washers, and two lock washers are also provided. The clamp is available in three sizes.

Specifications

Clamp Size	Cable Diameter (In.)	Comcode
1	Up to 0.8	400 366 332
2	0.8 to 1.6	400 366 340
3	Over 1.6	400 366 357

Clamp, C Ground

Applications

The C Ground Clamp is used to attach ground wire to cold-water pipe, electrical conduit, or ground rods from 0.5-inches to 1.25 inches.

Description

The C Ground Clamp is a brass, 2-piece, saddle-type clamp designed to attach sizes 6-, 10-, or 12-gauge ground wire. It comes in packages of five.

Product Code	Comcode
8981	402 689 822

Clip, B Baseboard

Applications

The B Baseboard Clip is used to attach D inside wire to baseboard or trim moldings in both residential and small business installations.

Description

This clip is made of a clear, flame-retardant polycarbonate, has an adhesive backing, and comes in packages of 15.

Product Code	Description	Comcode
9031	Package of 15 clips	403 103 286
9031	Ten packages of 15 clips	403 100 118

Clip, B Bond

Applications

The B Bond Clip is used to provide temporary shield continuity across a splice opened during splicing or whenever a splice case or lead sleeve is opened. (For making permanent electrical bonds, see B Bond Clamp.)

Description

The B Bond Clip consists of a formed copper clip with inner projections for making contact with 24-gauge stranded copper wire and with the aluminum cable shield.

Comcode (100/Package)	Comcode (500/Package)
997 302 633	997 126 586

Clip, B Cord

Applications

The B Cord Clip is used to attach cords and cables (including flat cable) to walls. It is available in sizes up to 75-pair.

Description

This clip has an adhesive back that attaches securely to any clean, smooth surface and sets in minutes. Cables can be inserted and removed by snapping them into and out of the clip. The B1 clip fits wire up to 25 pair, the B2 clip fits 25-pair wire, and the B3 fits 50- and 75-pair wire.

Product Code with Color Suffix	Color	Comcode
B1-3	Black	400 717 559
B1-51	Green	400 717 591
B1-58	White	400 717 617
B1-60	Beige	400 717 625
B1-61	Gray	400 717 641
B2-3	Black	400 717 567
B2-51	Green	400 717 609
B2-58	White	400 725 461
B2-60	Beige	400 717 633
B2-61	Gray	400 717 658
B3-3	Black	400 717 575
B3-51	Green	400 719 084
B3-58	White	400 719 092
B3-60	Beige	400 719 100
B3-61	Gray	400 719 118

Clip, C Cord

Applications

The C Cord Clip is used to attach cords to desks and walls.

Description

This clip is an extruded plastic strip with one side covered in double-faced adhesive that allows easy installation and removal on clean, dry surfaces. It comes in six sizes ranging from 0.125 inches to 0.5 inches.

Product Code	Size (In.)	Comcode
8921-C1	0.125	402 326 136
8921-C2	0.1875	402 326 133
8921-C3	0.25	402 326 151
8921-C4	0.3125	402 326 169
8921-C5	0.375	402 326 177
8921-C6	0.5	402 644 132

Covers, Connector and Plug

Applications

The Connector and Plug Covers are protective housings and supports for the multicontact connectors and plugs used with key telephone systems. They come in 12 different sizes and are used as follows:

- The L1, L2, and L3 Connector and Plug Covers are used to protect and/or support the 3-finger group of connectors associated with 75-pair cable.
- The L6, L7, and L8 Connector and Plug Covers are used to protect and/or support the 5-finger connectors associated with 100-pair cable.
- The L12, L13, and L14 Connector and Plug Covers are used to protect and/or support the single connectors associated with 25-pair cable.
- The L16, L17, and L18 Connector and Plug Covers are used to protect and/or support the 6-finger connectors associated with 150-pair cable.

Description

Each connector and plug cover comes with a bracket and screws, a magnetic assembly, or an adhesive bracket that may be screwed to an outlet box or flat surface, as specified below.

Product Code	Application	Mounting	Comcode
L1	75-pair cable	Bracket & screws	400 461 257
L2	75-pair cable	Magnetic assembly	400 461 265
L3	75-pair cable	Adhesive bracket	400 461 273
L6	100-pair cable	Bracket & screws	400 461 281
L7	100-pair cable	Magnetic assembly	400 461 299
L8	100-pair cable	Adhesive bracket	400 461 307
L12	25-pair cable	Bracket & screws	400 604 641
L13	25-pair cable	Magnetic assembly	400 604 658
L14	25-pair cable	Adhesive bracket	400 604 633
L16	150-pair cable	Bracket & screws	401 437 777
L17	150-pair cable	Magnetic assembly	401 437 785
L18	150-pair cable	Adhesive bracket	401 437 793

F Clip Terminal Insulator

Applications

The F Clip Terminal Insulator is used to mark circuits that require special service protection or special safeguarding measures.

Description

The F Clip Terminal Insulator is a small red plastic clip, available in one-pair size only, that mechanically protects one pair at the cross connect without interference to the adjacent pairs.

Product Code	Comcode
AT-8660	401 149 802

Housing, 304

Applications

The 304 Housing is floor-mounted and used to house the 1A-4P Adapter (see Section 4), which connects round cable to flat undercarpet cable.

Product Code	Comcode
304	403 401 833

Housing, WSB-10

Applications

The WSB-10 Housing is a wall-mounted junction box used to hold 1A-4P Adapters (see Section 4), which join undercarpet cable and round cable.

Description

The WSB-10 is a metal box with a gray cover that can be painted, or the entire box can be mounted behind the baseboard molding.

Specifications

Length: 14 in.
Height: 6.375 in.
Depth: 1.4375 in.

Product Code	Comcode
WSB-10	403 723 356

Impact Tool, AT-8762 D

Applications

The AT-8762 D Impact Tool is used to hard-wire terminations (one wire at a time) on 110-type connecting blocks, particularly in installations where numerous cutdowns are required.

