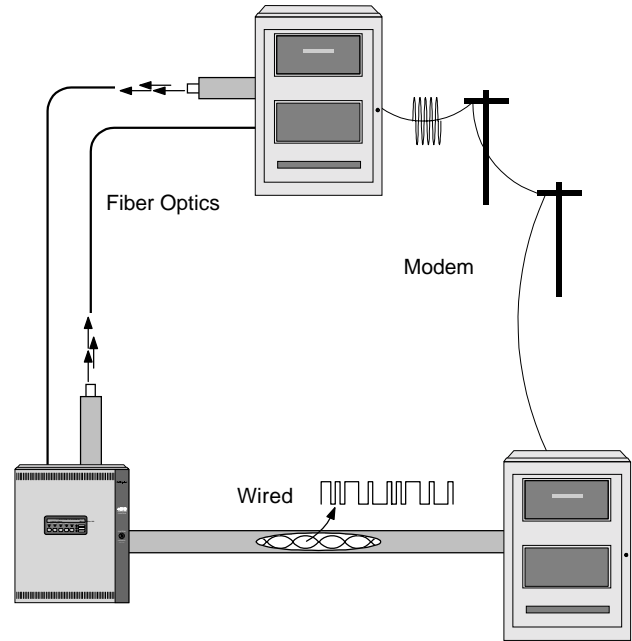


UL, ULC Listed
FM Approved

Network Options
Modular/Aftermarket Network Interfaces
4010, 4120, 4100, 4020, and 4002 Series

FEATURES

- **Multi-media 4120 Network connections**
- **Modular card provides:**
 - Communications using fiber optics, wired media, or modem cards, selected as required (refer to page 3 for individual panel availability)
 - LED status indicators
 - Style 7 (Class A) or Style 4 (Class B) operation
- **Fiber optic media card:**
 - Fiber optic links provide immunity to electrical transients, short circuits, and ground conditions
 - Provided with type ST connectors, compatible with 62.5/125 or 50/125 fiber
 - **4190-9010 Bi-Directional Couplers** are available to allow use of single fiber cable (for Network communications)
- **Wired media card:**
 - Isolated earth detection
 - Compatible with Simplex isolated loop and overvoltage protectors
 - Electrical characteristics are similar to RS-485
- **Modem media card, 9600 baud:**
 - Compatible with Telco leased lines
 - Modular RJ-11 connector
- **Additional interconnection options (see page 3):**
 - **Physical Bridge Modules** provide extended modem communications for remote connections, network loop linking, and star topology connections
 - **Fiber Optic Audio Interface/Repeater** modules provide separate fiber optic broadcast of 4120 Network audio tones and messages



4120 Network Media Options
(some options are not available on all control panels)

Wired Communications Distances

| Wire Size and Specifications | Data Rate | Distance** |
|--|-----------|--------------------|
| # 18 Twisted, Shielded Pair, 58 pF/ft, 6.39 Ω/1000 ft | 9600 | 17,000 ft (5.4 km) |
| | 57.6K | 10,000 ft (3 km) |
| # 24 Telephone Cable*, 22 pF/ft | 9600 | 12,000 ft (3.6 km) |
| | 57.6K | 7,000 ft (2.1 km) |

