



**G-Force 4200  
GF-4200**

**Fire Alarm Control Panel**

**Installation & Operation Manual**

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## 1.0 Preliminary Information

### Essential Please read before proceeding!

The equipment described in this manual is listed by Underwriters Laboratories, Inc. for use in fire alarm signaling systems, only when installed in accordance with this manual and the latest National Fire Protection Association Standards NFPA 72; the National Electrical Code (NFPA 70); the Life Safety Code (NFPA 101); and/or the local authority having jurisdiction (AHJ).

It is possible to apply system components incorrectly or arrange system components and installation wiring so that required life safety functions are NOT performed. As a result, lives may be lost.

To minimize this possibility:

DO NOT deviate from any installation instructions contained in this manual.

DO NOT assume any installation details not shown in this manual.

DO NOT alter any mechanical or electrical features of the equipment supplied

BE FAMILIAR with the building code, fire prevention code, and/or requirements of the Authority Having Jurisdiction (AHJ) in the locale of the installation.

### **!Caution!**

Under normal and fault conditions, AC line voltages may be present on any terminal. Touching any component could be hazardous and result in loss of life. A short circuit can result in arcing that could cause molten metal injuries to testing personal.

To minimize this possibility, only qualified electrical technicians familiar with electrical hazards should perform these checkout procedures. Safety glasses should be worn by such personnel, and instruments used for voltage measurement should be designed for the purpose and should be in good mechanical and working order.

If there is application or installation information that is not clear or not covered in this manual, please contact us at:

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## 1.1 The GF-4200 Manual

This manual is a complete Installation and Operation guide that includes the following sections:

**Section 1-System Overview:** Describes the panel features, agency listings and approvals, technical specifications, wire specifications, and system architecture and overview.

**Section 2-Installation Procedures:** Describes the hardware and software, sequence overview, and instructions on how to install the GF-4200.

**Section 3-System Controls and Operation:** Provides the panel operation instructions, including a basic layout and description of the visual indicators and function keys.

**Section 4-System Programming:** The “how to” section to program your specific devices and system, including a description of the menus found on the panel.

**Section 5-Special Application Programming and Operation:** “What can this system do for you?” is provided with detailed programming and operation of common applications.

**Section 6-Networking/Serial Devices:** Description of how to install and work with network devices.

**Section 7-Appendixes:** Other information relevant to the GF-4200 and this manual, including a glossary of terms.

If you have any questions or concerns about the installation, operation, or programming of the GF-4200, please refer to our web site:

<http://www.globalfirecontrol.com> or E-mail support at [inquire@globalfirecontrol.com](mailto:inquire@globalfirecontrol.com)

If you prefer, contact us at: **Toll Free: (888) 673-2900**



## 1.2 System Summary

The G-Force GF-4200 is a sophisticated microprocessor-based analog addressable fire alarm control system suited to the various needs of commercial, industrial and institutional applications. The **GF-4200** provides the ability to “software” configure and label 1008 Signal Line Circuits (hereinafter SLC) points plus system and network points. It functions in accordance with the **National Fire Protection Association (NFPA) Standard 72 Fire Alarm Code** as a manual, automatic and water flow control system for local, central station, and remote station applications. Activation of a compatible sensor or normally open fire alarm initiating devices will sound audible appliances, notify a remote station, annunciate a fire or alarm condition, and energize supplementary relays.

### 1.2.1 List of typical Features

**AC Power** 120 VAC, 60Hz or 230 VAC 50Hz, according to the customer order.

**DC Power** Standard - **7A total (Output current + Stand-by current)**, *Intelligent multi-rate battery charger.*

**Panel Annunciation** Eight rows of twenty characters LCD display, *LEDs for Power, Silence, Alarm, Trouble Pre Alarm and for trouble and alarm grouping*, Seventeen button keypad for all programming and control functions, *Real-Time clock/calendar display*, Point description, location, and condition is displayed when appropriate, *1000 events history log.*

**Cabinet** 16-gauge cold rolled steel finished in red powder coat enamel with space at bottom for batteries (8 or 12 Ah), *Conduit knockouts in the top, sides.* Removable Door with key lock, *Will house a 2 or 4 SLC system*

### 1.2.2 Programming Features

Keypad programming on the front panel or the Remote Console

*Three levels of Password protection, Auto-programming of SLC, System Devices and Network Devices.*

### 1.2.3 Initiating Circuits Features

2 Signal Line Circuits (SLC) standard, digital communication protocol, can use standard fire rated cabling, *Wire run length of up to 7,600 ft. with 18 AWG wire* (for details refer to [www.globalfirecontrol.com](http://www.globalfirecontrol.com) products section and download Loop Calculator), **126** addressable devices per one SLC, *SLC can be configured as Style 4, 6, or 7 without a reduction in the number of circuits available*, All SLCs are fully supervised and protected from surges.

### 1.2.4 Notification Appliance/Auxiliary Power Circuits

Four programmable outputs can be either Notification Appliance (NAC) or Auxiliary Power (APC) circuits, *all circuits can be configured as Style Y (Class B) or Z (Class A) without a reduction in the number of circuits available*, 3.0 A per circuit available subject to the combined total limit of 7.00 Amps, *NACs signal pattern programmable for March Time, ANSI Temporal Code, or Continuous*, All NAC circuits are **fully supervised and protected from surges**  
Note: The four NACs may also be used as inputs for switches.

### 1.2.5 List of Network Features

**Relay Outputs** Form C relay outputs for System Alarm and Trouble, *Up to ten programmable auxiliary system relays optional from the Panel (Five RCs Modules).*

**Analog Addressable Sensors** Photoelectric and ionization sensor heads have sensitivity set in the software database, *Heat sensor is programmable to alarm at 135° F to 190° F*, Sensor address is in the base using the Xpert module system

**Addressable Modules** fit a single gang box or 4” square boxes and have an LED visible through cover, *A sounder control module provides a NAC*, An input-output module has a supervised input and a relay output that follows its input, *The isolator module includes a mounting base and does not require an electrical box for mounting*, Addresses are set via DIP switches, *Modules can be wired as Class A or B, which is switch selectable at the module.*

### 1.3 Agency Approvals and Listings

The **GF-4200** Control System is designed to comply with Underwriter Laboratories (UL) Standard 864, Control Units for Fire-Protective Signaling Systems. File number S24253.

The **GF-4200** is Underwriters Laboratories listed for the applications described below:

<u>Type</u>	<u>*Type Service</u>	<u>**Type Signaling</u>
Local	A, M, WF, SS	M, NC
Central Station	A, M, WF	DAC
Remote Station	A, M, WF	DAC

\*Automatic (A), Manual (M), Water Flow (WF), Sprinkler Supervisory (SS)

\*\*March Time (M), Digital Alarm Communicator (DACT) - separately listed

**Anyone installing this system ought to have knowledge with the:**

- Installation Manual
- NFPA 72, NFPA 70
- NEC Article 300 Wiring Methods
- NEC 760 Fire Protective Signaling Systems
- Applicable Local and State Building Codes
- Requirements of Local Authority Having Jurisdiction

**Underwriters Laboratories has the following Pre-connection Requirements:**

- A) All AC wiring connected to the **GF-4200** enclosure is to be installed in conduit
- B) All field wiring must be installed in accordance with the National Electric Code (NFPA 70)
- C) All field wiring must be 18 AWG or larger (system accommodates 14-24 AWG)
- D) Power-Limited and Non-Power-Limited wiring must be segregated and routed as described in Section 2.2.2
- E) Use only the compatible detectors and modules listed in Appendix 6 on the SLC loops
- F) The Control mounting location should allow easy access and proximity to all audible alerts and local annunciation by the person(s) having responsibility for maintaining and supervising the system.
- G) All 2-wire smoke detectors utilized on the GF-4200-CZ10 must be listed as compatible in Appendix 5
- H) Supervised audible and visual appliances as listed in Appendix 6 Compatible Devices must be located so as to conform to UL and the ADA where required
- I) A full system checkout must be performed any time the panel is programmed
- J) The system must be maintained in accordance with NFPA 72 standards

***Specific instructions on configuring and programming to achieve some common applications are contained in Section 4, and may have additional requirements.***

***Please remember that all installations are regulated by the Local or State Authority Having Jurisdiction (AHJ) as they interpret the applicable NEC, NFPA and UL standards and regulations.***

## 1.3.1 Specific UL Requirements

### Requirements for All Installations

General requirements are described in this segment. When installing an individual device, refer to the specific section of the manual for extra requirements. The following subsections list specific requirements for each type of installation e.g., Central Station Fire Alarm systems, Local Protected Fire Alarm systems.

1. All field wiring must be installed in accordance with NFPA 70 National Electric Code.
2. Use the addressable and conventional smoke detectors specified in this manual listed in the compatibility chart.
3. Use UL listed notification appliances compatible with the GF-4200 from those specified in this manual.
4. A full system checkout must be performed any time the panel is programmed.
5. The GF-4200-RC module is required for connecting to the DACT (Model 5104B B MFG Silent Knight) and not required for GF-4200 as minimum configuration local panel.

## 1.3.2 Local Protected Fire Alarm Systems

At least one UL listed, supervised notification appliance must be used.

### 1.3.3 NFPA 72 Central Station – Digital Alarm Communicator Transmitter (DACT)

NFPA 72 requires a central station monitored system to include battery backup to power the system for 24 hours with 5 minutes in alarm at the end of that period. It requires that reporting loss of AC power trouble condition be delayed until 25% of battery backup capacity has been utilized.

(Model 5104B B MFG Silent Knight)

Refer to the sections in this manual to properly set this up.

Requires that AC Loss reporting be set to delay from 6 to 12\* hours.

The GF-4200-RC, GF-4200-DACT-R and SLC Mini Switch Monitor (Apollo model #55000-830) must be used.

### 1.3.4 NFPA 72 Remote Station – Digital Alarm Communicator Transmitter (DACT)

NFPA 72 requires a remote station monitored system to include battery backup to power the system for 60 hours with 5 minutes in alarm at the end of that period. It requires that reporting loss of AC power trouble condition be delayed until 25% of battery backup capacity has been utilized.

(Model 5104B B MFG Silent Knight)

Refer to the sections in this manual to properly set this up.

Requires that AC Loss reporting be set to delay 15 to 24\* hours

The GF-4200-RC, DACT-R and SLC Mini Switch Monitor (Apollo model #55000-830) must be used.

**\*the GF-4200 allows for 0, 8, or 16 hours**

## 1.4 Technical Specifications

### 1.4.1 Power Supply

<b>Nominal AC Input Voltages</b>	120 VAC/60 Hz for Common System Device Model GF-4200-MBC 230 VAC/50 Hz for Common System Device Model GF-4201-MBC
<b>Maximum Primary Current</b>	6.3A for Common System Device Model GF-4200-MBC 3.15A for Common System Device Model GF-4201-MBC
<b>24VDC Power Available</b>	7A Output Current max output (continuously = NSC 3.0A ALARM 7.0A).

### 1.4.2 Battery Charger

#### Multi Rate Smart Charger

Maximum Battery Charge Voltage	27.3VDC
Maximum Battery Charge Current	1.6 A
Maximum Chargeable Battery Capacity	40 Ah

After installation of the battery, the charger will begin working by first charging step. If the charge current is less than 1 A the charger is turned to next step voltage. At the last step voltage the charging is stopped, when charge current is less than 40 mA, and is began when Vbat is less than 27V.

The Battery Charger is implemented for the batteries 8, 12, 15, 20 and 40 Ah size or another UL-listed batteries. Capacity of the used batteries is depended of system configuration. For chosen batteries refer to 1.4.8 section.