Description

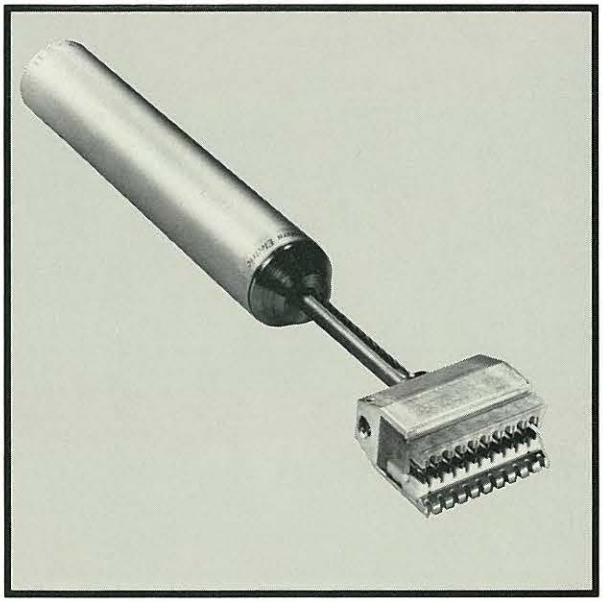
This tool consists of a plastic handle and a metal head. It has an adjustment switch on the handle that is labeled HI for 22-gauge or larger conductors and LO for 24- or 26-gauge conductors. It uses a 110 reversible blade that inserts, or inserts and cuts off the scrap end of, conductors. There is a cavity in the handle for storing an extra blade.

Product Code	Description	Comcode
8762D 8762D-88	Handle Blade for 110 block	402 024 723 402 024 699

Impact Tool, 110, 788J1

Applications

The 788J1 110 Impact Tool is used to insert and trim up to ten cable conductors at a time and to seat the 110C Connecting Block. It can be used with 3 , 4 , and 5 pairs of wires.



Description

The 788J1 tool has a reversible head that inserts, or inserts and cuts off the scrap ends of, conductors. A replacement head, 788M1, can be ordered separately.

Product Code	Comcode
788J1	102 648 839
788M1	102 995 420

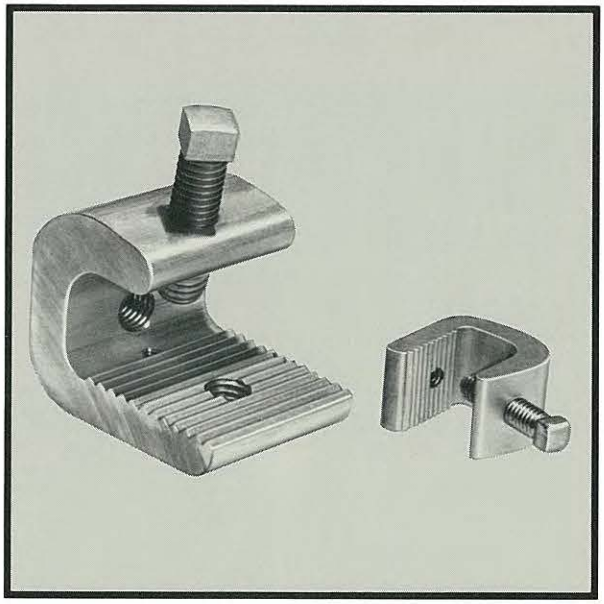
Insulator Supports

Applications

The Insulator Supports are used as attachments for drop and block wire on structural steel framework.

Description

The Insulator Supports consist of a malleable cast-iron frame with a set screw for securing a support in place and holes for mounting S or T knobs or bridle rings. They are available in seven sizes.



Specifications

Product Code	Thread Diameter, Back	Thread Diameter, Bottom	Length (In.)	Height (In.)	Width (In.)	Comcode
7772B	10-24	—	1.25	1.5625	1	400 273 108
7772C	1/2-13	10-24	2.875	2.125	2.0625	400 273 116
7772D	3/8 CL	10-24	2.6875	1.9375	1.5	400 273 124
7772E	1/2-13	—	2.5	2.3125	2.4375	400 273 132
7772F	3/8-16	—	2	2	2	400 273 140
7772G	5/16-18	—	1.625	1.75	1.375	400 273 157
7772H	1/4-20	—	1.25	1.5625	1	400 071 048

Modular Stripping Tool, MST-XP26

Applications

The MST-XP26 Modular Stripping Tool is used to strip PVC cable jackets from 4-pair, 26-gauge, flat under-carpet cable.

Description

The MST-XP26 Stripping Tool is a 1-piece unit that contains two replaceable blades.

Product Code	Comcode
MST-XP26	900 728 635

Patch Cord Storage Box, 110 Patch Panel System

Applications

The 110 Patch Panel System Patch Cord Storage Box is wall-mounted and provides storage for spare patch cords used with the 110 patch panel system.

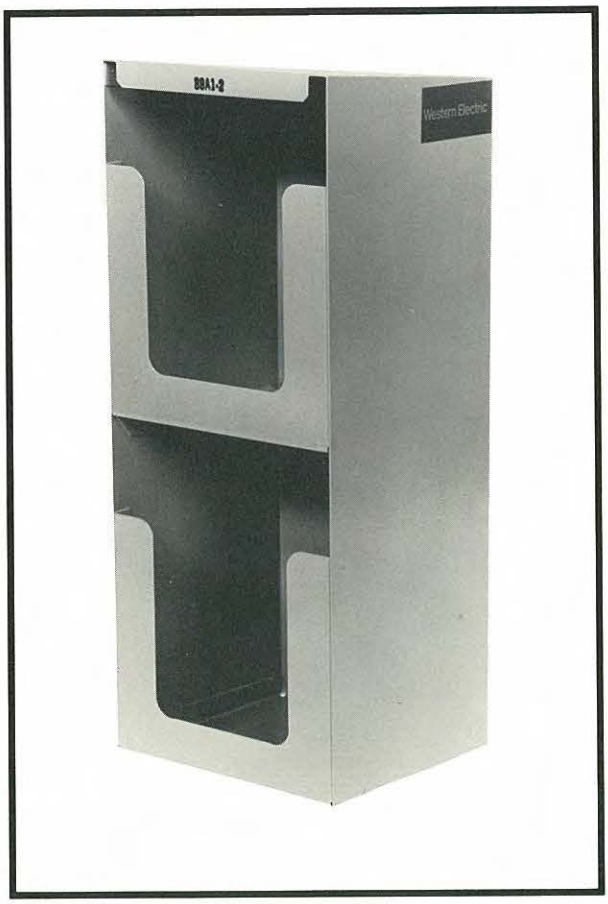
Description

This storage box is a steel container with top and bottom compartments for storing spare patch cords.

Specifications

Length: 14.5 in.
Width: 5.36 in.
Depth: 5.5 in.

