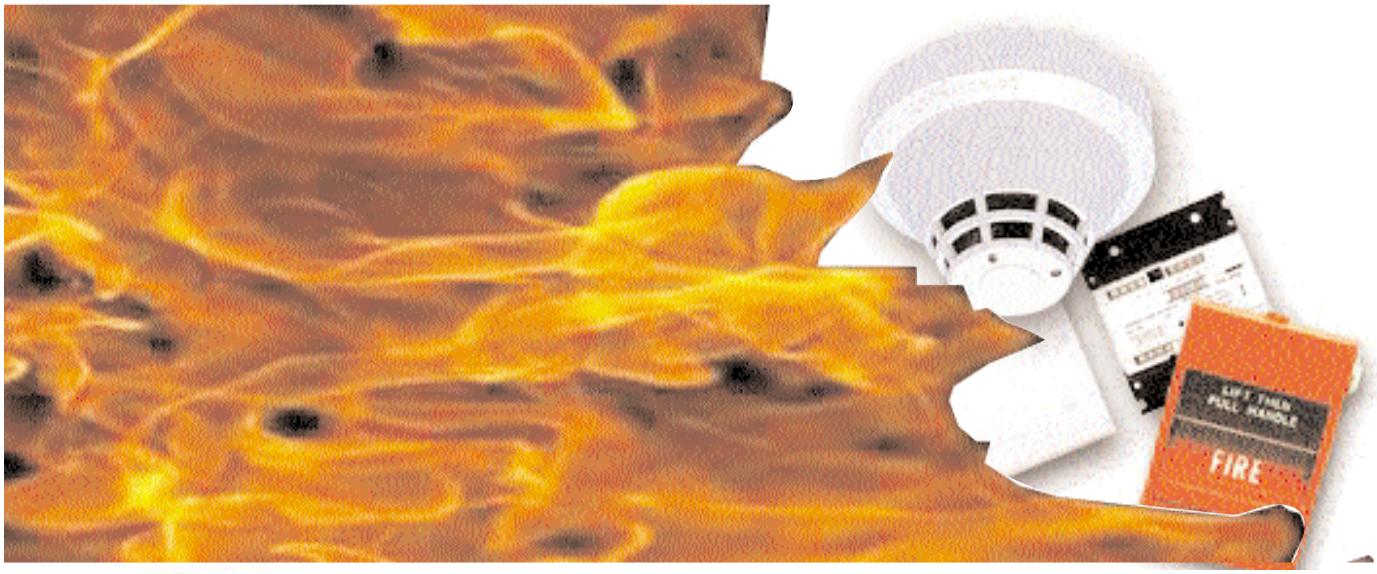
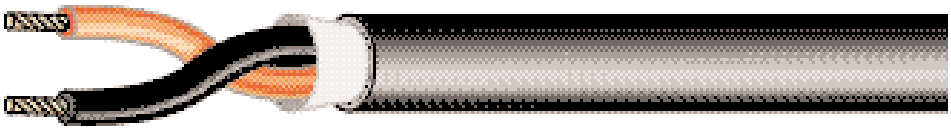


FIRE-PROTECTIVE SIGNALING CABLES



CONVENTIONAL FIRE ALARM SYSTEM

- **Power-Limited Cables**
- **FPLR**
- **FPL**
- **FPLP**
- **NonPower-Limited Cables**
- **NPLF**
- **NPLFP**

ADDRESSABLE FIRE ALARM SYSTEM

- **Power-Limited Cables**
- **FPL**
- **FPLP**

AQUASEAL WATER-RESISTANT

- **FPL**

NEC ARTICLE 760 FIRE ALARM CABLES

UNSHIELDED

AWG	COND.	FPL		FPLR		FPLP			NFPL	NFPLP
		Aquaseal	Low-Cap	Regular	Low-Cap	Regular	Mid-Cap	Low-Cap	Regular	Mid-Cap
12	2	AQ227		998		60995B	60995			
14	1					6962				
14	2	AQ226		994		60993B	60993		1994	251994
14	4	AQ246		700		60700B				
16	1					6961				
16	2	AQ225	D990	990		60991B	60991			
16	4	AQ245		992		60164B			1992	
18	2	AQ224	D980	980		60980B	60980		1980	251980
18	4	AQ244	D982	982		60982B	60982		1982	
18	6			984					1984	
18	8			986					1986	
18	10			988					1988	
22	4						60996			
22	6			1084			60997			
22	8			1086			60998			
ONE CONDUCTOR		FPL								
16	1	961								
14	1	962								
TWO CONDUCTOR		FPL								
18	2	970								
16	2	971								
14	2	972								
12	2	974								