### 1.4.3 Notification Appliance Circuits/24VDC Auxiliary Outputs

#### NAC Specification

Four programmable outputs can be either Notification Appliance (NAC) or Auxiliary Power (APC) circuits.

The NACs provide the following programmable modes:

- NAC Steady – 24 VDC at alarm condition
- NAC Temporal Code – 24 VDC at alarm condition (on, off, on, off)
- NAC March Time – 24 VDC at alarm condition (on, on, off, off, on, on, off, off)
- Power Supply Resettable – clear output 24VDC during the Reset procedure
- Power Supply Continuous– 24 VDC continuously.

The devices can be connected to the NACs by Style Y (Class B) or Z (Class A) without a reduction in the number of circuits available. Overload protection and auto Restart after current Break down

Each NAC supervises the EOL resistor 10 kOhm by 1mA current (in class B).

All circuits are **fully supervised and protected from surges**. The four NACs maybe programmed as inputs.

### 1.4.4 GF-4200-LCD SPECIFICATIONS

In addition to the local PDC the GF-4200 allows you to connect the remote Display Annunciators (Model GF-4200-LCD). The total Remote Annunciator quantity that can connect to one Panel is 15

The Remote Annunciator is intended for surface or flush mounting and includes the Remote Annunciator module that is placed inside the cabinet.

GF-4200-LCD module contains:

- Graphical LCD display 64x128 points with LED backlight.
- 17 key keyboard.
- 25 System Status LEDs

GF-4200-LCD module provides the following functions:

- Indication by LCD screen of the system events and input/output system configuration parameters.
- LCD indication font – 6x8 points.
- Characters numbers 160 (8 lines x 20 characters).
- Multilanguage options - according to the customer order.
- System command entering by keyboard
- System status indication by LEDs
- Communication with main Panel – by RS485 internal network
- Nominal power supply voltage - 24 VDC

### 1.4.5 GF-4200-LC Specifications

The GF-4200-LC module provides two loops Class A and B for Apollo addressable devices. The loop module provides 252 devices (126 per loop). The modules may be mounted in the standard Main Cabinet (one or two units or a Separated Cabinet. The Model GF-4200-EXP cabinet is used as Separated Cabinet for the remote GF-4200-LC mounting. A maximum of twoGF-4200-LC can be installed in one GF-4200-EXP. A maximum of four loop modules can be used in the system.

The GF-4200-LC provides the following functions:

- Two Signaling Line Circuits (SLCs).
- Up to 126 addressable analog devices can be installed to any loop.
- Compatible with Apollo’s Discovery, XP95 and Series 90 devices.
- Automatic detection of Class-A and Class-B connections.
- Each SLC is supervised for removing and adding of devices, and for ground fault for both class A and B.
- Each SLC is supervised for open-circuit in Class A and Class B.
- Each SLC provides protection for loop overload or shorting with restart mode. Overload or shorting of one loop, does not have an effect on the other loop.

GF-4200-LC parameters are shown as below

Parameter	Condition	Nominal	Unit
Loop voltage		24	V
Maximum Loop current		0.4	A
Maximum Loop capacitance		0.5	uF
Power supply voltage		24	V
Maximum loop module Current Draw	@ 24 VDC power, 50 Ohm load in each loop	1.15	A
Current consumption (standby)	@ 24 VDC power, without SLC devices	65	mA
Maximum 24VDC line resistance to remote GF-4200-LC (one side)	@ 24 VDC Panel power and GF-4200-LC at maximum current draw 1.15A	2	Ohms

### 1.4.6 GF-4200-CZ10 Conventional Zone Module

The Conventional Initiating Zone Expansion is implemented by GF-4200-CZ10 module. The **GF-4200** allows for six conventional initiating zone expansion modules. The GF-4200-CZ10 module outputs are compatible with various two wire fire detectors, and any normally open contact devices. The circuits may also be used as a supervisory circuit to monitor the normally open contacts of supervisory devices or water flow or pressure switches in sprinkler systems.

The GF-4200-CZ10 module provides five Class A initiating loops or ten Class B initiating loops. The GF-4200-CZ10 supervises each Apollo smoke detectors the S60 and S65. The GF-4200-CZ10 modules are mounted in the standard Main Cabinet (one module) or a Separated Cabinet (GF-4200-EXP or GF-4200-EXP5). The GF-4200-CZ10 specification and mounting details are described in Sec.6.3

### 1.4.7 System and Auxiliary Relay Outputs

All auxiliary and system relay outputs (Alarm, Trouble, and GF-4200-RC) carry the same ratings. Dry contact relays voltage free power factor 1.0.

#### Technical Specifications

Contact rating	10A @ 30VDC (PF=1)
Contact rating	10A @ 240VAC, resistive load (PF=1)
Contact rating	3A @ 240VAC, inductive load (PF=0.4)

### 1.4.8 RS-485 Network

- **Maximum number of devices** - 25
- **EIA-485 Circuit rating** - 5.5VDC max., 50mA
- **Data Transfer Rate** – 9,600 Baud
- **Recommended Wire Type** – 14-18 AWG twisted - pair (See Sec. 1.4.9.3)
- **Maximum Cable Length** - 9000 ft (3.000 m) (@18AWG)
- **Maximum Total Cable Resistance** – 100 Ohms
- **Maximum Cable Capacitance** – 0.3µF

### 1.4.9 Wiring Specifications and Requirements

All circuits except AC, System Relays, and battery cables are power limited.

#### 1.4.9.1 General Specifications

Induced noise (transfer of electrical energy from one wire to another) can interfere with the communication and is a cause of false alarms. To avoid induced noise, follow these guidelines:

- Isolate input wiring from high current output and power wiring. Do not pull one multi conductor cable for the entire panel. Instead, separate the wiring as follows:

High voltage	Switch able Power Supply Terminal
Notification appliance Circuits (NAC)	Terminals 20 to 35
Signal Line Circuits (SLC)	Terminals A-, A+, B-, B+ on SLC1 and SLC2
Network	Terminals 1 to 10
Relay Circuits	Terminals 11 to 19

- Do not pull wires from different Zones through the same conduit. If you must run them together, do so for as short a distance as possible or use shielded cable. Connect the shield to the terminal earth (RS485 terminal) at the panel. You must route high and low voltages separately.
- Route the wiring around the inside perimeter of the cabinet. It should not cross the circuit board where it could induce noise into the sensitive microelectronics or pick up unwanted RF noise from the high speed circuits.
- High frequency noise, such as that produced by the inductive reactance of a speaker or bell, can also be reduced by running the wire through ferrite shield beads or by wrapping it around a ferrite.

#### 1.4.9.2 SLC Wire Specifications

No special wire is required for the addressable communication loops (SLC) when routed as specified above. The wire can be solid, stranded, untwisted and unshielded. The wire must meet the National Electric Code 760-51 requirements for power limited fire protective signaling cables.

Maximum Resistance	50 Ohms
Maximum Capacitance	0.3 µF
Maximum Loop Length	depends on wire gauge as shown below (@ Loop current less than 60 mA):

<b>Wire Gauge (solid)</b>	<b>Solid Distance</b>	<b>Stranded Distance</b>
18	7,600 ft.	7,000 ft.
16	12,000 ft.	10,600 ft.
14	19,800 ft.	18,000 ft.

To determine your loop length measure from the farthest device on the loop back to the GF-4200-MBC or Remote Addressable Communication Module. When measuring a “T” tap, go from the farthest device on the “T” tap section back to the main SLC loop and from that junction back to the panel.

**Note:** Please use the loop calculator program (for details refer to [www.globalfirecontrol.com](http://www.globalfirecontrol.com) products section and download the Loop Calculator). The purpose of the Harrington Loop Calculator is to establish the viability of a design. It enables engineers to calculate the total loop loading in a proposed Apollo Discovery or XP95 fire detection system, by inputting relevant variables, for example control equipment, loop devices and cable length and type.

### 1.4.9.3 System Wiring

Network communication wiring requires a shielded, twisted pair of wires between each device. In addition, all network devices require battery backed 24VDC power. Twisted, shielded pair may be required for some installations. Following are examples of acceptable net wire.

Network Communication	14-18 AWG min
Twisted Pair	14 AWG Belden 9580 16 AWG Belden 9572 18 AWG Belden 9571
Twisted, Shielded Pair	14 AWG Belden 9581 16 AWG Belden 9575 18 AWG Belden 9574
Network Power	14 AWG

### 1.4.10 Calculating Maximum Current Draw and Battery Backup Requirements

This section will assist you in determining the maximum system current draw and standby battery needs for your installation. Follow the steps below to determine the current draw and standby battery requirements. Appendix B—**T8000** Current Draw/Battery Backup lists the standby and alarm current draw for the panel. Total standby and alarm Current is determined by multiplying the quantity of items by its current draw. To quickly determine maximum system current draw, perform the following computations:

1. Download the “Backup Calculation.xls” file from [www.globalfirecontrol.com](http://www.globalfirecontrol.com)
2. Enter the quantity of all T8000 devices that are included in your system configuration.
3. Fill in the quantities of conventional detectors, addressable detectors and devices.
4. Fill in the quantities and current draw of the Notification Appliances or auxiliary-powered devices for each output from the manual for each specific device.
5. Fill in the total quantities of detectors and modules. The detectors and modules total alarm current is determinate by estimation method, under the hypothesis that 5% LED will be ON.
6. The required battery capacity is determined according to equation  
 **$C_b \geq (I_{sb} * T_{sb} + I_a * T_a) * 1.1$**   
Where:  
Cb- required battery capacity, Ah  
Isb – standby current, A  
Tsb – supervisory time, 24 or 60 hours  
Ia – alarm current, A  
Ta – alarm time, 5 min (0.833 hours)  
1.1 – safety factor.
7. Make sure the total alarm current you calculated (including current for the panel itself) does not exceed 7.0 Amps. **This is the maximum alarm current allowable.**

The calculation example is shown in the table on next page.

	QUANTITY OF DEVICE/MODULE	STANDBY CURRENT (Amps)	MAXIMUM ALARM CURRENT (Amps)	TOTAL STANDBY CURRENT (Amps)	TOTAL ALARM CURRENT (Amps)
<b>SYSTEM COMPONENTS</b>					
Main System Part (MCC, PDC, FPC)	1	0.155	0.21	0.155	0.21
<b>SERIAL DEVICES</b>					
GF-4200-LC Addressable Loop Module	4	0.065	0.070	0.26	0.28
GF-4200-CZ10 Conventional Zone Module	2	0.11	0.14	0.22	0.28
GF-4200-LCD Remote Annunciator	15	0.03	0.04	0.45	0.6
GF-4200-RC Two Relay Module	5	0.002	0.05	0.01	0.25
<b>DETECTORS</b>					
55000-450 XP95A Heat Detector		0.000 25			
55000-550 XP95A Ion Smoke Detector		0.000 28			
55000-650 XP95A Optical Smoke Detector	800	0.000 34		.272	.272
55000-266 XP95A Beam Detector		0.0165			
55000-886 XP95A Multisensor Detector		0.000 47			
S60 and S65 Conventional (avg current)	400	0.0001		.04	.04
<b>MODULES</b>					
55000-750 Short Circuit Isolator		0.000 12			
55000-805 Switch Monitor Module		0.0006			
55000-806 Priority Switch Monitor Module		0.0006			
55000-820 Switch Monitor Input/Output Module		0.000 85			
55000-825 Sounder Control Module		0.001			
55000-831 Mini Switch Monitor Module		0.0006			
55000-830 Mini Priority Switch Monitor Module		0.0006			
<b>Detectors and Modules LED ON current</b>					
A) Detectors and modules, total number	1200				
B) Estimated LED-ON number $= (0.05 \times A)$	60				
C) Alarm current LED = 0.0035 Amps	0.0035				
D) Total alarm LED ON current $= (B \times C)$	0.21				0.21
<b>NOTIFICATION APPLIANCES</b>					
Other –NAC #1, 3 Amps maximum					1.193
Other –NAC #2, 3 Amps maximum					1.2
Other –NAC #3, 3 Amps maximum					1.2
Other –NAC #4, 3 Amps maximum					1.183
<b>TOTAL CURRENT (Amps)</b>				<b>1.487</b>	<b>7.00</b>

	UNITS	FORMULA	RESULT
a) Standby current	Amps	a	1.487
b) Standby time (24 or 60 hours)	hours	b	24
c) Standby requirement (demand)	Ah	$a \times b$	35.688
d) Alarm current	Amps	d	7
e) Alarm time (5 min = 0.0833, 10 min = 0.167)	hours	e	0.0833
f) Alarm requirement (demand)	Ah	$d \times e$	0.5831
g) Battery backup capacity (supply)	Ah	$c + f$	36.2711
h) Safety factor	Ah	$g \times 0.1$	3.6271
i) Minimum battery size required	Ah	$g + h$	39.8982
<b>REQUIRED BATTERY SIZE</b>	Ah		40

The required nominal batteries capacity as versus standby current system is shown in the table below. For chosen battery order the compatible wire set model (refer to Appendix 2)  
 Make sure that for the system configuration the standby is not more than **1.5 A for 24h and 0.6 A for 60h**.