Product Code	Comcode
88A1-2	103 083 218



Clamp, Bonding Ribbon

Applications

The Bonding Ribbon Clamp is used to ground bonding ribbon connected to either the 51D3-LG2 or UCB1 Lightguide Closure.

Description

The Bonding Ribbon Clamp is a tinned copper ribbon and clamp.

Product Code	Comcode
AT-6567	400 121 364

Consumable Kit, D181163

Applications

The D181163 Consumable Kit is used to mount array connectors on ribbon cable.

Description

The D181163 Consumable Kit contains enough supplies to mount one array connector. The entire kit consists of:

- a texmet paper
- a silicon carbide paper
- a package of TEXWIPEs®
- a package of paper towels
- a container of 6-1 epoxy
- an aluminum dish
- an end cap
- stripping compound
- release agent
- a container of epoxy for strain relief
- a container of micropolish
- a strain net
- two single-edge razor blades
- two stirring sticks
- two chips
- two positive chips

Product Code	Comcode
D181163	103 709 457

Consumable Kit, D181338

Applications

The D181338 Consumable Kit is used to mount ST (P2020A-C-125) Connector Plugs on 1860A, 1861A, 1862A, or LGBC Series cables.

Description

The D181338 kit contains enough supplies (except alcohol and compressed air) to mount approximately 100 ST connector plugs. The entire kit consists of:

- a stock list
- a strand of music wire in a vial
- 100 connector inserts
- a package of toothpicks
- a mixing pad
- two packages of TEXWIPEs
- six 2-dram bottles of stripping solution
- ten pipe cleaners
- ten threaders
- ten spare sleeves
- 25 1-micron polishing papers
- 25 5-micron polishing papers
- 25 syringes
- 25 dispensing tips
- a 4-gram package of epoxy

Product Code	Comcode
D181338	104 219 761

D Encapsulant

Applications

D Encapsulant is used to protect splices on air core and waterproof cables, and at the interface between air core and waterproof cables. It is designed for use in buried closures but should *not* be used in aerial applications.

Description

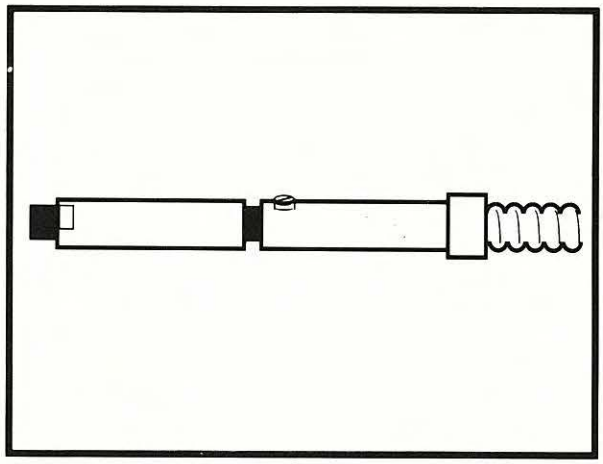
D Encapsulant is a liquid, fast-setting, all-weather, 2-part, reenterable splice encapsulant. It comes in containers of five different sizes.

Product Code	Grams	Comcode
D-1000	500	104 174 818
D-1000	750	104 174 826
D-1000	1900	104 174 834
D-1000	5000	104 174 842
D-1000	8000	104 178 611

Hardware, Sheath Termination (STH)

Applications

Sheath Termination Hardware (STH) is used to protect the ends of connectorized ribbon cable during installation.



Description

STH is a metal cap, equipped with a pulling eye, that fits over a 1009C Array Connector.

Product Code	Comcode
F-61533 (used with metallic ribbon cables)	103 692 364
F-61685 (used with nonmetalic ribbon cables)	103 863 429

Index Matching Gel

Application

Index Matching Gel is used to fill the small air gap at the assembled junction of two arrays when they are spliced. It reduces the splice loss because it has the same index of refraction as the fiber.

Description

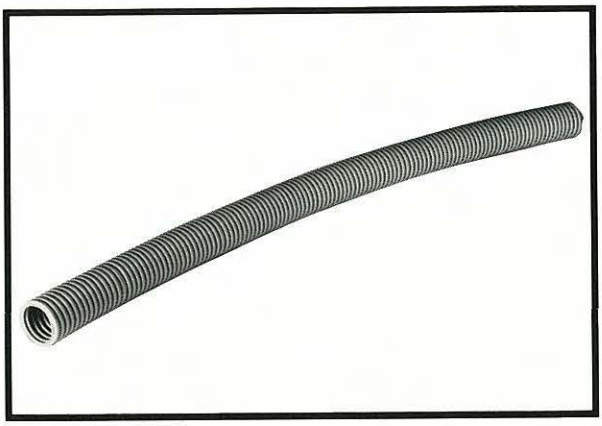
Index Matching Gel is an RTV compound that comes in a tube. There is a minimum order of five kits for this component.

Product Code	Comcode
AT-8955	402 698 302

Innerduct, B

Applications

B Innerduct is used as a protective conduit for lightguide cables in underground applications.



Description

B Innerduct is a high-density polyethylene pipe that is shipped on nonreturnable wooden reels. It can be ordered with colored marks to make cable identification easier.

Specifications

Inside Diameter: 1 in.
Wall Thickness: 0.1875 in.

Product Code	Description	Comcode
AT-8954	Innerduct with white mark	402 522 304
AT-8954	Innerduct with orange mark	402 522 312
AT-8954	Yellow innerduct	402 125 529

Innerduct Coupler

Applications

An Innerduct Coupler is used to splice sections of B Innerduct in underground applications.

Description

This coupler is an aluminum tube with opposite internal threads on each end so that B Innerduct can be screwed in from either side.

Specifications

Length: 3 in.
Outside Diameter: 1.5 in.

Product Code	Comcode
AT-8963	402 649 107

Ribbon, Bonding

Applications

Bonding Ribbon is used as a ground wire for the 51D3-LG2 and UCB1 Lightguide Closures as well as various cables.

Description

Bonding ribbon is a metallic ribbon that comes on a 5-lb spool.

Product Code	Comcode
AT-6868	400 260 337

Sealer, Duct B

Applications

Duct B Sealer is used to seal a duct with more than one innerduct running through it and to seal the space between a cable and an innerduct. It can be used in situations where a permanent, watertight and gastight seal is required.

Description

Duct B Sealer comes in a two-part package consisting of a collapsible tube and a friction-top can. The two paste-like materials, one red and one cream-colored, are combined just prior to use. One package makes from one to two seals, depending on the duct and cable size.