NEC ARTICLE 760 FIRE ALARM CABLES

SHIELDED

AWG	COND.	FPL		FPLR		FPLP			NFPL	NFPLP
		Aquaseal	Low-Cap	Regular	Low-Cap	Regular	Mid-Cap	Low-Cap	Regular	Regular
12	2	AQ296	D999	999			60994		1999	
14	1									
14	2	AQ295	D995	995		60992B	60992		1995	251995
14	4								1997	251997
16	2	AQ294	D991	991		60990B	60990	D60990	1991	251991
16	3		D989							251989
16	4	AQ3245	D993	993		603164B			1993	251993
18	2	AQ293	D975	975		60975B	60975	D60975	1975	251975
18	3		D976	976						251976
18	4	AQ3244	D977	977		60977B	60977		1977	251977
18	6									
18	8									
22	4			1083						
22	6									
22	8									

FIRE ALARM SYSTEMS AND CABLE:

This section represents the leading product line of fire alarm system cables for the fire protection industry. Our innovative product line includes all power-limited and non-power limited cables for use in the NEC Article 760. This product line includes Aquaseal power-limited fire alarm system cables. Aquaseal Water-Resistant cable is a trademark for the industries original indoor/outdoor low-capacitance fire alarm system cables.

NATIONAL ELECTRIC CODE (NEC) ARTICLE 760:

NEC Article 760 covers the installation of wiring and equipment of fire alarm systems, including all circutis controlled and powered by the fire alarm system. These systems are defined in the NEC as “The portion of the wiring system between the load side of the overcurrent devices or the power-limited supply and the connected equipment of all circuits powered and controlled by the fire alarm system.”

POWER-LIMITED FIRE ALARM SYSTEM CABLES:

Three types of power-limited fire alarm cables are currently in use.

1. Type FPL- FPL power-limited fire alarm cable is listed by the NEC as being suitable for general purpose fire alarm use. This listing excludes installation in riser, ducts, plenums and other space used for environmental air unless the cable is installed in conduit. All FPL cables are listed as being resistant to the spread of fire and must pass both UL test 1424 and the vertical flame test UL 1581.
2. Type FPLR- FPLR power-limited fire alarm riser cable is listed as being suitable for use in a vertical run in a shaft or from floor to floor. All FPLR cables are listed as having fire-resistant characteristics capable of preventing fire from traveling from floor to floor. Riser cables must pass both UL test 1424 and the Vertical riser test UL 1666.
3. Type FPLP- FPLP power-limited fire alarm cable is listed by the NEC as being suitable for use in ducts, plenums and other space used for environmental air. All FPLP cable are listed as having adequate fire resistant and low-smokeproducing characteristics and must pass both UL test 1424 and UL Stiener tunnel test 910.

- No Voltage Rating Markings on PLFA Cables
- CL3 and CM rated cables, which have a voltage rating of 300V are permitted to be used as PLFA cables.
- Power-limited is inherently limited by the power supply
    - Transformer
    - Other Power Supply Devices

NON POWER-LIMITED FIRE ALARM SYSTEM CABLES:

1. Type NPLF- NPLF Non power-limited fire alarm cable is listed by the NEC as being suitable for general purpose fire alarm use. This listing excludes installation in riser, ducts, plenums and other space used for environmental air unless the cable is installed in conduit. All NFPL cables are listed as being resistant to the spread of fire and must pass both UL test 1424 and the vertical flame test UL 1581.

3. Type NPLFP- NPLFP Non power-limited fire alarm cable is listed by the NEC as being suitable for use in ducts, plenums and other space used for environmental air. All NPLFP cable are listed as having adequate fire resistant and low-smokeproducing characteristics and must pass both UL test 1424 and UL Stiener tunnel test 910.