Capacity (Ah)	Max permissible System Standby Current		Battery Wires Model
	24h	60h	
8	0.2772	--	(standard)
12	0.4287	--	(standard)
15	0.5423	0.2169	T8000-15/20BWIRE
20	0.7317	0.2927	T8000-15/20BWIRE
40	1.4893	0.5957	T8000-40BWIRE



## 1.5 Before You Begin Installing

### 1.5.1 Point Programming Overview

The **GF-4200** allows for programming of all system inputs and outputs.

**NOTE: Every time you make a change in programming to add or delete SLC or Network devices, you have to rescan the loops (Scan - Point Mode).**

### 1.5.2 SLC Devices, Bases and Accessories

There are sixteen types of SLC devices available for the **GF-4200** system. These devices include sensors and three varieties of bases, mini and standard priority switch monitor modules, a sounder control module, a combination input/output module and a short circuit isolator module as shown in Appendix 6.

### 1.5.3 Global Input Programming Options

- Auto-Test Time
- LED-blink enable/disable (**for series detectors ONLY**)
- Define Photo Sensor Analog Sensitivity settings for Low, Medium and High
- Define Ion Sensor Analog Sensitivity settings for Low, Medium and High
- Define temperature sensor set points for High, Medium and Low temperatures

### 1.5.4 System Timing Options

- Establish four Day/Night sensitivity schedules
- Establish up to eighteen Holidays
- Establish up to four System timing schedules
- Auto-Silence
- Silence Inhibit
- Alarm Verification ( **For XP95A Smoke detectors ONLY** )

### 1.5.5 Input Point Programming

Each sensor allows programming of the following parameters:

- Character label
- Alarm verification enable/disable
- High, medium or low sensitivity selection
- Output group assignment
- Selection of Day/Night sensitivity schedule (**Photo, Ion, Multi and Heat Sensors**)

Each switch monitor module or input point on the conventional zones may be programmed with a 40-character label, and for one of 10 different functions:

- Alarm input
- Manual pull station
- Waterflow Alarm
- Supervisory Alarm Input

### 1.5.6 SLC Output Point Programming

Each output point allows programming of the following parameters:

- Select for the "All-call" group,
- Define silence operation
- Select for one of four output schedules
- Associate with up to ten output Zones
- Provided a 20-character courtesy label

## 1.5.7 Output Zones

- The panel accommodates up to 250 output Zones. Each output group provides the following options:
- Enable/disable
- 20-character courtesy label (the courtesy label is for reference only, and is only visible when viewing group status, or on printed programming reports, NOT when the group is activated)
- Alarm and Trouble LEDs.
- Alarm count.

## 2 INSTALLING

### 2.0 Before You Begin Installing

This section of the manual is intended to smooth the progress to help you plan your installation. Please read this section thoroughly, especially if you are installing a GF-4200 panel for the first time.

#### 2.1 What's in the Box?

The GF-4200 is shipped with basic set augmented set according to the customer order. The basic set consists of Main Cabinet Enclosure (GF-4200-CAB), Common System Device (GF-4201-MBC or GF-4200-MBC) and one GF-4200-LC module. Two keys for the front door and the batteries jumper are included. The battery wires and battery jumper for the basic set are good for 8 or 12 Ah batteries.

**All other modules and the battery wires for larger batteries are optional.**

A cabinet with all the hardware pre-assembled. All assembled modules are connected to the earth ground. Four 10K Ohm EOL resistors (UL Resistors optional model T8000-10K) are connected to the NACs. A battery wires for batteries are connected.

#### 2.2 Installation Sequence

Installation procedures should be performed in the sequence outlined below. This will make the most efficient use of time and minimize the likelihood of accidental damage to the equipment.

<u>Step Number</u>	<u>Description of Task</u>
1	Mount Enclosure.
2	Connect AC power cable.
3	Install Optional modules as required.
4	Turn ON the AC Power.
5	Connect the Batteries.

##### 2.2.1 Mount Enclosure

Install the Enclosure as follows:

1. Carefully unpack the system components and inspect for any damage due to shipping.
2. Mount the enclosure in a clean, dry, vibration-free area where extreme temperatures are not encountered. The location should be readily accessible with sufficient room for easy installation and maintenance.
3. Locate the top of the cabinet 6 feet (1.9 m) above the floor, with the hinge mounting on the left.
4. Mount centering the single hole in the upper back of the cabinet to the center of a wall stud. After the panel has been properly located using the center-mounting hole, the panel can be secured.
5. Complete all conduit connections to the cabinet. Use the knockouts provided in the top and the sides. Wire must **NOT** enter the bottom of the cabinet, since this area is intended for batteries.

**NOTE:** All wiring should be in accordance with Article 760 of the National Electrical Code NFPA 70 and state and local codes for fire alarm systems. All conductors should be tagged or otherwise coded and logged at installation to identify circuit assignment, polarity, and Class "A" circuits, whether outgoing or incoming.

## 2.2.2 Connect AC Power

### WARNING!

To reduce the risk of electrical shock, make sure that all power has been turned off or disconnected prior to attempting to connect power to the Power Supply Controller.

Be sure that your Common System Device is powered correctly (GF-4201-MBC by 230VAC and GF-4200-MBC by 120VAC). Two versions of the Common System Device have different stickers and the GF-4200-MBC includes three varistors that are installed on the Power supply input (refer to Appendix 9).

**Apply the AC Power BEFORE connecting the batteries to the Panel!**

Provide the Fire Alarm Control Panel with a dedicated AC Circuit rated 15 Amps.

Refer to Figure 2.1 for wiring diagram.

1. Enter Power Cable into Cabinet via top knock hole and connect it to the terminal strip that is placed on the left side of chassis.
2. Attach the brown (live) wire from the source to terminal "Line".
3. Attach the blue (neutral) wire from the source to the "Neutral" terminal.
4. Attach the ground wire from the source to the "FG" terminal.

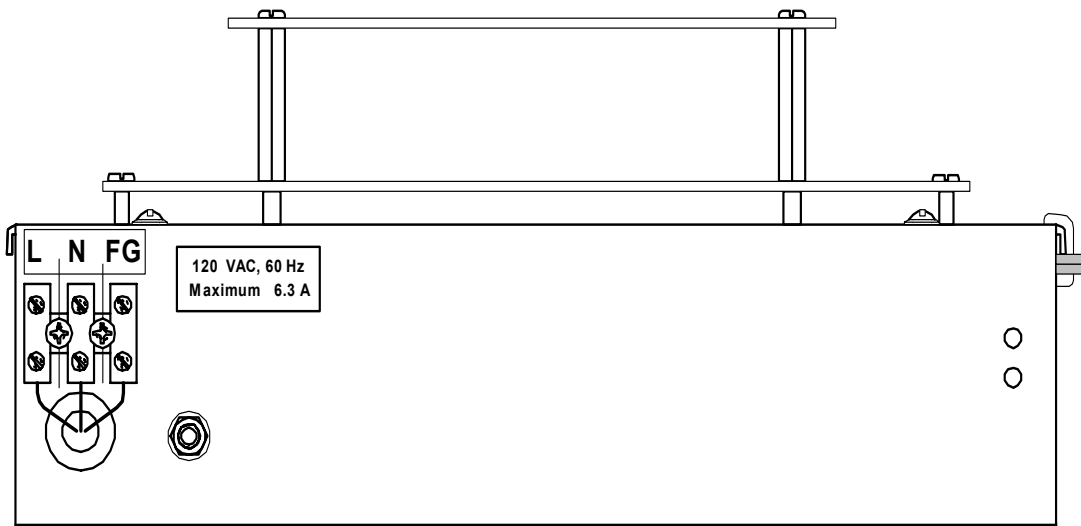


Fig. 2-1. Connection of power cable (the label conforms to GF-4200-MBC Device)

## 2.2.3 Installing Batteries

The battery 8 or 12 Ah are placed in the main GF-4200 enclosure and are connected to the chassis by the battery wires which are placed in GF-4200-CAB Cabinet, all other size batteries 15, 20 and 40 Ah must be placed in the external battery enclosure.

**Attention**  
***Do not connect the batteries in the opposite direction!***

## 2.2.4 Installing of Optional Modules

The basic system includes one GF-4200-LC module and GF-4200-MBC Common Devices which include the (Power Supply, PC, MCC and PDC modules that are fabric mounted on the chassis Fig.2-1). The cabinet construction allows you to install with the following options one GF-4200-RC module or either two –GF-4200-LCs (loop module) or one GF-4200-LC with aGF-4200-CZ10 (Conventional Module) or with one GF-4200-LC. The GF-4200-RC modules are mounted on high stand-offs, therefore the relay pins to bottom distance is more than ½ inch. It allows for a power AC (120-230 VAC) by the relay contacts (Fig.2-2). The optional serial modules are mounted on the upper level according to Fig.2-3 and Fig.2-4