Product Code	Comcode
AT-7774	400 264 867

Support, Lashed Cable C

Applications

The Lashed Cable C Support is used to rack cable in underground applications.

Description

The Lashed Cable C Support is a black molded strap with a molded ratchet buckle on one end, which is self-locking and nonreleasable.

Specifications

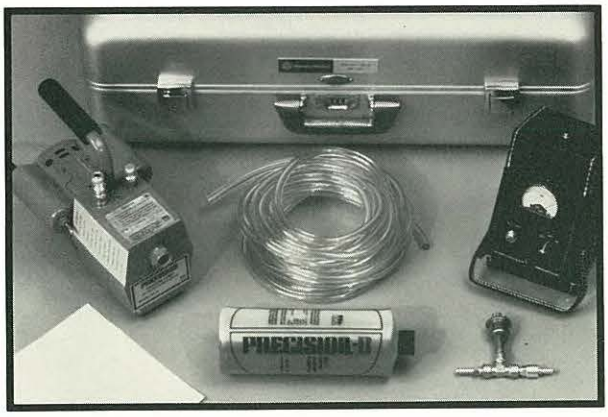
Length: 27.5 in.
Width: 0.25 in.

Product Code	Comcode
C13-1/2 P50	400 898 300

Tool Kit, 1030B

Applications

The 1030B Tool Kit is used to splice ribbon cables that are terminated with array connectors.



Description

The 1030B Tool Kit consists of two parts. The first part contains:

- a 26A shelf
- a high-intensity lamp
- a 5X eye loupe
- a 10X eye loupe
- a 6-inch SST ruler
- a universal closure bracket
- a 938B ribbon grommet tool
- a 939C multiple vacuum fixture
- two 136A brackets
- two 933A 20-mil spring clip tools
- two 933B 30-mil spring clip tools
- two 0.375-16 x 1.0 hex-head bolts
- two 0.375-16 SST hex nuts
- three 939B vacuum fixtures
- four flat washers

The second part contains:

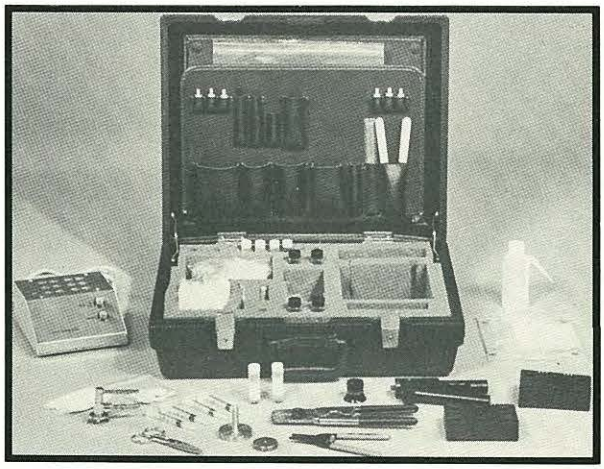
- a vacuum pump
- a "T" fitting
- two 42-inch bars
- two modified cable hooks
- two brackets
- two 0.25-20 x 0.50 screws
- four bar bracket assemblies

Product Code	Comcode
1030B	103 762 787

Tool Kit, 1032A

Applications

The 1032A Tool Kit is used to field-mount ST (P2020A-C-125) Connector Plugs on 1860A, 1861A, 1862A, or LGBC Series cables.



Description

The 1032A kit contains all the tools (except alcohol and compressed air) needed to mount approximately 100 ST connector plugs. The kit consists of:

- a 100A crimping tool
- a 200A curing oven
- a 300A microscope
- a 400A polishing tool
- a 500A insertion tool
- a 700A stripping tool
- a 975A cleaving tool
- a pair of scissors
- a 6-inch scale
- a canned air nozzle
- a bottle for alcohol
- an instruction sheet
- a glass plate
- a carrying case
- a label
- a stock list
- a 7X eye loupe
- an R4366 stripping tool
- two 971A-1 holding blocks
- four adhesive pads
- twelve 600A connector holders

Product Code	Comcode
1032A	103 808 416

Unit Splitter

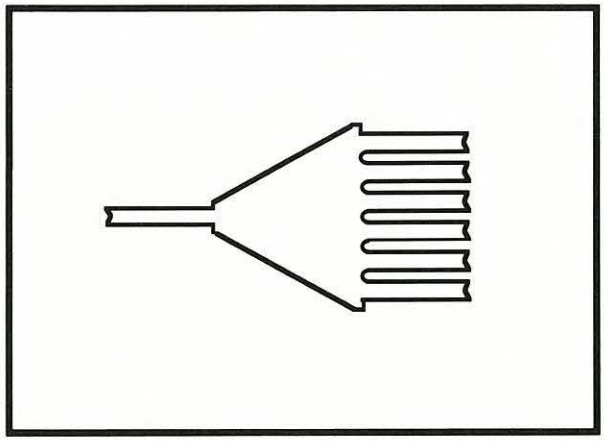
Applications

The Unit Splitter is used to route individual fibers from a ribbon cable to more than one storage leaf in a Lightguide Organizer.

Description

The Unit Splitter is a plastic piece with a single entrance port at one end and six exit ports for individual fibers at the other. Each Unit Splitter Kit contains 20 splitters.

Product Code	Comcode
D181348	104 225 198



Cable Tie, E Adhesive

Applications

The E Adhesive Cable Tie is used in customer installations to bind and mount wires, cords, and inside wiring into orderly harnesses.

Description

The E Adhesive Cable Tie is a molded nylon strip with an integral self-locking mechanism attached to a molded plastic base. The base has a pressure-sensitive adhesive backing and at least one hole for fastener mounting where appropriate.

Product Code	Comcode
8742	401 302 088

Cable Tie, Nylon

Applications

Nylon Cable Ties are used to band and secure wires and cables.