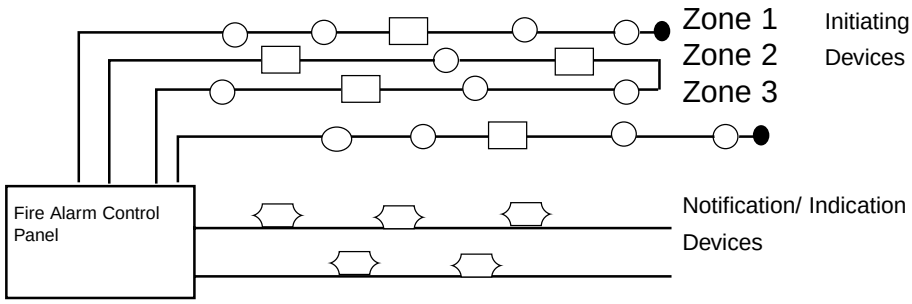
- Power source of NPLFA circuits output voltage shall not exceed 600 volts. Nominal
- Marking on NPLF cables are not addressed as 150V. For use in 150V or less on NPLF circuits (out of tray or conduit)
- Class 1 cables can be installed and used as NPLFA, but must be placed in a tray or conduit.
- Overcurrent devices shall be located at the point where the device to be protected receives its supply.

CONVENTIONAL (STANDARD) FIRE ALARM SYSTEM

Conventional Fire Alarm Systems, in their various forms, have been around for many of years and have changed little in that time in terms of technology although design and reliability have impoved significantly. However, Conventional systems are a well proven technology protecting many hundreds of thousands of properties worldwide. A Conventional Fire Alarm System is often the natural choice for smaller systems or where budget constraints exist.

In a Conventional Fire Alarm System the “Intelligence” of the system resides solely within the Fire Alarm Control Panel. The panel receives a trigger signal from a Conventional Detector or Initiating Device Circuit (Smoke, heat, flame detectors) which in turn signals the condition to the Notification (Indicating) Device Circuit such as alarm sounders, horns, strobes and other remote signalling equipment.

Conventional detectors are normally connected to the Fire Control Panel via dedicated circuits, each circuit protecting a designated “Zone” or area of the building. The system has different modes: Normal, Alarm, Trouble, and others, depending on the Fire Alarm Manufacturer.



CONVENTIONAL FIRE ALARM CABLE SELECTION

The designer must be sure that the last device on the circuit has sufficient voltage to operate the device within its rated voltage. When calculating the voltage available to the last device, it is necessary to ocon-sider the voltage drop due to the resistance of the wire. The larger the wire, the less the voltage drop. Generally, for purposes of determining the wire size necessary for the system, it is best to consider all of the devices as “lumped” on the end of the supply circuit, this simulates the worst case.

Typical wire size resistance:			**Loop Resistance**
18 AWG solid:	Approximately	6.5Ω/1000ft.	13Ω/1000ft.
16 AWG solid:	Approximately	4.1Ω/1000ft.	8.2Ω/1000ft.
14 AWG solid:	Approximately	2.6Ω/1000ft.	5.2Ω/1000ft.
12 AWG solid:	Approximately	1.8Ω/1000ft.	3.6Ω/1000ft.

EXAMPLE:
Assume you have 10 devices on a zone and each require 50mA average and 2000ft. of 14 AWG wiring. The voltage drop at the end of the loop is .050 amps per device x 10 devices x 2.6Ω/1000ft x 2000 = 2.6 V. A 12 AWG would produce a drop 1.8 V, and a 18 AWG would produce a voltage drop of 6.5 V.

Notes:
- If Class A wiring is installed, the wire length may be up to 4 times the single wire length in this calculation
- Consult your panel manufacturer’s specifications to determine acceptable voltage drop. Do not exceed panels specified amperage output
- All wiring must be installed in compliance with the National Electrical Code (NEC) and applicable local codes, as well as special requirements of the authority having jurisdiction, using the proper wire size.

CONVENTIONAL FIRE ALARM SYSTEM CABLES

(POWER-LIMITED) CONVENTIONAL FIRE ALARM SYSTEM CABLES:

CONDUCTOR-
- Shall not be smaller in size than a 26 AWG.
- Single conductor no smaller than 18 AWG.
- Solid or Stranded conductor. Bare Copper for lower DC Resistance.

INSULATION (DIELECTRIC)-
- PVC Insulation for the FPLR cables
- Fire / Smoke Retardant PVC for the FPLP - “B” Series
- Flouropolymer Insulation for the FPLP - Non “B” Series.