* With overall shield

** With or without isolated loop or overvoltage protectors

Modem Communications Distances

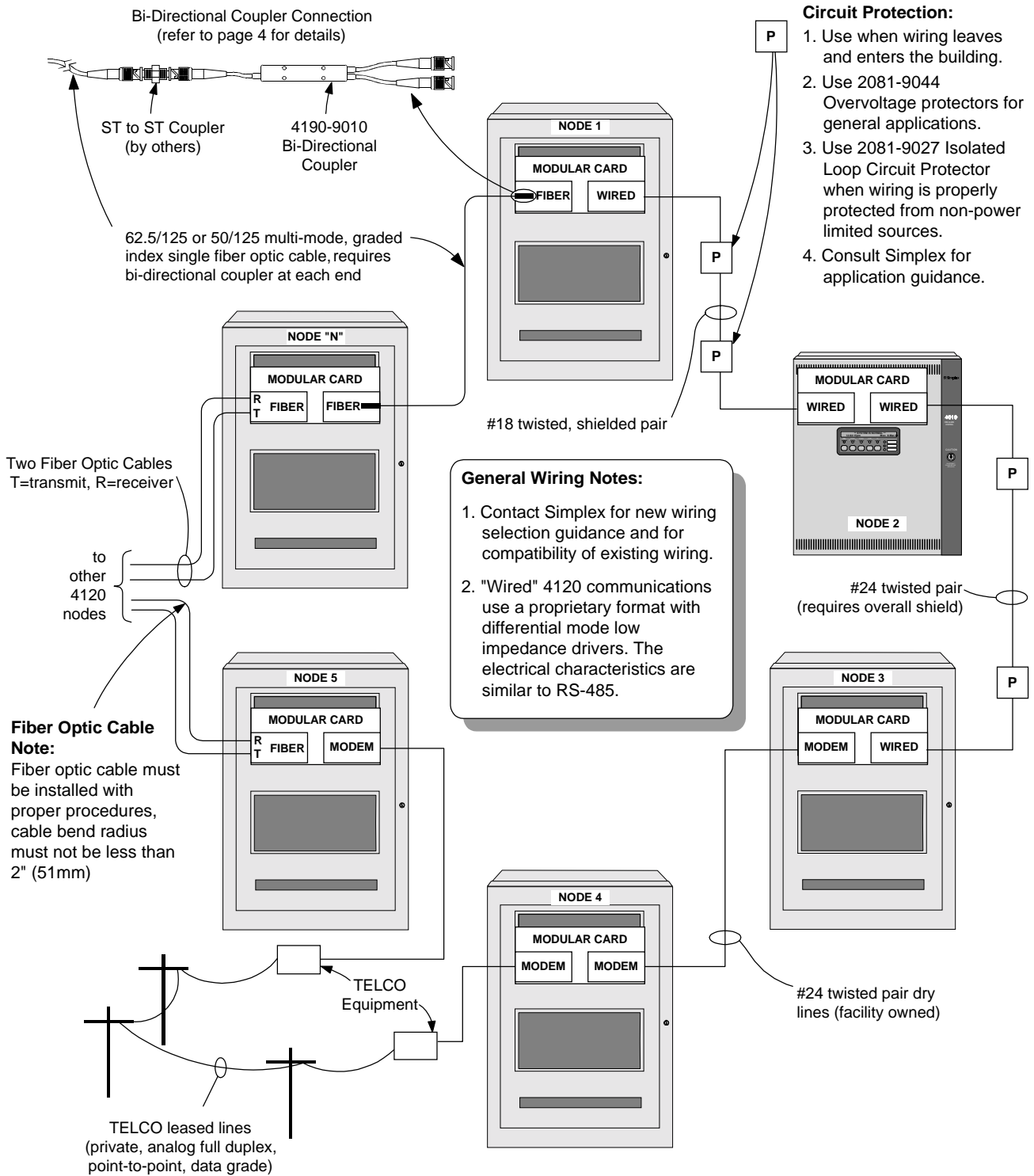
| Line Type | Distance (9600 baud) |
|-------------------------------------|---|
| Short Haul Twisted Pair Lines | # 26 AWG, 9500 ft (2.85 km) # 24 AWG, 15,000 ft (4.5 km) |
| Long Haul Leased Telco Lines | Distance: Essentially Unlimited Line Requirements: Private leased lines for analog data, point-to-point, full-duplex, no line conditioning or signaling required, two-wire line interface Connection Requirements: 2-wire, RJ-11 Termination |

Module Specifications

| Typical System Current Requirements* | |
|--------------------------------------|------------------------------------|
| Modular Card | 28 mA |
| Wired Media Card | 55 mA each |
| Fiber Optic Media Card | 25 mA each |
| Modem Media Card | 50 mA each |
| Environmental | |
| Operating Temperature | 32° F to 120° F (0° C to 49° C) |
| Operating Humidity | 95% Non-Condensing @ 93° F (34° C) |

* Refer to data sheet S4010-0001 for 4010 specifications.

4120 Network Example with Multiple Media Communications



4120 Network Interface Module Selection

| Fire Alarm Control Panel Series | Modular Card (or as noted) | Media Card | | |
|---------------------------------|-------------------------------|-------------------------------|-------------|---------------|
| | | Wired | Fiber Optic | Modem** |
| 4120 | 4120-6014 | 4120-0142 | 4120-0143 | 4120-0144 |
| 4020 | 4020-6014 | 4020-0142 | 4020-0143 | 4020-0144 |
| 4002 | 4002-6014 | 4002-0142 | 4002-0143 | 4002-0144 |
| 4010 | 4010-9817 | 4010-9818 | 4010-9819 | Not Available |
| | 4010-9821 | Dual wired, fixed media ports | | |
| 4100 Aftermarket or Retrofit | 4100-0149 | 4100-0142 | 4100-0143 | 4100-0144 |
| 4120 | 4120-6011* | Dual wired, fixed media ports | | |

* 4120-6011 is specified when configuring a 4120 series panel with fixed, wired media ports. Location requirements are the same as the 4120-6014 Modular card. System current is 150 mA, both supervisory and alarm.

** Modem communications are limited to two links per 4120 Network loop. For extended modem communication requirements, refer to Physical Bridge modules.