Description

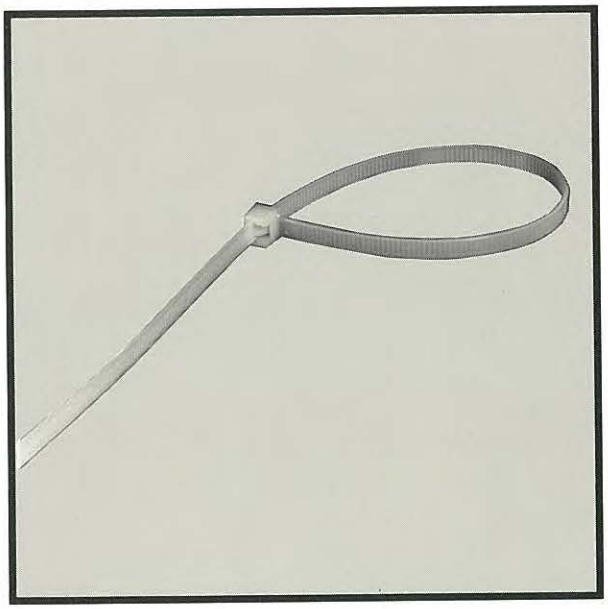
The ties are flat, injection-molded straps with a self-locking mechanism. They are constructed without sharp edges and are available in a standard gray or other colors. L1, L2, and L3 ties are used to band and secure wires and cables on vertical or horizontal distribution frames; L4 and L5 ties are used to band and secure wires and cables; L6 ties are reusable and are tensioned manually for use where a releasable tie is needed; L7 ties are used to secure key shelf cables in switchboards; L8 ties are used to secure cables to woodwork in switchboard sections.

Product Code	Comcode (100/Package)	Comcode (1000/Package)
K520896-L1	401 682 265	401 682 273
K520896-L2	401 682 281	401 682 299
K520896-L3	401 891 719	401 682 315
K520896-L4	401 682 323	401 682 331
K520896-L5	401 684 287	401 684 295
K520896-L6	401 682 349	401 682 356
K520896-L7	401 682 364	401 682 372
K520896-L8	401 737 929	401 737 937

An additional Comcode has been assigned for the eight types of cable ties so they can be ordered in colors other than the standard gray. To order the ties in a different color, the code number must be followed by a suffix corresponding to color. The colors and corresponding suffixes are:

Color	Suffix
Black	-0
Brown	-1
Red	-2
Orange	-3
Yellow	-4
Green	-5
Blue	-6
Purple	-7
Carbon Black*	-X

* The carbon black cable ties are for outdoor use and can be ordered with L1, L4, and L7 ties only.



The following Comcodes should be used when ordering cable ties in colors:

Product Code	Comcode (100/Package)	Comcode (1000/Package)
K520896-L1	401 908 017	401 908 025
K520896-L2	401 908 033	401 908 041
K520896-L3	401 908 058	401 908 066
K520896-L4	401 908 074	401 908 082
K520896-L5	401 908 090	401 908 108
K520896-L6	401 908 116	401 908 124
K520896-L7	401 908 132	401 908 140
K520896-L8	401 908 157	401 894 977

Duct Tape, TDC-2

Applications

TDC-2 Duct Tape is used to anchor undercarpet cable.

Description

TDC-2 Duct Tape is a silver-gray fabric tape, bonded on one side.

Specifications

Roll Length: 60 yd
Roll Width: 2 in.

Product Code	Comcode
TDC-2	900 556 754

Fire-Stop Seal Kit

Applications

The Fire-Stop Seal Kit is used to seal the area around a riser cable so that a fire will not spread from floor to floor within a building, or to seal holes in fire-rated walls where cable is run.

Description

The kit contains bars of UL-classified fire-stop putty, sheets of UL-classified ceramic fiber forming board, ceramic fiber insulation, and 12-gauge galvanized iron support wire. The kit is nontoxic, asbestos-free, and is suitable for use in walls and floors with up to a 3-hour fire rating. It is available for the following size openings:

- 4 in. circular
- 6 in. circular
- 6 in. x 12 in. rectangular
- 12 in. x 24 in. rectangular

Product Code	Description	Comcode
AA418	4-in. circular kit	403 766 629
AA419	6 in. circular kit	403 766 637
AA414	6 in. x 12 in. kit	403 766 603
AA416	12 in. x 24 in. kit	403 766 611
AA41F	Ceramic fiber (5 2-lb bags)	403 766 595
AA400	Putty (10 2-lb bars)	403 780 976

Floor Preparation, TP-17

Applications

TP-17 Floor Preparation is used to ensure maximum adhesion of PVC and duct tapes to a surface.

Description

TP-17 Floor Preparation comes in an aerosol spray can.

Product Code	Comcode
TP-17	403 724 016

Modular Line Tester

Applications

The Modular Line Tester is used to detect common battery voltage and tip and ring polarity in modular jacks. It is for testing only and should *not* be left in a telephone line.

Description

The Modular Line Tester is a polar line tester that tests analog connectivity; it lights if tip and ring are functioning properly.

Product Code	Comcode
MLT-1	403 608 326

Optical Loss Set, 938A

Applications

The 938A Optical Loss Set (OLS) is used to test active and passive lightguide components, installations, and systems.

Description

The 938A OLS is a modular, portable test set that combines the features of an optical power meter and stabilized optical source in a battery-operated, handheld unit. Microprocessor control of complex functions provides uncomplicated operation, eliminating the need for extensive operator training and reducing user-related measurement error. The 938A OLS may be used as a high-sensitivity power meter on multimode fibers. Its internal detector is comprised of an Indium-Gallium-Arsenide (InGaAs) compound and is calibrated at four wavelengths, has a power measurement range of +3 to -60 dBm (2mW to 1 nW), and is accurate within a range of ±5%.

The 938A mainframe will accept a variety of stabilized LED optical source modules (OSMs). These plug-in modules are user interchangeable and require no special tools. A precision interface between the 938A and bare or terminated optical fiber is provided by connector adapters, which are available for many popular connector designs.

Specifications

Physical Specifications

Length: 6.5 in.
Height: 1.5 in.
Width: 3.5 in.
Weight: 1 lb
Operating Temperature: 10 to 40°C
Storage Temperature: 20 to 60°C
Relative Humidity: 70% noncondensing

Electrical Specifications

Peak Wavelength for Standard Modules:
+10 nm at 850 nm (nominal)
+20 nm at 1300 nm (nominal)
Spectral Width (FWHM):
50 nm at 850 nm
150 nm at 1300 nm
Output Stability: ±0.5 dB over 8 hours at constant temperature

Product Code	Description	Comcode
938A	Optical loss set (mainframe and instruction manual)	104 374 137
938A1	Optical loss set, including 875- & 1300-nm sources, an ST connector adapter, a biconic connector adapter, a data link connector adapter, a 120 Vac adapter, a carrying case, and an instruction manual	104 391 131
9C	850-nm source module	104 391 073
9E	1300-nm source module	104 391 099
1A	Biconic connector adapter	105 219 158
2A	Data link connector adapter	105 219 166
3A	ST connector adapter	105 219 174
24A	Carrying case	104 391 032
364A	120 Vac adapter	105 219 455

Protective Tape

Applications

Protective Tape is used to protect undercarpet cable.