CONDUCTORS ARE EITHER TWISTED CABLED OR PARALLEL.

SHIELD - (OPTIONAL) DEPENDANT ON SYSTEM REQUIREMENTS, AND ENVIRONMENTAL CONDITIONS -
- To protect against interference created from other cables or other electronic/ electrIcal/ Mechanical devices.
- The shield is a 100% Aluminium foiled wrap.

JACKET - PVC Jacket for the FPLR cables
- Flexible Plenum PVC jacket for the FPLP cables.
- The jacket is usually Red in color. But we offer many fire alarm cables in multiple jacket colors.

(NON POWER-LIMITED) CONVENTIONAL FIRE ALARM SYSTEM CABLES:

CONDUCTOR-
- 18 AWG or smaller AWG (larger conductor)
- Solid or stranded Bare copper

INSULATION (DIELECTRIC)-
- PVC with Nylon coating
- NPLF cables (Nylon for dielectric stregth)
- Flouropolymer insulation - NPLFP cables

CONDUCTORS ARE CABLED.

SHIELD - (OPTIONAL) DEPENDANT ON SYSTEM REQUIREMENTS, AND ENVIRONMENTAL CONDITIONS
- To protect against interference created from other cables or other electronic/ electrIcal/ Mechanical devices.
- The shield is a 100% Aluminium foiled wrap.

JACKET - PVC Jacket for the NPLF cables
- Flouropolymer jacket - NPLFP cables
- Color is usually red.

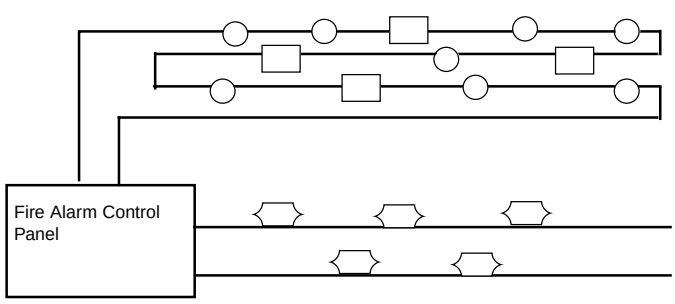
ADDRESSABLE FIRE ALARM SYSTEM

Addressable Fire Alarm Systems differ from conventional systems in a number of ways and certainly add more flexibility, intelligence, speed of identification and scope of control. For this reason, Addressable Fire Alarm Systems are the natural choice for larger premises and buildings with more complex system requirements.

In an Addressable system, detectors are wired in a loop around the building with each detector having its own unique address. The system may contain one or more loops depending upon the size of the system and design requirements. The Fire Control Panel communicates with each detector individually and receives a status report e.g Normal, Alarm, Trouble etc. As each detector has an individual address the fire alarm control panel is able to display or indicate the precise location of the device in question, which obviously helps speed the location of an incident and for this reason zoning of the system is not necessary, although it may be done for convenience.

Addressable detectors are, in themselves, intelligent devices which are capable of reporting far more than just fire or fault conditions. Most analog addressable detectors are able to signal if contamination in the device reaches a pre-set level enabling maintenance to take place prior to problems being experienced.

In most earlier styles of Addressable systems, the notification appliances were not intellegent. Today, many manufacturers are providing addressable notification technology. There are many advantages of providing such technology. Such as lower cost of wire, and overall installation time.



ADDRESSABLE FIRE ALARM CABLE SELECTION

The designer must be aware of not only the D.C Resistance of the cable, but the capacitance and the Velocity of proporgation of the cable. The designer must assure that the overall loop capacitance is not compromised, and error rates are kept to a minimum.