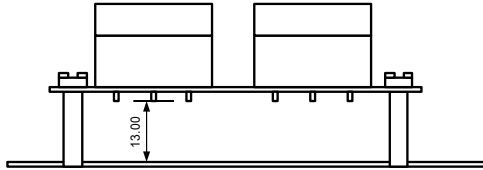


Fig.2-2. How to install the GF-4200-RC module

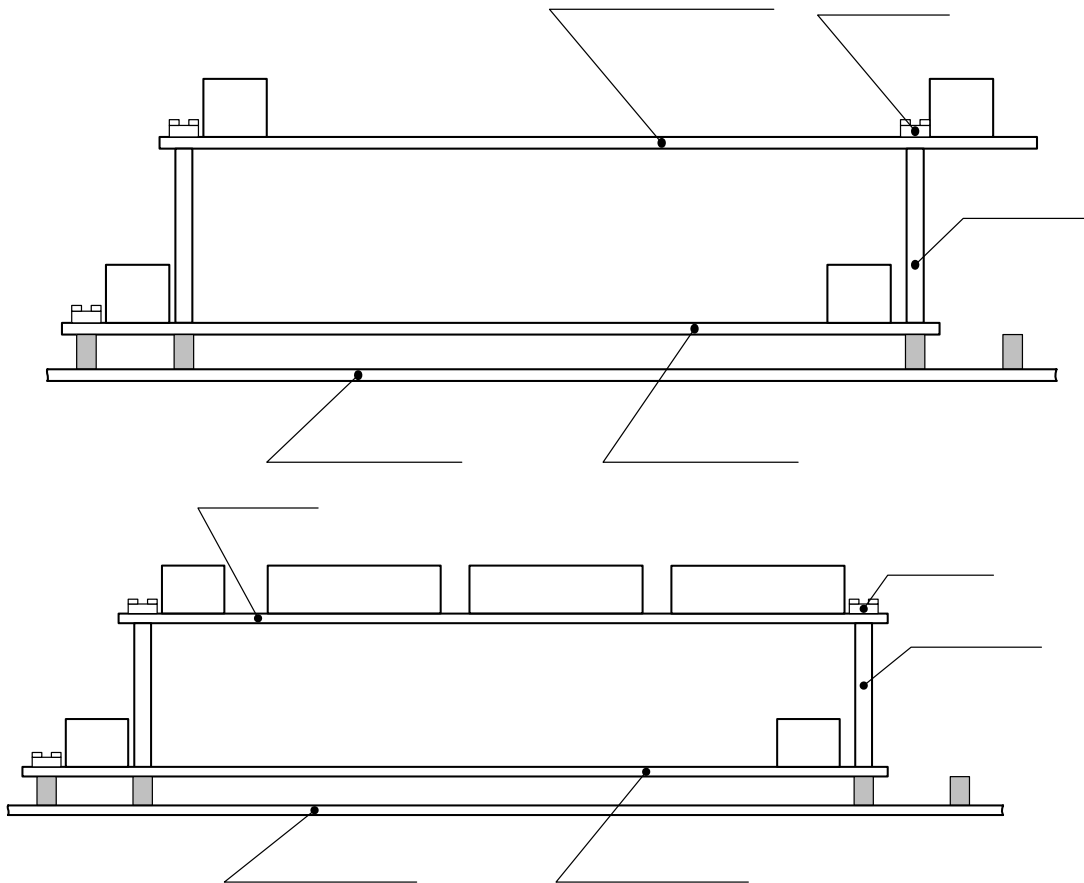


Fig.2-3 Optional GF-4200-LC module mounting in one position (side view).  
 Fig.2-4. Optional conventional (GF-4200-CZ10) module mounting in one position (side view).

Upper G-42

The different installation options of the devices in the Cabinet are shown on the Fig.2-5, Fig.2-6 and Fig.2-7.

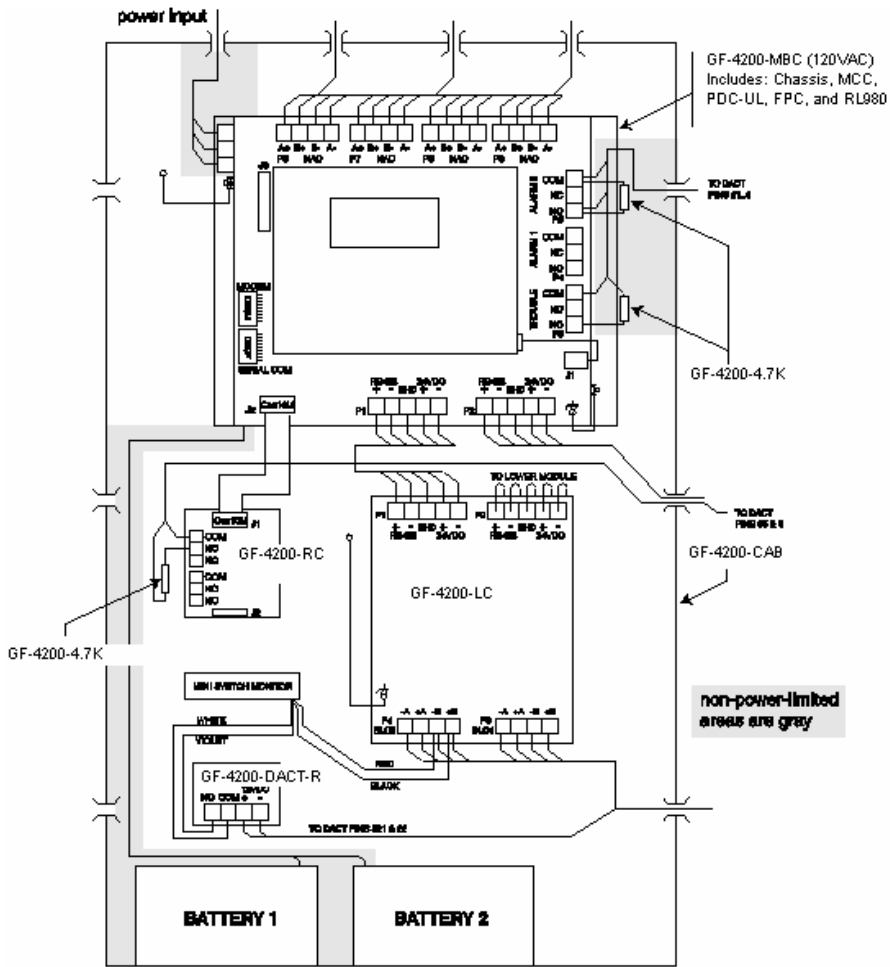


Fig.2-5. The GF-4200 system includes one GF-4200-LC and one GF-4200-RC modules which are mounted in the cabinet.

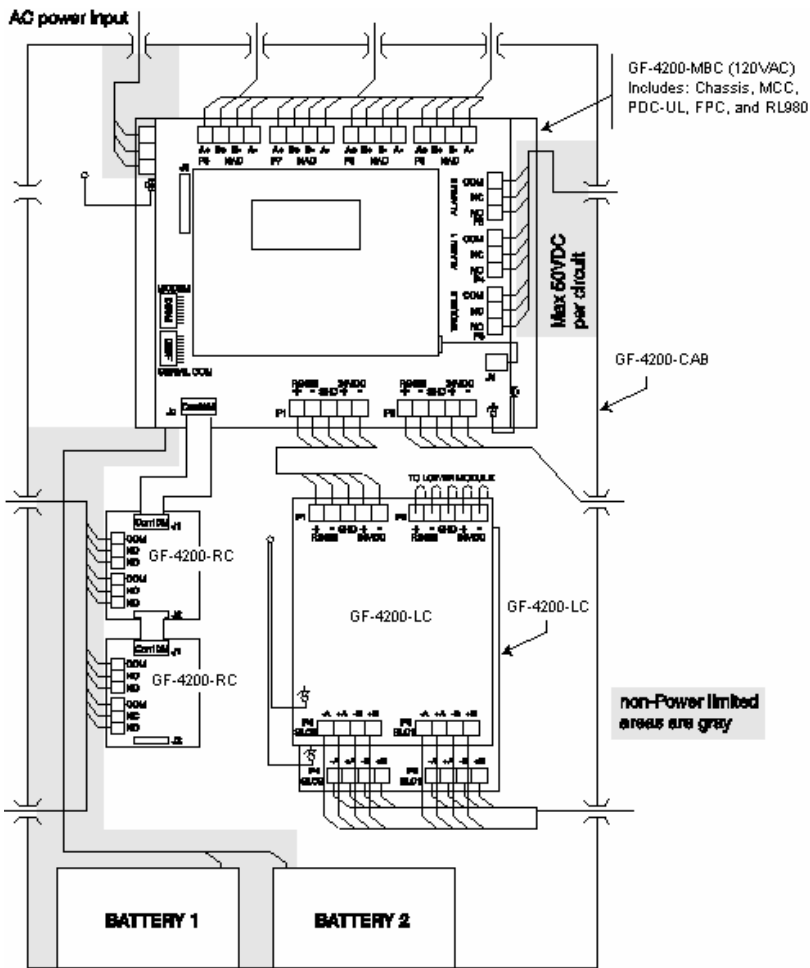


Fig.2-6. The GF-4200 system includes two GF-4200-LC modules and two GF-4200-RC mounted in the cabinet.

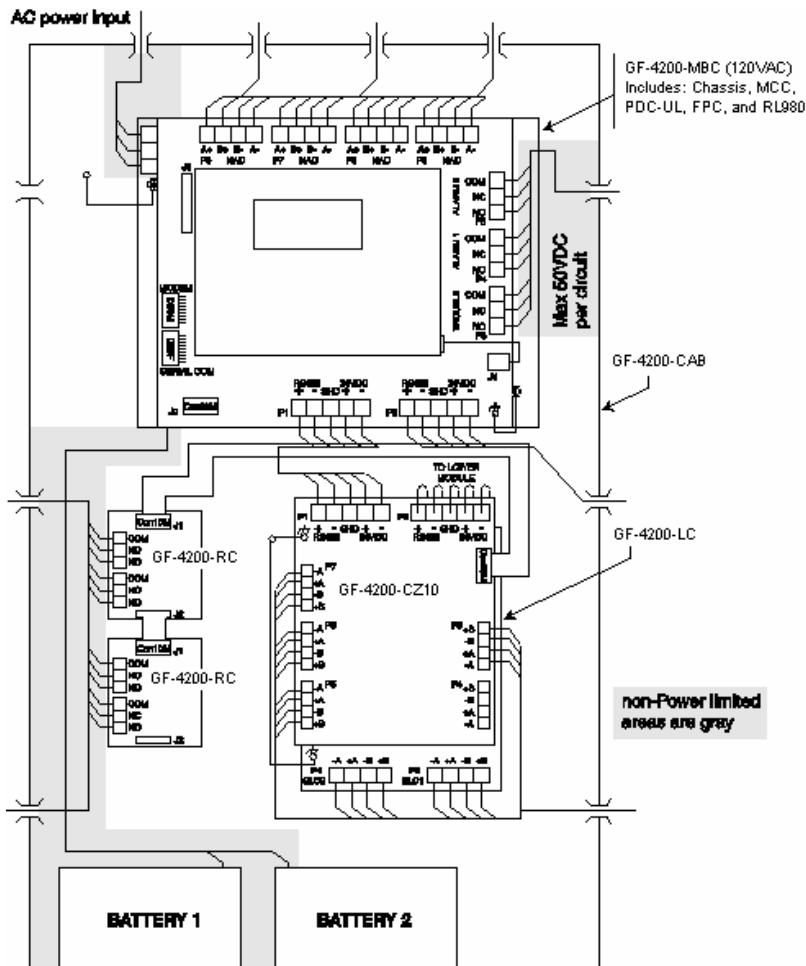


Fig.2-7. The GF-4200 system includes one GF-4200-LC one GF-4200-CZ10 and GF-4200-RC modules mounted in the cabinet.

The GF-4200-RC module is connected to the MCC, but in the system that includes the GF-4200-CZ10 module the GF-4200-RC module may be connected to either the MCC or GF-4200-CZ10 modules. The main cabinet construction provides for two serial device modules, but if more modules are required, the remote cabinet should be used. The optional modules are fabric installed in the Main or Separated Cabinet or may be installed by the customer.

### 2.3 Wiring the Signaling Line Circuits (SLCs)

Communication with the addressable initiating, monitor, and control devices occurs through Signaling Line Circuit (SLC) loops. Each loop will support up to 126 addresses for devices of any type. Isolator modules do not require an address and are not included in the 126-device total. The basic panel will accommodate 252 total devices. The panel will support three additional addressable communication modules (GF-4200-LC) and each GF-4200-LC will support up to 252 total devices up to a total of 1,008 total addressable SLC devices. Max 4 modules GF-4200-LC are connected per system.