Description

Protective Tape is a 10-mil PVC tape with a releasable backing.

Specifications

Roll Length: 100 ft
Roll Width: 2 in., 5 in.

Product Code	Comcode
TPVC2	900 556 762
TPVC5	900 556 747

Protective Under Layer, TA-3

Applications

TA-3 Protective Under Layer is used to anchor under-carpet cable.

Description

TA-3 Protective Under Layer is an 8-mil metallic tape with plastic film, bonded on both sides.

Product Code	Comcode
TA-3	900 690 702

Sealant Coating

Applications

Sealant Coating is used to protect modular connectors and other communications hardware from dirt, moisture, and corrosive environments.

Description

The sealant is a heavy grease material that is compounded to form a protective skin when exposed to air. It functions as a high-dielectric lubricant at electrical connections.

Comcode
403 591 092

Tape Distributor

Applications

The Tape Distributor is used to apply double-sided protective PVC tape for undercarpet cable. This can be done while the craftsperson is walking, allowing one person to do the job.

Product Code	Comcode
TD-2X5	403 725 401

Transfer Unit, Power Fail Automatic

Applications

The Power Fail Automatic Transfer Unit is used between outside lines and a PBX to provide automatic power transfer as well as ground start capability in the event of a commercial power failure. Eliminating the need for additional wiring and the addition of ground start buttons, the transfer unit automatically provides telephone service to five of a company's most important lines after a power failure.

Description

This wall-mounted unit features input and output via RJ11-type connectors.

Specifications

Length: 10 in.
Width: 2.375 in.
Depth: 2.9375 in.

Product Code	Comcode
572-5RJ	403 608 391

Wall Rings

Applications

Wall Rings are used to bundle wires and cables neatly.

Description

These rings are made of flame-retardant plastic and come in two sizes: one accommodates bundles up to 2.25 inches and the other accommodates bundles up to 3.625 inches.

Description	Comcode
2.25-in. ring	401 516 992
3.625-in. ring	401 517 008

Glossary

Adapter
A device that enables different sizes or types of plugs to mate with one another, provides for the rearrangement of leads, allows large cables with numerous wires to fan out into smaller groups of wires, or makes interconnections between cables.

Administration Subsystem
The part of a Premises Distribution System that includes the distribution hardware and components for adding or rearranging circuits. These components include cross connects, interconnects, information outlets, and their associated patch cords and plugs.

ALPETH
Aluminum-polyethylene, the primary sheath for aerial cable.

ALVYN
Aluminum-polyvinyl-chloride, the preferred sheath for riser cable where a flame-retardant sheath is required to meet NEC standards.

American Wire Gauge (AWG)
The standard gauge for measuring the diameter of copper, aluminum, and other conductors.

Ampere
A standard unit of current. One ampere of current is produced by one coulomb of charge passing a point in one second.

Annealing
A process of controlled heating followed by gradual cooling to relieve mechanical stresses. Annealing copper makes it less brittle.

Array Connector
A connector that aligns and protects the 12 fibers from a ribbon fiber cable. A fanout array design can be used to connect ribbon fiber cables to nonribbon cables.

ASP
Aluminum-steel-polyethylene, the preferred sheath for filled cable.

Attenuation
Power loss in an electrical system. In cables, it is generally expressed in decibels per unit length (usually 1000 feet).

AWG
See American Wire Gauge.

Backboard
A wooden or metal panel used for mounting miscellaneous apparatus.

Bandwidth
The range of frequencies that can be used for transmitting information on a channel, equal to the difference in Hertz (Hz) between the highest and the lowest frequencies available on that channel. Bandwidth indicates the transmission capacity of a channel; the larger the bandwidth, the greater the amount of information that can pass through a circuit.

Bend Radius
The radius of curvature that a fiber can bend without breaking or causing excessive loss.

Bonding
The connecting together of all building and equipment electrical grounds to eliminate differences in electrical ground potentials.

Building Entrance Area
The area inside a building where cables enter and are connected to riser cables and where electrical protection is provided. The network interface, as well as the protectors and other distribution components for the campus subsystem, may be located here.

Campus Subsystem
The part of a Premises Distribution System that includes the cable, interbuilding distribution facilities, protectors, and connectors that enable communications among multiple buildings on a premises.

Capacitance
The property in a system of conductors and dielectrics that permits the storage of electrically separated charges whenever a difference in potential exists between the conductors. Capacitance is undesirable in wire cable because it interferes with signals traveling on the wire by opposing the desired flow of current.

Carbon Block
A surge-limiting device that is grounded by arcing across the air gap when the voltage of a conductor exceeds a predetermined level. If the current flow across the gap is large or persists for a length of time, the protector mechanism will operate and the protector will become permanently grounded.

Characteristic Impedance
A frequency dependent resistance that quantifies the complex opposition to current flow offered by a transmission line.

Cladding
The low refractive index material that surrounds the core of an optical fiber.

Conduit
A pipe, usually metal, that runs either from floor to floor, or along a floor or ceiling, to protect cables. In the riser subsystem, when riser closets are not aligned, conduit is used to protect cable and provide the means for pulling cable from floor to floor. In the horizontal subsystem, conduit may be used between a riser closet and an information outlet in an office or other room. Conduit is also used for in-conduit campus distribution, where it is run underground between buildings and intermediate manholes and encased in concrete. Multiduct, clay-tile conduit may also be used.

Connecting Block
A flame-retardant plastic block containing metal wiring terminals (quick clips) that establish an electrically tight connection between the cable and the cross-connect wire.

Connector
A device that allows you to physically connect and disconnect wire or fibers in cable, cable to equipment, or other wires or fibers. Wire and optical fiber connectors most often join tranmission media to equipment or cross connects.

Core
The central transmission area of a fiber. The core always has a refractive index higher than that of the cladding.

Cross Connect
Distribution system equipment used to terminate and administer communications circuits. In a wire cross connect, jumper wires or patch cords are used to make circuit connections. In an optical cross connect, fiber patch cords are used.