Nominal Capacitance for wire sizes:

18 AWG solid unshielded:	16pf/ft	
18 AWG solid shielded:	25pf/ft	45pf/ft **
16 AWG solid unshielded:	18pf/ft	
16 AWG solid shielded:	30pf/ft	54pf/ft **
14 AWG solid shielded:	30pf/ft.	54pf/ft **
12 AWG solid shielded:	35pf/ft.	63pf/ft **

** Capacitance between one conductor and the other connected to the shield.

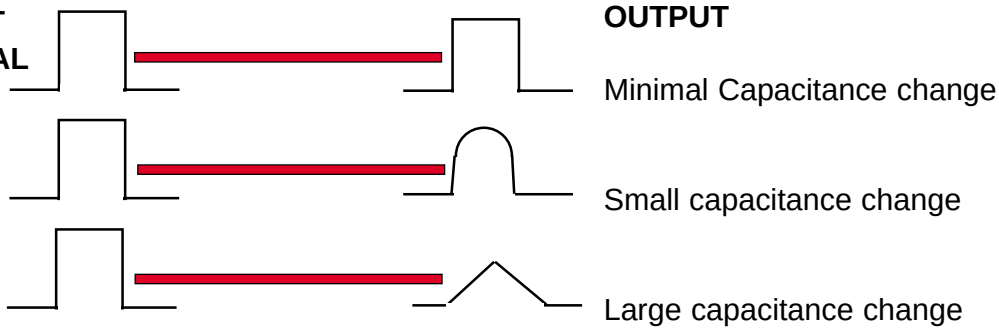
Example
A systems loop capacitance is given to be .5mf. A 16AWG shielded cable is selected.

Calculation:
.5 divided by .000054 = 9259ft.
if the system requirement is .2mf, then
.2 divided by .000054 = 3703ft.

Notes:
- If Class A wiring is installed, the wire length may be up to 4 times the single wire length in this calculation
- Consult your panel manufacturer's specifications to determine acceptable loop capacitance.
- All wiring must be installed in compliance with the National Electrical Code (NEC) and applicable local codes, as well as special requirements of the authority having jurisdiction, using the proper wire size.

LOW AND MID CAPACITANCE CABLES:
ADDRESSABLE FIRE ALARM SYSTEM

The need to conform to the American with Disability Act (ADA), and the increased demand for addressable fire-alarm systems have created many changes in the fire-alarm cable constructions. An addressable system allows the control panel or unit to communicate with each base individually using a sophisticated polling process. The polling process allows the system to detect trouble, or alarm or each base initiating devices, and in some cases the notification devices.
Addressable fire-alarm signals need to be fast and have a clear signal transfer. Hence the electrical characteristics are a major concern in cable construction



Capacitance-The property of a system of conductors and dielectrics that allow the storage of an electrical charge when a potential difference exists between conductors. Capacitance is found between wo wires of a twisted pair, and also between adjacent conductors in the same cable (mutual capaci- ance). Capacitance is expressed in pf/ft. The larger the capacitance, the higher the distortions.

Velocity of propogation- refers to a ratio of a signal traveling through a cable compared to that same signal traveling through air and is determined by the dielectric insulation material.

POWER-LIMITED) ADDRESSABLE FIRE ALARM SYSTEM CABLES:

CONDUCTOR
- Shall not be smaller in size than a 26 AWG.
- Single conductor no smaller than 18 AWG.
- Solid or Stranded conductor. Bare Copper for lower DC Resistance.
- 12 AWG up to 18 AWG.

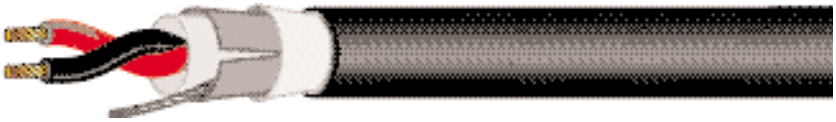
NSULATION (DIELECTRIC)
- COPOLENE Insulation for the FPL cables.
  - Thicker than conventional fire system cable insulation
  - A better performance dielectric material
  - Flouropolymer Insulation for the FPLP Cables

TWISTED CABLE CONSTRUCTION.

SHIELD - (OPTIONAL) DEPENDANT ON SYSTEM REQUIREMENTS, AND ENVIRONMENTAL CONDITIONS.
- To protect against interference created from other cables or other electronic/ electrical/ Mechanical devices.
- The shield is a 100% Aluminium foiled wrap.

JACKET
- PVC Jacket for the FPL cables
- Flexible Plenum PVC jacket for the FPLP cables.

AQUASEAL WATER RESISTANT CABLE



Aquaseal Power-limited water-resistant cables are designed to be used for indoor/outdoor fire alarm system. The Aquaseal products are manufactured using a premium grade jacket compound. These cables are flame retardant, sunlight and water resistant, and employ an abrasion and crush resistant construction. This durability allows the Aquaseal power-limited water-resistant cables to be direct burial.