Each SLC loop can be wired to meet the requirements of the NFPA. There are four basic types of devices that can reside on an SLC:



1. **Isolator Modules** permit a group of sensors and modules to be electrically “isolated” from the remainder of the SLC, allowing critical loop devices to function in the event of a circuit fault Isolator Modules are required to meet NFPA Style 6 and Style 7 requirements.

2. **Switch Monitor Modules and Input/Output Modules** allow the control panel to monitor entire circuits of conventional alarm initiating devices such as manual pull stations, smoke detectors, heat detectors; waterflow and supervisory devices.

3. **Smoke and Heat Sensors** allow the panel to monitor an environment for smoke and heat conditions indicating a fire condition.

4. **Output and Input/Output Modules** allow the control panel to selectively activate notification and relay outputs.

## 2.4 Sensor Base Wiring

There are three types of bases that may be used with the optical, ionization, and thermal sensors: Mounting Base, Sounder Base and the Relay Base. These bases views are shown on Fig.2-8 and Fig.2-9. The isolator base is only used with the isolator module.

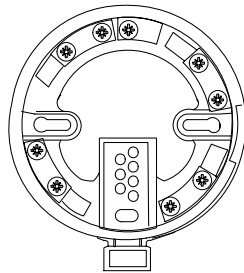


Fig.2.8 XP95 Mounting Base with XPERT card

**NOTE:** Fig.2.8 55000-250 Mounting Base with XPERT card

L1 and L2 are polarity sensitive on the Isolator Module, but not the other bases.

<b>L2</b>	<b>L1</b>
<b>-R</b>	<b>+R</b>

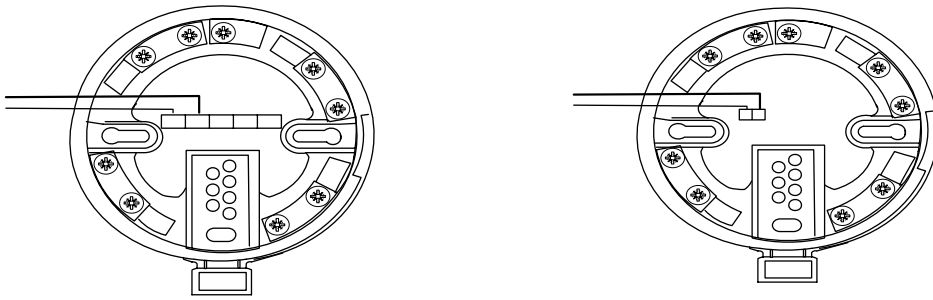


Fig.2-9 Relay and Sounder bases

24VDC

From  
FACP  
Panel

+

L2

L1

The L1 and L2 terminals are used for the loop wires connection, the R- and R+ terminals are used for remote LED device connection. The Remote LED is connected to one device or to the any devices as is shown on Fig.2-10. In this case the remote LED is ON if one of detectors will be in alarm condition.

24VDC

From  
FACP

+

-

**NOTE:** L1 and L2 are polarity sensitive on the Isolator Module, but not the other bases.

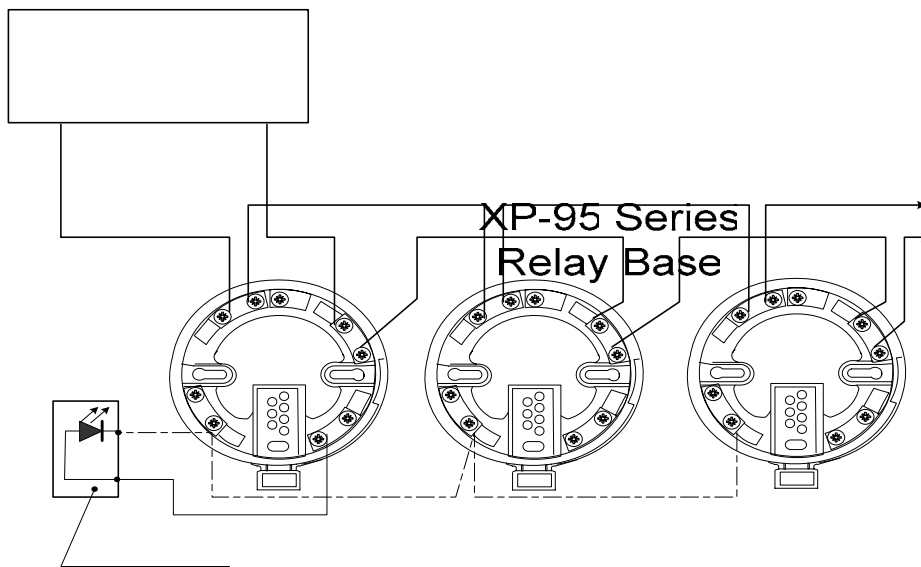


Fig.2-10. Wiring Diagram XP95 loop with LED Remote Indicator.

The indicator may be used in all installations incorporating Apollo detectors, including Series 60 65, XP95A, and Discovery.

## 2.5 Installing SLC Devices

### 2.5.1 NPFA Wiring Styles

The examples of NPFA Wiring Styles are shown below on Fig.2-11 ... Fig.2-15

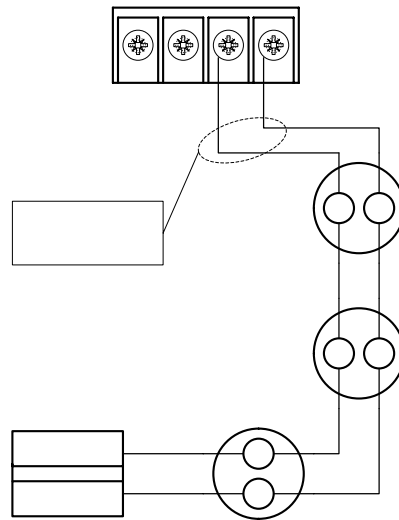


Fig.2-11 Wiring example according to Style 4 (Class B)

Loop Module

**--A +A --B +B**

Supervised  
Power Limited

XP-95  
BASE

L1

XP-95  
BASE

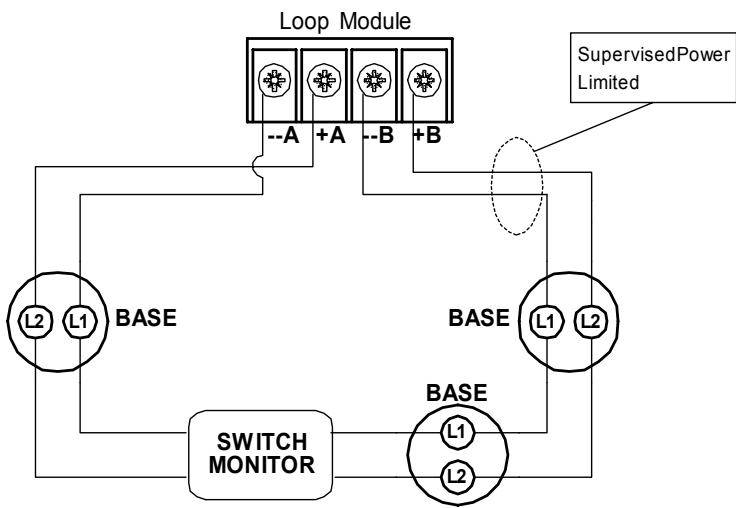


Fig.2-12 Wiring example according to Style 6 without isolators (Class A)

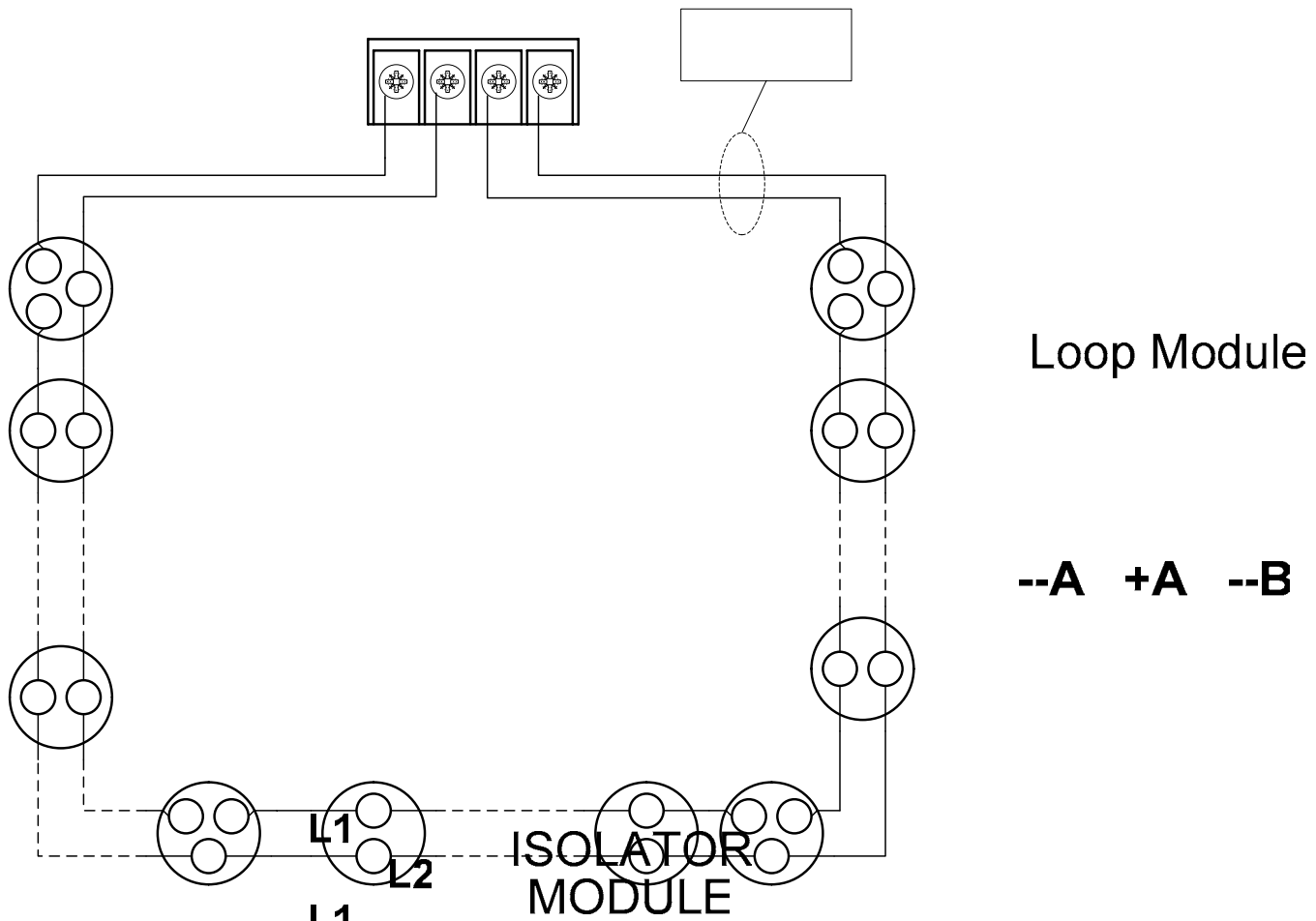


Fig.2-13 Wiring example according to Style 6 with isolators (Class A)

Note: Each zone, which includes (10-15) sensors, must be separated by a isolator.