Cross-Connect Field
Wire terminations grouped to provide cross-connect capability. The groups are identified by color-coded sections of backboards mounted on the wall in equipment rooms or riser closets, or by designation strips placed on the wiring block or unit. The color coding identifies the type of circuit that terminates at the field.

Decibel (dB)
A standard unit for expressing transmission gain or loss and relative power levels.

Dielectric
A nonconducting or insulating material that resists passage of electric current.

Dielectric Constant
The ratio of the capacitance of an insulated wire with that of the same wire uninsulated in air.

Dielectric Strength
A measure of the maximum voltage that the insulation of a particular cable can withstand without breakdown.

Dual Fiber Cable
A type of optical fiber cable that has two single fiber cables enclosed in a jacket of extruded PVC, with a rip cord for pulling back the jacket to access the fibers.

DUCTPIC
DUCTPIC is a trademark of AT&T, designating a type of cable ideally suited for running through ducts.

Equipment Room
The room in which voice and data common equipment are housed, protected, and maintained, and where circuit administration is performed using the trunk and distribution cross connects.

Equipment Wiring Subsystem
The part of a Premises Distribution System that includes the cable and distribution components in an equipment room and that interconnects system-common equipment, other associated equipment, and cross connects.

Farad (F)
The standard unit of capacitance.

Fiber Optics
The technique of conveying light or images through glass or plastic fibers. Incoherent fiber optics will transmit light but not an image; coherent fiber optics will transmit both and should actually be called "aligned fiber optics" because the fibers are all the same length and are held in a constant spatial relationship.

Frequency
The number of cycles completed by a signal in one second; measured in Hertz (Hz).

Fuse
A device used for protection against excessive currents. It consists of a short length of fusible metal wire that melts when the current through it exceeds the rated amount for a definite time.

Fusible Links
Short lengths of fine-gauge wire pairs inside metallic sheath cable that melt to interrupt an electrical circuit and to prevent overheating in building wiring and equipment.

Gas Tube
A surge-limiting device similar in operation to a carbon block except that it has specially configured electronics with a more precise narrow gap and a sealed gas composition. The gas tube results in a more accurate and precise operating voltage range and extended service life under conditions of repeated operation.

Graded Index Fiber
An optical fiber with a refractive index that gets progressively lower away from the axis. This causes the light rays to be continually refocused by refraction in the core. It bends the rays inward and allows them to travel faster in the lower index of refraction region. This type of fiber provides high bandwidth capabilities.

Ground
A conducting connection, intentional or accidental, between a circuit or equipment and the earth.

Henry (H)
The standard unit of inductance. The inductance of a current is one Henry when a current variation of one ampere per second induces one volt.

Hertz (Hz)
Standard unit of frequency; equal to one cycle per second.

Horizontal Subsystem
The part of a Premises Distribution System installed on one floor that includes the cables and distribution components connecting the riser subsystem and equipment wiring subsystem to the information outlet via cross connects.

Impedance
The total opposition that a circuit offers to the flow of alternating current at a particular frequency. It is a combination of resistance R and reactance X and is measured in Ohms.

Inductance
The property of a circuit that opposes any change in the existing current during periods of changing current.

Information Outlet (IO)
A connecting device designed for a fixed location (usually a wall in an office) in which horizontal subsystem cable pairs terminate and which receives an inserted plug; it is an administration point located between the horizontal subsystem and the work location wiring subsystem. Although such devices are also referred to as "jacks," the term "information outlet" encompasses the integration of voice, data, and other communications services that can be supported by a Premises Distribution System.

Insulation
A material having high resistance to the flow of electric current.

Insulation Resistance
An insulation's ability to resist the flow of current through it; usually measured in megohm-feet.

IO
See Information Outlet.

Jack
A receptacle used with a plug to make electrical contact between communications circuits. Jacks and their associated plugs are used in a variety of connecting hardware applications including adapters, information outlets, and equipment connections.

Jumper Wire
A short length of wire to route a circuit by linking two cross-connect termination points.

Microfarad (μF)
One-millionth of a farad. This is the common unit for designating capacitance in electronics and communications.

Micron (μm)
One-millionth of a meter.

Mil
One-thousandth of an inch.

Modem
A modulator/demodulator unit used for data transmission on conventional voice-grade data lines. It converts digital data into voice-grade analog signals when transmitting and reverses this process when receiving.

Multimode Fibers
Optical fibers that have a large core (25 to 300 μm) and that permit nonaxial rays or modes to propagate through the core.

Multiplexing
The process of combining multiple signals, usually by time-division multiplexing (TDM) on a high-frequency carrier, to optimize the use of available transmission media.

Mutual Capacitance
The capacitance between two conducts when all other conductors, including the shield, are short-circuited to ground.

National Electrical Code (NEC)
A nationally recognized safety standard for the design, construction, and maintenance of electrical circuits. The NEC, sponsored by the National Fire Protection Association, generally covers electrical power wiring in buildings.

NEC
See National Electrical Code.

Network
The local and long-distance telecommunications capability provided by common carriers for switched and private line telecommunications services.

Network Interface
The point of interconnection between building communications wiring and outside communications lines, that is, telephone company facilities.

Ohm
The standard unit of electrical resistance. One volt will cause one ampere of current to flow through one Ohm of resistance.

110-Type Connecting Block
The part of a 110-type cross connect that terminates twisted-pair wiring and can be used with either jumper wires or patch cords to establish circuit connections.

110-Type Cross Connect
A compact cross connect, developed by AT&T, that can be arranged for use with either jumper wires or patch cords. Jumper wires, used for more permanent circuits, must be cut down to make circuit connections. Patch cords allow ease of circuit administration for frequently rearranged circuits. The 110-type cross connect also provides a straightforward labeling method to identify circuits.

Optical Connectors
Connectors designed to connect and disconnect either single or multiple optical fibers repeatedly. Optical connectors are used to connect fiber cable to equipment and interconnect cables.

Optical Cross-Connect
A cross-connect unit used for circuit administration and built from modular cabinets. It provides for the connection of individual optical fibers with optical fiber patch cords.

Optical Fiber Cable
A transmission medium consisting of a core of glass or plastic surrounded by a protective cladding, strengthening material, and an outer jacket. Signals are transmitted as light pulses, introduced into the fiber by a light transmitter (either a laser or a light-emitting diode). Low data loss, high-speed transmission, large bandwidth, small physical size, light weight, and freedom from electromagnetic interference and grounding problems are some of the advantages offered by this type of cable.