The internal cable construction employs a dry water blocking barrier instead of a messy gel. Unlike many other outdoor cables which can not be placed indoors due to their inability to pass flame tests. Aquaseal water-resistant cables carry both indoor and outdoor ratings

Aquaseal cable retains consistent electrical characteristics compared to standard cable when immersed in water. The moisture blocking barrier used in this cable has proven itself in various tests where standard outdoor cable has failed. This can be verified by monitoring the capacitance levels of both cables. Aquaseal water-resistant cables will consistently have lower capacitance values and remain stable over the long haul enabling the lowest signal loss.

Aquaseal is UL listed NEC type FPL or PLTC rated and utilizing 18 AWG to 12 AWG makes this cable excellent for low voltage Conventional and Addressable systems.

To learn more about B-I-A please visit us at our WEB site: www.BiaGmbH.com

SYSTEM LAYOUTS:

The initiating circuits that connect detectors to a control panel should be supervised so that a fault (trouble) condition that could interfere with the proper operation of the circuit will be detected and annunciated.

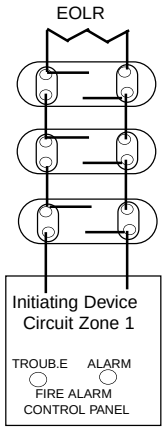
Detectors are generally categorized as either 2-wire or 4-wire detectors. Two-wire detectors derive their power directly from the same fire alarm control panel alarm initiating device circuit over which they report an alarm. Because of their dependency on the initiating circuit, 2-wire detectors must be tested and listed for compatibility with the control panel to be used, to ensure proper operation.

Four-wire detectors are powered from a separate pair of wires, and like the 2-wire detector, apply an electrical short across the associated alarm initiating device to transmit an alarm. Because they do not derive their power from the alarm control panel circuit, compatibility is predicated upon the operating parameters of the power supply to which the detectors are connected and not the initiating circuit. Supervision of the power to 4-wire detectors is mandated through the use of an end of line power supervision relay (EOLR). When power is on, the relay contacts at the end of line relay are closed and connected in series with the end of line resistors beyond the last initiating device. Loss of power at any point in the power supply circuit will cause the relay to de-energize and a trouble condition to occur on the initiating circuit.

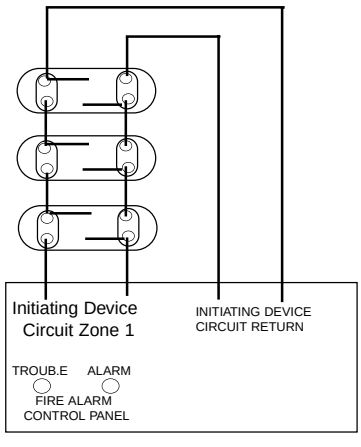
CLASS B CIRCUITS:
Class B circuits differentiate between short circuits across the loop (alarm) and opens on the loop (trouble). Supervision of this circuit is accomplished by passing a low current through the installation wiring and an EOLR. Increases or decreases in this supervisory current are monitored by the fire alarm control panel and will cause alarm or trouble conditions, respectively, to be indicated. A single onpen in a Class B circuit disables all devices electrically beyond open.

CLASS A CIRCUITS
Class A circuits also differentiate between short circuits across the loop and opens on the loop. Supervision is accomplished by monitoring the level of current passing through the installation wiring and the EOLR, which in a Class A circuit is an integral part of the fire alarm control panel. Class A wiring must return to and be terminated in the control panel. This technique requires a minimum of four wires be terminated in the control panel, and further requires that the fire alarm control panel is designed to monitor Class A circuits. The additional circuitry neccessary for Class A supervision enables the control panel to “condition” the initiating circuit to monitor the initiating circuit from both ends when in a trouble mode due to an open fault on the loop. This “conditioning” ensures that all devices are capable of responding and reporting an alarm despite a single open or non-simultaneous single ground fault on a circuit conductor.

CLASS B



CLASS A



Installation

Calculating Conduit Capacity

One Cable Type in Conduit

The following information is to provide you with a quick and easy reference for conduit fill requirements. This information is to be used as a general guideline. Each installation has different restrictions for installation environments and/or local codes to follow.