L2 L1 45681-250  
BASE

Zone N

L2 L1

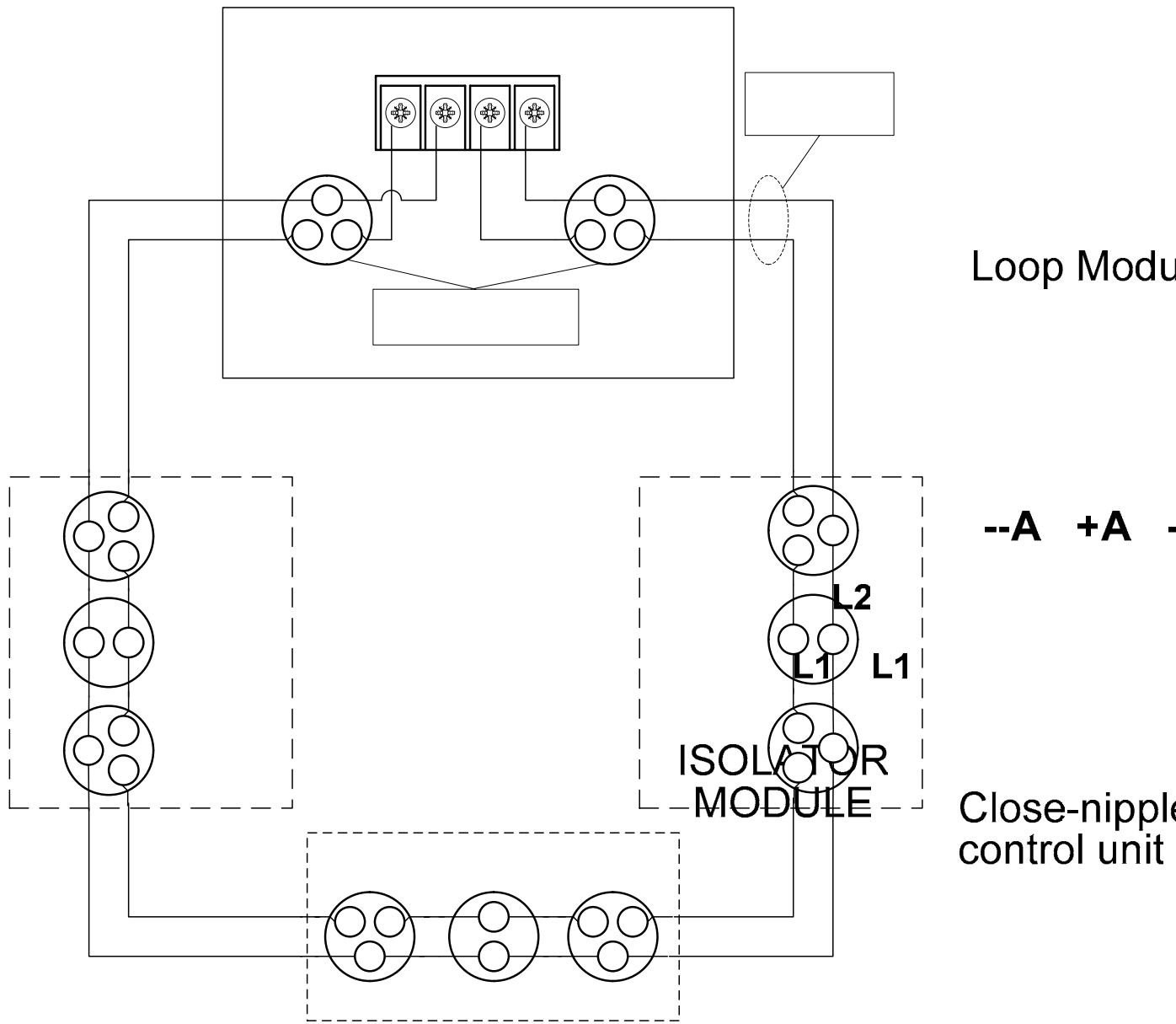


Fig.2-14 Wiring example for Style 7 (Class A)

Note: The SLC Loop is connected to the SLC Module via two Isolator Modules, which should be mounted close-nippled to GF-4200-LC module, of each side of A and B. The SLC loop (style 7) consists of the sequentially connected groups, which includes one Detector and two Isolator Modules. In the Loop that consist of N Detectors should be connected  $(2N+2)$  Isolator Modules.

L2 L1 ISOLATOR  
L1 L1 MODULE

close-nippled

L2 L1 45681-250  
BASE

## 2.5.2 Input SLC Modules

**The Temperature Sensor Head (55000-450)** is molded from white polycarbonate material with a low air flow resistance design. Stainless steel wiper contacts connect the sensor to the terminals, which are polarity insensitive, in the mounting base. Inside the sensor case is a circuit board with the sensing system on one side and the address capture, signal processing, and communication electronics on the other side. The sensor monitors temperature by using a single thermistor network, which provides a voltage output proportional to the external air temperature. This analog voltage is converted to a digital signal, which is transmitted to the FACP for interpretation. The alarm threshold is programmed into the FACP.

**The Ionization Smoke Sensor Head (55000-550)** is molded from white polycarbonate material with wind resistant smoke inlets and an insect resistant screen. Stainless steel wiper contacts connect the sensor to the terminals, which are polarity insensitive, in the mounting base. Inside the sensor case is a circuit board with the sensing system on one side and the address capture, signal processing, and communication electronics on the other side. The sensor is a dual chamber, single radioactive source system that provides analog readings, which are converted to a digital signal and transmitted to the FACP for interpretation. The alarm threshold is programmed into the FACP.

**The Photoelectric Smoke Sensor Head (55000-650)** is molded from white polycarbonate material with wind resistant smoke inlets and an insect resistant screen. Stainless steel wiper contacts connect the sensor to the terminals, which are polarity insensitive, in the mounting base. Inside the sensor case is a circuit board with the sensing system on one side and the address capture, signal processing, and communication electronics on the other side. The Photoelectric system operates on the light scattering principle. When smoke enters the optical chamber it scatters light in proportion to the smoke characteristics and density. The sensor's electronics read the analog value, convert that value to a digital signal and communicate the digital signal to the FACP. The alarm threshold is programmed into the FACP.

**The Multisensor detector (55000-886)** contains an optical smoke sensor and a thermistor temperature sensor. The output from these two sensors is used to determine the analogue value of the detector. This analogue value is then transmitted back to the control and indicating equipment via the Apollo communications protocol. The overall construction of the Multisensor is similar to the XP95A optical detector but uses a different lid and optical molding to accommodate the temperature sensor. The outputs from the optical smoke sensor and temperature sensor represent the smoke level and the air temperature in the vicinity of the detector. These two outputs work independently of each other and are constantly monitored by an onboard microprocessor, which uses a number of algorithms to determine the change in smoke and/or temperature levels. A change in the stimuli will result in a change in the analogue level, which will then be transmitted to the control and indicating equipment. The temperature signal processing is only concerned with rate-of-rise increases and will not therefore respond to very slow temperature increase and does not have an upper fixed temperature setting for alarm. The detector incorporates drift compensation, which compensates for dirtying of the optical assembly. Drift compensation is carried out in the processing algorithms, which maintains the quiescent analogue level until the limit of compensation has been reached.

**The Mini Switch Monitor Module (55000-830)** is used to monitor any N.O contacts in the UL Listed fire alarm initiating device such as a manual pull station. The module fits in a single gang box, has flying leads for connection, and is addressed by dip switches. Current consumption in normal state is 600 $\mu$ A typically, in alarm it draws 4mA. The Module can be wired either Class A or Class B (switch selectable) and uses standard XP95 digital communication protocol.

**The Switch Monitor Module (55000-806)** is used to monitor any N.O. contacts in UL Listed fire alarm initiating device. Waterflow, tamper, other supervisory devices, 4-wire smoke detectors are a few examples. Module fits a 4" junction box. Address is set with a dip switch. Current consumption in normal state is 600 $\mu$ A typically, in alarm it draws 4mA. A red LED is visible through the decorative cover. Screw terminals are provided and it can be wired Class A or Class B, switch selectable. The Module uses standard XP95 digital communication protocol.

### 2.5.3 Input/Output (I/O) Module

**The Switch Monitor Input-Output Module** (55000-820) mounts in a standard 4" square junction box. The red LED is visible through the cover plate. Input circuit can be wired Class A or Class B, switch selectable, which monitors N.O. initiating devices. Closure of the input causes an alarm condition and the Form C output relay to transfer. The output relay is rated at 2 A @ 30 VDC or 0.6 A @ 125 VAC (PF>0.35). Connections are through screw terminals. Normal operation and alarm current consumption is 850µA typically. Alarm current is 4mA uses standard XP95 digital communication protocol. The address is set with dip switches

### 2.5.4 Sounder Controller Module

**The Sounder Control Module** (55000-825) is fitted to a 4" square junction box with a red LED visible through the cover. The module monitors and controls one notification appliance circuit (NAC) or voice evacuation speaker circuit. Output circuits can be wired Class A or Class B, switch selectable. Unit requires input from an isolated, power-limited, regulated 24 VDC UL Listed for Fire Protective Signaling Service power supply or a UL Listed for Fire Protective Signaling Service audio amplifier with circuit supervision capability per NFPA. Screw terminals are provided for all wire connections. Power supplies must be power limited per NFPA. Current draw in normal state is 1mA typically. Power up surge current is 6mA maximum for 150 mS. Uses standard XP95 digital communication protocol. The address is set with dip switches.

### 2.5.5 Sounder Base/Relay Base

**The Relay Base** is a 6-inch (150mm) mounting device for analog addressable sensors. The base has a built-in Form C relay. An external, regulated and power-limited 24 VDC power supply, UL Listed for Fire Protective Signaling, must be provided. Each base includes an Xpert addressing module. This unique, patented system puts the address information in the base while keeping the base entirely free of electronic parts except for the relay. This coded plastic module is inserted into the base so that the address remains the same. No need to worry about changing the address in the sensor head if the sensor head requires replacement. When the sensor head in a base is put into alarm by the control panel the relay in that base will transfer until the panel is silenced and/or reset. If the external power supply to a circuit of bases has the polarity of the 24 VDC power reversed then all the bases on that circuit will transfer their relays until the polarity is reversed back to stand-by state. The relay's function can be tested by simply reversing the polarity of the external power. The sensor head does not need to be installed to perform this test. Additional Xpert modules are available separately if needed. They can be ordered in a pre-addressed form or ready to be addressed.

**The Sounder Base** is a 6 inch (150mm) mounting device for analog addressable sensors. The base has a built-in piezo sounder. An external, regulated and power-limited 24 VDC power supply, UL Listed for Fire Protective Signaling, must be provided. Each base includes an Xpert addressing module. This unique, patented system puts the address information in the base while keeping the base entirely free of electronic parts except for the sounding device. This coded plastic module is inserted into the base so that the address remains the same. No need to worry about changing the address in the sensor head if the sensor head requires replacement. When the sensor head in a base is put into alarm by the control panel the sounder in that base will sound until the panel is silenced and/or reset. If the external power supply to a circuit of bases has the polarity of the 24 VDC power reversed then all the bases on that circuit will sound until the polarity is reversed back to stand-by state. The sounder's function can be tested by reversing the polarity of the external power. The sensor head does not need to be installed to perform this test. Additional Xpert modules are available separately if needed. They can be ordered in a pre-addressed form or ready to be addressed.