4120 Network Interface Module Location Reference

| Panel | Modular Interface Card | Wired | Fiber Optic | Modem |
|------------------|---|--|-------------|-------|
| 4120 | Mounts in existing I/O slot | Select as required for right or left media port | | |
| 4020 | Door panel or option bay | | | |
| 4002 | Mounts in existing unused space | | | |
| 4100 Retrofit | Requires 2" of backplane space (includes mating I/O board) | | | |
| 4010 | Mounts in panel expansion slot | | | |

Physical Bridge Module Reference (refer to data sheet S4120-0005 for details on Physical Bridge Modules)

| Product | Description |
|-----------|---|
| 4120-6023 | Style 4 Physical Bridge Module for 4120 Series Fire Alarm Control Panels <ul style="list-style-type: none"> Includes two Wired Media Modules and one Physical Bridge Link Modem Media Module Mounting requires 2" vertical slot width |
| 4120-6024 | Style 7 Physical Bridge Module for 4120 Series Fire Alarm Control Panels <ul style="list-style-type: none"> Includes two Wired Media Modules and two Physical Bridge Link Modem Media Modules Mounting requires 4" vertical slot width |
| 4020-6023 | Style 4 Physical Bridge Module for 4020 Series Fire Alarm Control Panels <ul style="list-style-type: none"> Includes two Wired Media Modules and one Physical Bridge Link Modem Media Module Mounting requires a minimum of 4 unit cabinet |
| 4120-0156 | 8 V Converter Module for 4120 Series Fire Alarm Control Panels <ul style="list-style-type: none"> Provides 8 V @ 3 A, powered from 28 V tap of main or expansion power supply For use where physical bridge modules in Hub Nodes require additional logic power Mounts on 4120 cabinet rack end |

Fiber Optic Audio Interface/Repeater Modules Reference (refer to data sheet S4120-0006 for detail)

| Product | Description | |
|-----------|-------------------------------------|--|
| 4190-9011 | Fiber Optic Audio Transmitter | For 4120 Series Fire Alarm Control Audio/Voice Panels, mounts in standard 2" I/O slot |
| 4190-9012 | Fiber Optic Audio Receiver/Repeater | |

FIBER OPTIC COMMUNICATIONS FOR 4120 NETWORK DATA
(refer to data sheet S4120-0006 for fiber optic audio communications data)

Dual Fiber Optic Cable Connections. The standard fiber optic connection between 4120 Network nodes uses two fiber optic cables, one for transmit, and the other for receive. This connection allows for optimum communications distance.

The available communications distance is determined by the properties of the specific fiber cable used. Distances can be determined using the information and examples shown below in Table 1.

Single Fiber Optic Cable Connections. For applications where a single fiber cable is available, or where use of a single cable is desired, using a model 4190-9010 Bi-Directional Coupler at each node combines the separate transmit and receive signals into a single path (refer to requirements list).

This connection allows use of a single fiber cable, but it does reduce communications distance as indicated in the information and examples shown below in Table 2.

4190-9010 Requirements:

1. For use with Fiber Optic Media Board part number 565-261, Revision "C" or higher.
2. Two 4190-9010 Bi-Directional Couplers are required per connection, one at each node.
3. The 4190-9010 is equipped with type ST connectors. To make type ST to type ST connections, an ST to ST coupler, by others, is required.

ST to ST Couplers are available from:

Black Box, part # FO200
Fiber Instrument Sales, part # F1-8101
Newark Electronics, part # 95F2097
(or equivalent)

4. 4190-9010 cross references to Simplex part number 271-012.

Table 1. Dual Fiber Optic Cable Communications Distance Examples

| Fiber Type ¹ | MIFL ² | Power Margin | Distance ³ | Budget ³ |
|---|-------------------|--------------|-----------------------|---------------------|
| 50/125 numerical aperture = 0.2 | 4 dB/km | 4 dB | 10,000 ft (3.05 km) | 17 dB |
| | 3 dB/km | 3 dB | 15,000 ft (4.57 km) | |
| 62.5/125 numerical aperture = 0.275 | 4 dB/km | 4 dB | 13,000 ft (3.96 km) | 21.4 dB |
| | 3.75 dB/km | 3 dB | 15,000 ft (4.57 km) | |

Table 2. Single Fiber Optic Cable Communications Distance Examples Using 4190-9010 Bi-Directional Couplers

| Fiber Type ¹ | MIFL ² | Power Margin | Distance ³ | Budget ³ | 4190-9010 Coupler Loss | ST to ST Coupler Loss |
|---|-------------------|--------------|-----------------------|---------------------|------------------------|-----------------------|
| 50/125 numerical aperture = 0.2 | 3 dB/km | 2 dB | 7,650 ft (2.33 km) | 21.4 dB | 9.4 dB | 3 dB |
| | | | 8,200 ft (2.5 km) | | | 2 dB |
| 62.5/125 numerical aperture = 0.275 | 3.2 dB/km | | | | | |

Notes:

1. Cable specifications are for 50 or 62.5 micron core with 125 micron cladding, multi-mode graded index fiber. Wavelength = 850 nm.
2. MIFL = Maximum Individual Fiber Loss. Numbers shown are for example reference only, refer to specific cable for exact specification.
3. Maximum cable length is determined by distance listed or by reaching budget value, whichever is shorter. Maximum distances listed for dual fiber cable are shorter than would be calculated. Budget using 4190-9010 Bi-Directional Coupler is the same with either size cable because the coupler input cables are 62.5/125 fiber allowing launch power to be the same.

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S4120-0003-7 6/99



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