The Conduit Capacity Chart provided on the following page is for applications when only one type of cable is to be used in a conduit. For example, if you know the diameter of the cable you will be installing, use the cable O.D. column, and find the exact or next largest diameter cable O.D.. Next, follow this row over to the number of cables you need to install in a conduit. Then follow this column to the top of the chart and read the conduit size required for the number of cables you need to install.

Multiple Types of Cable in One Conduit

If you will be mixing various cable diameters in a conduit, then this overall chart does not apply. You will have to use the following guidelines to calculate the conduit fill requirements.

To determine the conduit size required for a particular installation of cable follow these steps:

1. Square the O.D. of each cable and total the results.
2. Multiply the total by .7854*. This is the total area of the cables in square inches.
3. From the Permissible Area row on the Conduit Capacity Chart shown on the following page, select the conduit size with an area equal to or greater than the total area you calculated.

* See Important Notes and Installation Suggestions

** Permissible Area to be occupied (sq. in.) is based on the NEC standard of 40% fill, which applies to three or more non-lead covered cable installed in the same conduit.

Important Notes and Installation Suggestions

- A single cable is permitted to occupy 53% and two cables are limited to 31% conduit fill. For a single cable use .5927 in step 2, for two cables use 1.1034, and three or more cables use .7854.
- This chart is based on the maximum number of cable permitted in conduit under the National Electrical Code, and is calculated on the area of the cable with 40% of the conduit filled. For conduit runs of 50 to 100 feet, the installed number should be reduced by 15%, or use the next larger size conduit. If more than two 90 degree bends are to be used in the conduit run, or if the run is to be over 100 feet in length, insert a pull box.
- An anti-friction agent is recommended in pulling operations.

*CAUTION: Select an anti-friction agent which is suitable for the cable jacket material. The electronic characteristics of unjacketed cable may change due to the application of anti-friction agents.

* COLD ENVIRONMENT PRECAUTION: Due to the nature of PVC compounds to become non-pliable when stored or handled in ambient temperatures of 32 degrees F or less, we recommend the following:

"Prior to installation, condition the cable for at least 24 hours at room temperature to provide the best flex properties for ease of installation."

- Permissible area chart does not apply to metallic and non-metallic surface raceways; consult the NEC for recommendations.

THE NATIONAL ELECTRICAL CODE FORBIDS THE INSTALLATION OF COMMUNICATION CABLE IN THE SAME CONDUIT AS POWER CABLE.

Pulling Tensions

Under the stress of approximately 15,000 lbs./sq. in. annealed copper will begin to permanently stretch. The table below lists the absolute maximum recommended pulling tensions for conductor sizes. For multiple conductor cable, multiply the appropriate value by the total number of conductors. These pulling tensions must be equally distributed among the conductors.

THESE LIMITS MUST NEVER BE EXCEEDED EVEN MOMENTARILY! DON'T JERK THE CABLE!

The electronic characteristics of a cable may change due to excessive tension and crushing.

Gauge	Max. Pulling Tension
24 AWG	4 lbs.
22 AWG	7 lbs.
20 AWG	12 lbs.
18 AWG	19 lbs.
16 AWG	30 lbs.
14 AWG	48 lbs.
12 AWG	77 lbs.