## 2.6 MCC Wiring Terminal Identification

The MCC diagram is shown on Fig.2-15. The MCC module is connected to the internal and external loops by the four Connector and nine terminal blocks. The MCC wiring examples are shown on Fig. 2-5...2-7

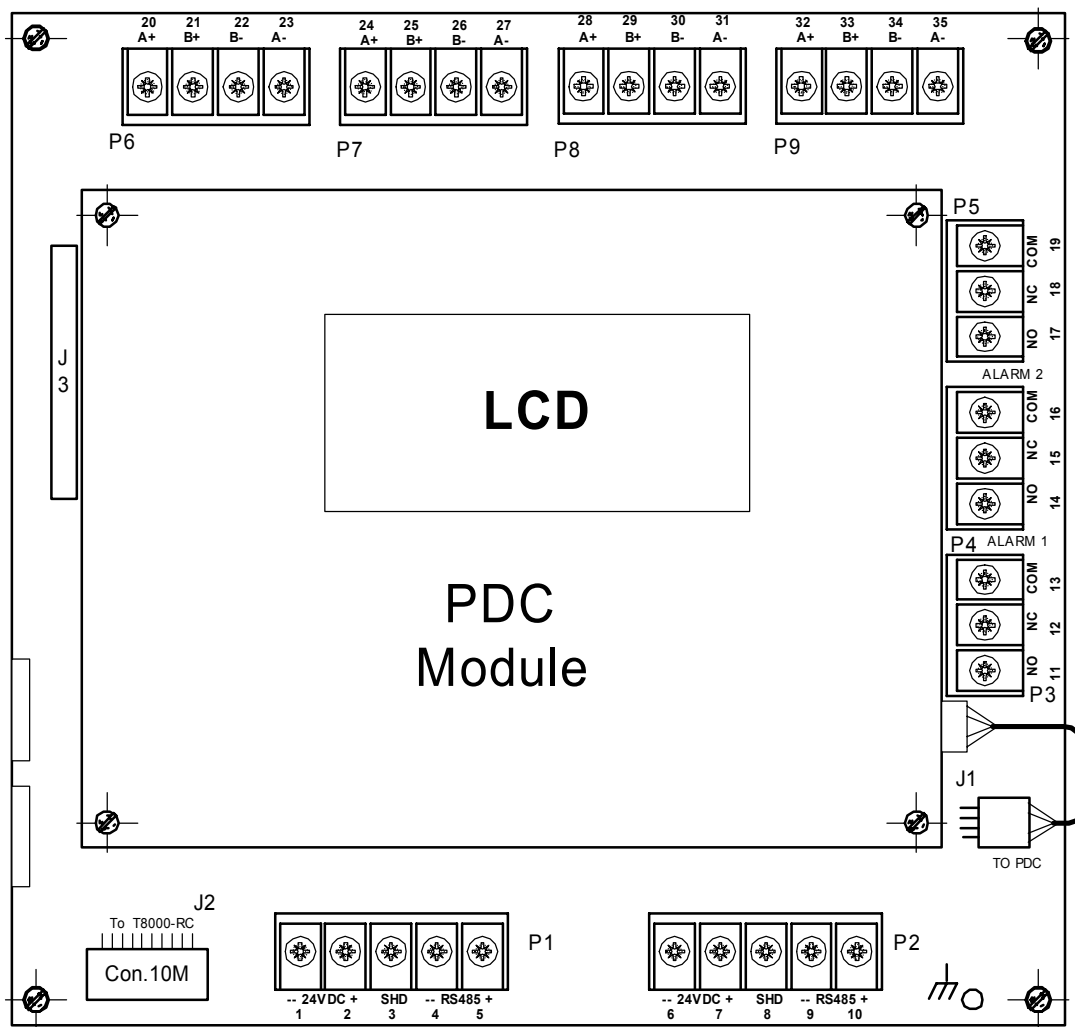


Fig.2-15. MCC Connectors and terminal blocks diagram

### 2.6.1 MCC connectors Destination

The PDC local module is connected to the MCC by 4-wires cable via J1 connector. The distance between the PDC connector and P3 terminal block is no less than 9/16 inch. The J2 connector is used for GF-4200-RC (two relay) module connection.

## 2.6.2 NACs Wiring

The MCC includes four separated Notification Appliance Circuits (NAC) that may be wired in Class B or Class A. The NAC outputs are supervised and power limited. The polarized Horn, Strobe and Bell connection to Notification Appliance Circuit diagram is shown on Fig.2-16. The NAC1 and NAC2 are wired by Class B, the NAC3 and NAC4 are wired by Class A. All devices, which are connected to the NACs, must be UL listed and GF-4200 compatible (look Appendix 4).

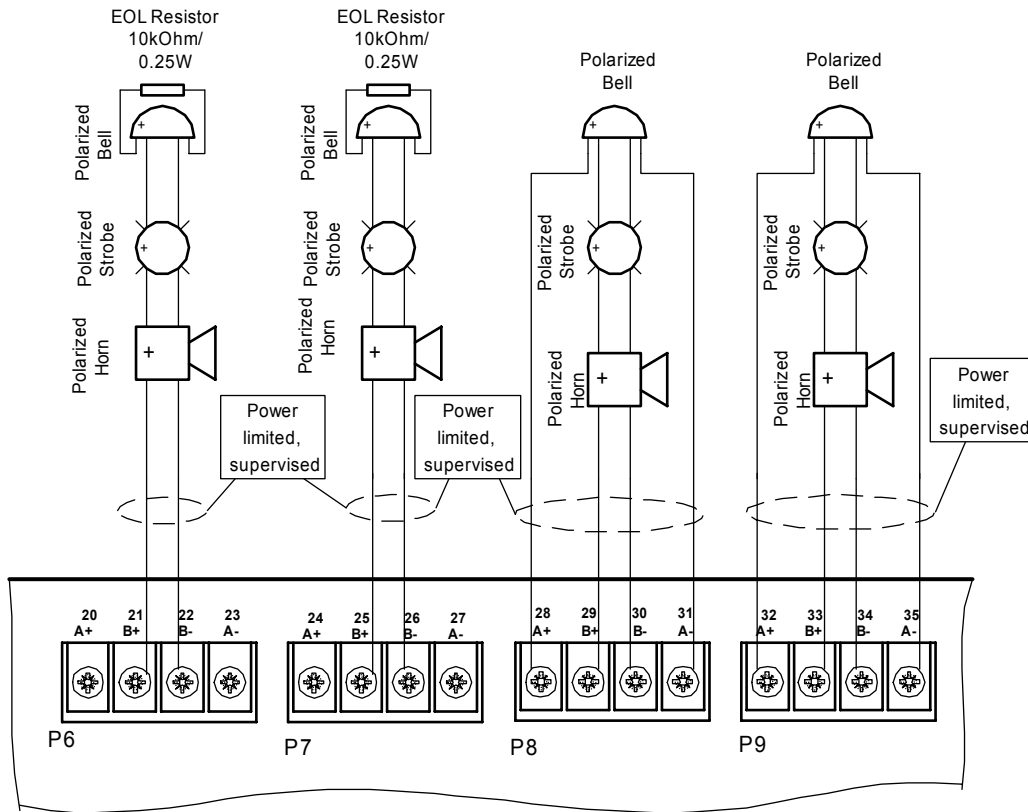


Fig.2-16. The MCC NACs wiring in Class B (NAC1, NAC2) and Class A (NAC3, NAC4)

## 2.6.3 RS485 Network wiring

The system internal RS485 Network is connected to the system by serial modules according to Fig.2-17 diagram. The contacts (-24VDC and +24VDC) of P1 and P2 are shorted in the MCC module therefore they are equivalent for connection. The like leads RS485 of P1 AND P2 are connected to the signal source via the segregating resistors that provides the communication workable on one terminal block even if other RS485 loop is shorted. So, it is required to wire the cabinet mounted serial devices via P1 terminal block and the remote serial devices to wire via P2 terminal block (refer to Fig.2-5...2-7).

If the GF-4200-LC and /or GF-4200-CZ10 modules are connected to the Panel as remote modules, it is preferable to use two wires cables: 14AWG for 24VDC and GND connection to the remote modules, 18AWG for RS485 connection to the remote modules.

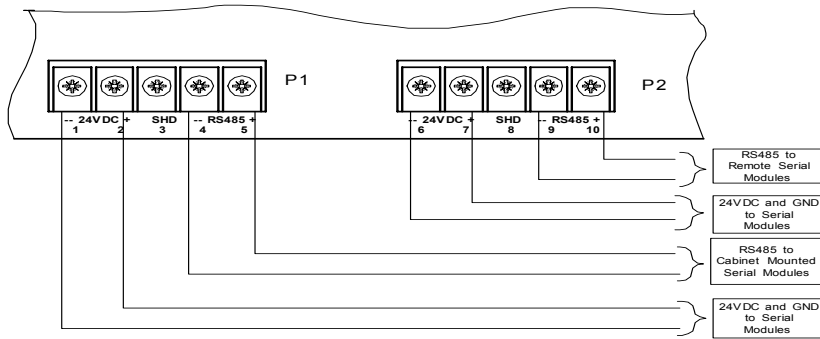


Fig.2-17. The RS485 and Power network wiring

### 2.6.4 MCC Relays wiring

There are three relays one is for TROUBLE and two are for ALARM, which is installed on the MCC module. It is allowed to switch by the relay dry contacts a voltage less than 240VAC.

### 2.7 System and Auxiliary Relays

The GF-4200-RC module (Fig.2-18) has two “C” form relays and provides connection or disconnection of two external loops by SPDT dry contacts. Any GF-4200-RC module may be connected to GF-4200-CZ10 or MCC modules via its connector. The modules may be mounted in the Main Cabinet (two module) which is connected to MCC module or GF-4200-CZ10 module, if it installed in the Main cabinet. Up to 5 FRC modules may be connected to the each remote GF-4200-CZ10 module, which is installed in Separated Cabinet. The GF-4200-EXP cabinet is intended for installation of one GF-4200-CZ10 and up to 2 GF-4200-RC modules in the one common enclosure. The GF-4200-EXP5 cabinet is intended for installation of one GF-4200-CZ10 and up to 5 GF-4200-RC modules in the one common enclosure. Refer to the 6.3.5 section for GF-4200-RC installing details. The GF-4200-RC modules are mounted on the high stand-offs therefore the relay pins to bottom distance is more than ½ inch. It allows commutating a power AC (120-240 VAC) by the relay contacts.

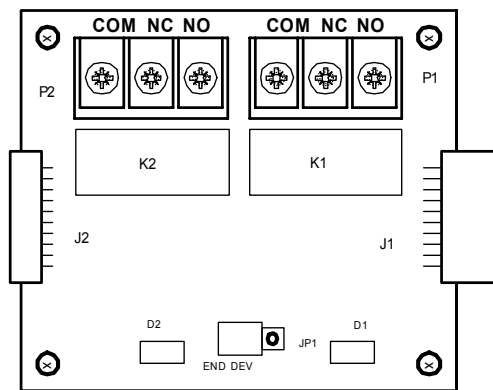


Fig.2-18 GF-4200-RC Module Diagram

## 2.7.1 GF-4200-RC SPECIFICATIONS

Parameter	Condition	Nominal	Unit
Standby Current Draw		2	mA
Alarm Current Draw	For each relay	25	mA
Contact rating	30VDC PF=1.0	10	A
Contact rating	240VAC, resistive	10	A
Contact rating	240VAC, inductive (PF=0.4)	3	A

## 2.7.2 GF-4200-RC installation in Main Cabinet

### Hardware Required:

- One GF-4200-RC module
- Four plastic screws
- Connection flat cable

The GF-4200-RC module is mounted into the Cabinet on the bottom stand-offs, refer to Fig. 2-2. Place module on stand-offs and tie it to stand-offs by plastic screws. Connect module by flat cable to MCC module or GF-4200-CZ10 module. Place the jumper JP1 on GF-4200-RC in END DEVICE position.