Optical Interconnect
An interconnection unit used for circuit administration and built from modular cabinets. It provides interconnection for individual optical fibers but, unlike the optical cross-connect panel, it does not use patch cords. The optical interconnect provides some capability for routing and rerouting circuits, but is usually used where circuit rearrangements are infrequent.

Optical Splice
A fiber optic cable splice provides the means by which two or twenty-four fiber optic cable ends are permanently joined together. Two types of optical splices are supported by PDS—an array splice, which joins twenty-four optical cable ends, and a rotary mechanical splice, which joins two optical cable ends.

PAP
Polyethylene-aluminum-polyethylene, the preferred sheath for protection against lightning damage.

PASP
Polyethylene-aluminum-steel-polyethylene, the preferred sheath for protection against lightning, mechanical damage, or damage from rodents.

Patch Cord
A short length of wire or fiber cable with connectors on each end used to join communications circuits at a cross connect.

PBX
See Private Branch Exchange.

PDS
See Premises Distribution System.

Picofarad (pF)
One-trillionth of a farad. A unit of capacitance used to designate capacitance unbalance between pairs or capacitance unbalance of the two wires of a pair to ground.

Plenum Cable
Cable specifically designed for use in a plenum, the space above a suspended ceiling used to circulate air back to the heating or cooling system in a building. Plenum cable has insulated conductors often jacketed with TEFLON or HALAR to give them low flame- and low smoke-producing properties.

Plug
A device used for connecting wires to a jack. It is typically used on one or both ends of equipment cords or on wiring for interconnects or cross connects.

Polyvinyl Chloride (PVC)
A flame-retardant thermoplastic insulation material that is commonly used in jacks or building cables.

Premises Distribution System (PDS)
The transmission network inside a building or group of buildings that connects various types of voice and data communications devices, switching equipment, and other information management systems together, as well as to outside communications networks. It includes the cables and distribution hardware components and facilities between the point where building wiring connects to the outside network lines back to the voice and data terminals in an office or other work location. The system consists of all the transmission media and electronics, administration points, connectors, adapters, plugs, and support hardware between the building's side of the network interface and the terminal equipment required to make the system operational.

Private Branch Exchange (PBX)
A private switching system usually serving an organization, such as a business or government agency, and located on the customer's premises. It switches calls both inside a building or premises and outside to the telephone network, and can sometimes also provide access to a computer from a data terminal.

PVC
See Polyvinyl Chloride.

Quad Fiber Cable
A type of optical fiber cable that has four single fiber cables enclosed in an extruded jacket of PVC, with a rip cord for pulling back the jacket to access the fibers.

Rack
The vertical or horizontal open support, usually made of aluminum or steel, that is attached to a ceiling or wall. Cables are laid in and fastened to the rack.

Resistance
The property of a conductor that determines the current produced by a given potential difference. It impedes the flow of current and results in the dissipation of power as heat. Measured in Ohms.

Ribbon Fiber Cable
A cable that accommodates 1 to 12 ribbons, each ribbon having 12 fibers for a cable size range of 12 to 144 fibers. Ribbon cables are designed for used in large distribution systems where small cable size and high pulling strength are important.

Riser Closet
The closet where riser cable is terminated and cross connected to either horizontal distribution cable or other riser cable. The riser closet houses cross-connect facilities, and may contain auxiliary power supplies for terminal equipment located at the user work location.

Riser Subsystem
The part of a Premises Distribution System that includes the main cable route and the facilities for supporting the cable. The riser subsystem usually extends from an equipment room (often in a building's basement) to the upper floors in a multistory building, or along the same floor in a single-story building. It is terminated on a cross connect in a riser closet, at the network interface, or on the distribution components of the campus subsystem.

Service Entrance
The point at which network communications lines (telephone company lines) enter a building.

Shield
The metallic layer that surrounds insulated conductors in shielded cable. The shield may be the metallic sheath of the cable or the metallic layer inside a nonmetallic sheath.

Single Fiber Cable
A plastic-coated fiber surrounded by an extruded layer of PVC, encased in a synthetic strengthening material and enclosed in a PVC sheath.

Sneak Current
A low-level current that is insufficient to trigger electrical surge protectors and, therefore, able to pass them undetected. These currents may result from contact between communications lines and AC power circuits or from power induction, and may cause equipment damage due to overheating.

STALPETH
Steel-aluminum-polyethylene, the primary sheath for underground air core cable.

STEAMPETH
A medium-density polyethylene sheath that is recommended for working environments up to 170° F.

Straight-Tip (ST) Connector
An optical fiber connector used to join single fibers together at interconnects or to connect them to optical cross connects.

Stub Cable
A short cable (usually 25 feet or less) that extends from a cable terminal, protector, or block and is used to make connections to such devices.

Support Hardware
The racks, clamps, cabinets, brackets, trays, tools, and other equipment that provide the physical means to attach the transmission media and connecting hardware to walls or ceilings.

Surge
A sudden voltage rise and fall in an electrical circuit.

Telecommunications
The transmission and reception of electrical or optical signals by wire, fiber, or electromagnetic means.

Terminal Block
A protected or unprotected unit of wiring blocks, connecting blocks, and troughs that serves as a transition point between cable conductors.

Thermoplastic
A plastic material that softens and flows when heated and becomes firm when cooled. This process can be repeated.

Thermoset
A plastic material that is crosslinked by a heating process known as curing. Once cured, thermosets cannot be reshaped.

Transmission Electronics
Any of the various devices used with different transmission media to covert from one transmission method to another. Transmission electronics devices typically include multiplexing equipment and Asynchronous Data Units (ADUs).

Transmission Media
The various types of wire and optical fiber cable used for transmitting voice, data, or video signals.

Twisted Pair
Two insulated copper wires twisted together. The twists, or lays, are varied in length to reduce the potential for signal interference between pairs. In cables greater than 25 pairs, the twisted pairs are grouped and bound together in a common sheath. Twisted pair cable is the most common type of transmission media.

Underwriter's Laboratories (UL)
A private testing laboratory concerned with electrical and fire hazards of equipment.

Volt
The standard unit of electromotive force or electrical pressure. One volt is the amount of pressure that will cause one ampere of current to flow through one Ohm of resistance.

Wiring Block
A molded plastic block that is designed in various pair configurations to terminate cable pairs and establish pair location on a 100-type cross connect.

Work Location Wiring Subsystem
The part of a Premises Distribution System that includes the equipment and extension cords from the information outlet to the terminal device.

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