Installation

Conduit Capacity Chart

Conduit Size		1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5
I.D., inches		.622	.824	1.049	1.380	1.610	2.067	2.469	3.068	3.548	4.026	4.506	5.047
Permissible Area*		0.12	0.21	0.34	0.60	0.82	1.34	1.92	2.95	3.96	5.09	6.38	8.00
Cable O.D. inch	Cable Area Sq. inch												
0.100	0.008	15	27	44	76	103	170	243	376	503	648	812	1018
0.125	0.012	9	17	28	48	66	109	156	240	322	414	519	652
0.150	0.018	6	12	19	33	46	75	108	167	223	288	360	452
0.175	0.024	5	8	14	24	33	55	79	122	164	211	265	332
0.200	0.031	3	6	11	19	25	42	60	94	125	162	203	254
0.225	0.040	3	5	8	15	20	33	48	74	99	128	160	201
0.250	0.049	2	4	7	12	16	27	39	60	80	103	129	163
0.275	0.059	2	3	5	10	13	22	32	49	66	85	107	134
0.300	0.071	1	3	4	8	11	18	27	41	55	72	90	113
0.325	0.083	1	2	4	7	9	16	23	35	47	61	76	96
0.350	0.096	1	2	3	6	8	13	19	30	41	52	66	83
0.375	0.110	1	1	3	5	7	12	17	26	35	46	57	72
0.400	0.126	–	1	2	4	6	10	15	23	31	40	50	63
0.425	0.142	–	1	2	4	5	9	13	20	27	35	44	56
0.450	0.159	–	1	2	3	5	8	12	18	24	32	40	50
0.475	0.177	–	1	1	3	4	7	10	16	22	28	35	45
0.500	0.196	–	1	1	3	4	6	9	15	20	25	32	40
0.525	0.216	–	–	1	2	3	6	8	13	18	23	29	36
0.550	0.238	–	–	1	2	3	5	8	12	16	21	26	33
0.575	0.260	–	–	1	2	3	5	7	11	15	19	24	30
0.600	0.283	–	–	1	2	2	4	6	10	13	18	22	28
0.625	0.307	–	–	1	1	2	4	6	9	12	16	20	26
0.650	0.332	–	–	1	1	2	4	5	8	11	15	19	24
0.675	0.358	–	–	–	1	2	3	5	8	11	14	17	22
0.700	0.385	–	–	–	1	2	3	4	7	10	13	16	20
0.725	0.413	–	–	–	1	1	3	4	7	9	12	15	19
0.750	0.442	–	–	–	1	1	3	4	6	8	11	14	18
0.775	0.472	–	–	–	1	1	2	4	6	8	10	13	16
0.800	0.503	–	–	–	1	1	2	3	5	7	10	12	15
0.825	0.535	–	–	–	1	1	2	3	5	7	9	11	14
0.850	0.567	–	–	–	1	1	2	3	5	6	8	11	14
0.875	0.601	–	–	–	–	1	2	3	4	6	8	10	13
0.900	0.636	–	–	–	–	1	2	3	4	6	8	10	12
0.925	0.672	–	–	–	–	1	1	2	4	5	7	9	11
0.950	0.709	–	–	–	–	1	1	2	4	5	7	8	11
0.975	0.747	–	–	–	–	1	1	2	3	5	6	8	10
1.000	0.785	–	–	–	–	1	1	2	3	5	6	8	10
1.025	0.825	–	–	–	–	–	1	2	3	4	6	7	9
1.050	0.866	–	–	–	–	–	1	2	3	4	5	7	9
1.075	0.908	–	–	–	–	–	1	2	3	4	5	7	8
1.100	0.950	–	–	–	–	–	1	2	3	4	5	6	8
1.125	0.994	–	–	–	–	–	1	1	2	3	5	6	8
1.150	1.039	–	–	–	–	–	1	1	2	3	4	6	7
1.175	1.084	–	–	–	–	–	1	1	2	3	4	5	7
1.200	1.131	–	–	–	–	–	1	1	2	3	4	5	7
1.225	1.179	–	–	–	–	–	1	1	2	3	4	5	6
1.250	1.227	–	–	–	–	–	1	1	2	3	4	5	6
1.275	1.277	–	–	–	–	–	1	1	2	3	3	4	6
1.300	1.327	–	–	–	–	–	1	1	2	2	3	4	6
1.325	1.379	–	–	–	–	–	–	1	2	2	3	4	5
1.350	1.431	–	–	–	–	–	–	1	2	2	3	4	5
1.375	1.485	–	–	–	–	–	–	1	1	2	3	4	5
1.400	1.539	–	–	–	–	–	–	1	1	2	3	4	5
1.425	1.595	–	–	–	–	–	–	1	1	2	3	3	5
1.450	1.651	–	–	–	–	–	–	1	1	2	3	3	4
1.475	1.709	–	–	–	–	–	–	1	1	2	2	3	4
1.500	1.767	–	–	–	–	–	–	1	1	2	2	3	4

* Permissible Area to be occupied (sq. in.) based on the NEC standard of 40% fill, which applies to three or more non-lead covered cables installed in the same conduit.

Important Note: This conduit capacity chart is to be used as a general guideline. Because local codes can vary from the National Electrical Code, the manufacturer cannot be held responsible for this information as it pertains to your installation. Proper conduit fill is the sole responsibility of the installer and it is your responsibility to see that your installation will pass local codes.