## 2.8 Conventional Zone Module (GF-4200-CZ10) Input Capabilities

The GF-4200 Panel includes the optional GF-4200-CZ10 module for the conventional detectors initiating. The GF-4200-CZ10 module provides five Class A initiating loops or ten Class B initiating loops. The GF-4200-CZ10 version supervises each of the Apollo smoke detectors – S60 and S65 type (refer to Appendix 5). All zone outputs are supervised and power limited. Up to 6 GF-4200-CZ10s can be connected to a single panel. The modules may be mounted in the standard Cabinet (one module) or in the Separated Cabinet. For GF-4200-CZ10 specification and installing details refer to Section 6.3

The general GF-4200-CZ10 specification parameters are shown in the below table.

Parameter	Class B	Class A	Unit
Zone Supervision Current	5	4.0	mA
Loop Short current	40	85	mA

## 3 System Controls & Operation

### 3.0 Control Panel

The Control Panel (PDC module) provides status System indication by LEDs, the system events indication by LCD screen and input/output system configuration parameters and command entering. The PDC module view is shown on Fig.3-1.

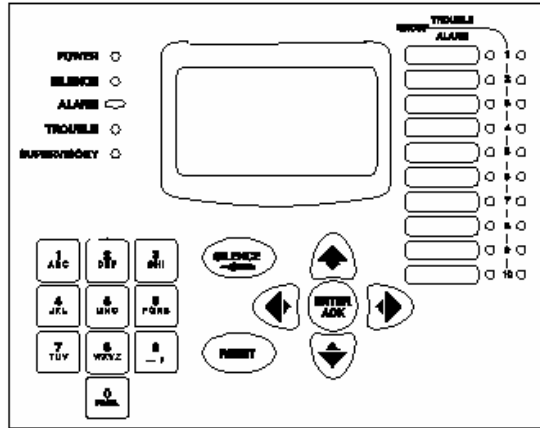


Fig.3-1. Control Panel (PDC module) view

### 3.1 System Display and Annunciation

#### 3.1.1 LCD Screen

The 160-character LCD screen displays all messages and information about the system. It is also used to display program menus, the time and date, and company name.

#### 3.1.2 LED Indicators

The system condition LED indicators are provided to indicate Power, Silence, ALARM, Trouble and PreAlarm placed on the left hand side.

There are ten Zones LEDs Alarm and Trouble placed on the right hand side. Each LED may be programmed for identification condition of Zones.

#### 3.1.3 Panel Control Keys

There are five panel control keys  $\uparrow$  UP  $\downarrow$  DOWN  $\leftarrow$ LEFT  $\rightarrow$ RIGHT and ENTER (In normal mode is used as the ACK key). These keys allow you to view more menu options when available. A  $\downarrow$  DOWN arrow on the lower right hand side of the LCD screen or an  $\uparrow$  UP arrow on upper right hand side of screen indicates another screen, therefore press the UP or DOWN keys to access.

#### 3.1.4 Function Keys

The SILENCE and RESET keys allow you to silence alarms and troubles and reset any off-normal condition. When the SILENCE key is activated, the panel's sounder and Notification Circuits will be silenced and the corresponding Silenced LED will illuminate and flash until the panel is reset or until another alarm is sensed. A second alarm condition will cause all previously silenced alarm conditions and the panel sounder to resound its audible tone. The RESET key is used to reset the system at any time in any menu or mode.

Pressing the RESET key will return the panel to normal operating mode, clear any off-normal condition from the status display; restore the alarm relay to normal state; extinguish all status LEDs except the green AC LED; and send a message to the display that a System Reset has been performed.

The SILENCE and ENTER panel control keys are found to the right of the function keys. The SILENCE key is used as the ESCAPE key in programming mode which allows you to exit any menu at any time without saving the information to the panel's memory and automatically moves to the down previous screen. The ENTER key stores the programming selection into the panel's memory and automatically moves to the up option screen.

### 3.1.5 Alphanumeric Keypad

To access a number, press the respective key once (the panel is automatically set up as a numeric keypad). To access the alphabetic keypad, press the respective key twice. The first letter on these selected keys will appear, to select the second letter, press the key again, and another time for the third letter etc.

## 3.2 System LED Indicators

### 3.2.1 Alarm

When the system has detected an alarm, an audible tone will sound and the red LED Alarm lights will illuminate. These lights will disengage when the alarm has been rectified and the system reset.

### 3.2.2 Trouble

The Trouble LED will indicate when there are any problems with the system. An audible tone will sound and the yellow LED Trouble light will illuminate. This light will disengage when the trouble has been repaired or when the ACK (ENTER) Key or the Silence key has been pressed or Reset key. IF set to latching trouble the ACK button will not disengage LED.

### 3.2.3 Silenced

When the Silenced key is pressed the SILENCE LED will illuminate (flash) until the system has been reset, or another alarm is activated the buzzer and Outputs are deactivated.

### 3.2.4 Acknowledge (Ack)

When the Ack (ENTER) key is pressed the buzzer is deactivated.

### 3.2.5 AC Power

When AC power is present, the green AC LED is illuminated.

## 3.3 Function Keys

### 3.3.1 Programming (PROG)

The panel is factory-programmed with a set of default settings allowing basic system installation with virtually no programming. The **PROG** key accesses all programming or test and history (reports information on past alarms, troubles, and status of the system) menus for programming of the system configuration.

### 3.3.2 Status

The **STATUS** key allows the user to obtain the current status or history of the system at any time. It browses the event history, checks an individual device status, reviews the power supply status, and checks what versions of hardware are attached to the system. Upon entering the STATUS Menu from the Main Menu press key **2** and the System Status screen will appear.

### 3.3.3 Test

The TEST function provides a menu with six test categories: Normal Walk Test, Silent Walk Test, NACs Outputs, Relay Outputs, LCD Display and Drill Test. Normal Walk mode is used to perform a one-person walk through test of any or all devices in the system. Upon completion of the walk through test, press < SILENCE> and the system will reset.

Note: After sixty minutes the Walk test will end and reset by itself.

The Silent Walk Test is the same as the Normal Walk Test. For the Silent test the NACs are disabled, therefore the sounder devices that are connected to the NACs will not perform.

The **NAC** (Notification Appliance Circuits) test allows you to test and turn off the circuits for horns, strobes, and any other audible/visual notification devices.

The **Relay** test allows you to turn on and off the relays.

The **Display** menu tests, the LCD screen and LED lights to verify operation. (this may be done silently, or with audible feedback).

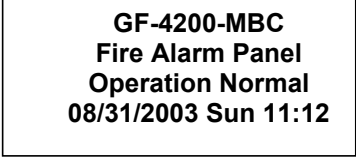
The **DRILL** Test allows for a fire drill, turning on all NACs and the output loop devices, but not transferring relays. Upon completion of the fire drill, press < SILENCE> and the system will reset.

## 3.4 System Operating Modes and Annunciation

### 3.4.1 Normal Operation

The following functions will be performed at regular intervals when in normal mode:

1. Supervises all SLC devices, network devices and the four notification appliance circuits.
2. Checks for valid replies, alarms, troubles, etc.
3. Checks for power supply and battery condition.
4. Scans keypad for System RESET.
5. Performs detector auto test
6. Supervised Network communications.
7. Performs time-scheduled actions (day/night sensitivity and on/off schedules)



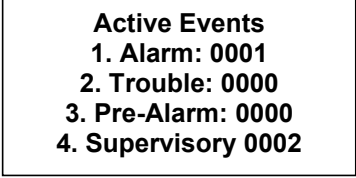
**GF-4200-MBC**  
**Fire Alarm Panel**  
**Operation Normal**  
**08/31/2003 Sun 11:12**

Fig. 3-2. Normal Operation Screen Example

**NOTE: The silence key will allow you at any time, to return back to the previous screen.  
The RESET key will allow you at any time, to escape from the program menu.**

### 3.4.2 Active Operation

You are able to see if you have any active Alarm or Troubles conditions. This screen describes the active events.



**Active Events**  
**1. Alarm: 0001**  
**2. Trouble: 0000**  
**3. Pre-Alarm: 0000**  
**4. Supervisory 0002**

Fig. 3-3. The Active Events Screen example

Use the **↑ UP** or **↓ DOWN** keys to see the active Alarm events.  
For the Trouble events use the **← LEFT** and **→ RIGHT** keys.

### 3.4.3 Trouble Operation

With no alarms, the detection of a trouble in the system will cause the buzzer to sound a coded output - three rapid pulses, then a pause, three rapid pulses, then a pause. The System Trouble LED will illuminate, and the trouble relay will activate. The following is a typical message that could occur on the Panel LCD.

```
TR: 0056      01:0030
01/01/2000  Mon 14:54
Device Removed
```

Fig. 3-4. The Trouble Message example

The first line lists the type of event code – TR (trouble), Event Number – 0056, and the Loop and Address where the event occurred. The second line is the Date and Time of the event and the third line contains a description of the Trouble Event Type. And two following lines maybe consists of point description.

### 3.4.4 Silence Operation

Pressing the SILENCE button will cause the buzzer to silence and the Silenced LED to flash. This occurs regardless of the number of troubles, alarms, and supervisory signals in the system (global silence). If the trouble clears (and troubles are configured as non-latching), either before or after Silence Event, the Trouble Restore message is sent to the displays.

### 3.4.5 Alarm Operation

Alarm operation is similar to Trouble operation, but with the following differences:

- 1) The buzzer is pulsed – 1 second on, 0.5 second off, 0.5 on and 1 second off.
- 2) The System Alarm LED illuminates
- 3) The Display reports an Alarm event (AL) with the address, date, and time in the top two lines
- 4) The label of the point in Alarm is displayed in the fourth and fifth lines
- 5) Alarms latch and are not allowed to clear
- 6) Alarms cause recalculation of all control-by-event
- 7) Timers (Silence Inhibit, Auto Silence) are started
- 8) Alarms activate the general alarm relay, default Group 201, and other Output Zones the input is mapped to.

```
AL: 0056      01:0030
01/01/2000  Mon 14:54
Floor 2 Main Hall
```

Fig. 3-5. The Alarm Message example

### 3.4.6 Supervisory Action

Supervisory operation is similar to an Alarm operation, with the following differences:

- 1) The buzzer is a coded sound – Long pulse, a short pause, rapid pulse, then a long pause.
- 2) The Alarm LED illuminates.
- 3) The display reports a Supervisory Event (SP) with address, date and time in the first two lines, the label is displayed in lines 3 and 4.



<b>SP: 0056</b>	<b>01:0030</b>
<b>01/01/2000</b>	<b>Mon 14:54</b>
<b>Tamper Switch</b>	
<b>Warehouse</b>	

Fig. 3-6. The Alarm Message example

### 3.4.7 Program Mode Operation

When another mode is selected at the keypad (other than normal operating, alarm or trouble operation modes), the system is considered in an off-normal condition. The panel has a built in safeguard that protects it from being left in an off normal mode. After five minutes the panel will automatically reset, locking in any programming changes, and return to normal operating mode.

## 3.5 Addressable Detector Functions

### 3.5.1 General Functions Description

The addressable temperature detectors convert analog values read at the detector head and communicate the values back to the control unit, where decisions are made based on the detector's readings. Following is a review of the features and functions relative to the detectors that are available from the control system.

### 3.5.2 Sensitivity Adjustment

Alarm levels for the intelligent detectors may be manually set within the UL range. There are three system level programmable settings: high, medium, or low. Values associated with the High, Medium and Low settings are user programmable within the UL approved range. Each detector may then be set to one of the three levels. Note: Ionization detectors used in duct applications must be set to high sensitivity.

### 3.5.3 Day/Night Sensitivity Adjustment

The system can be programmed to automatically adjust the smoke detectors to a lower sensitivity during times the location is normally occupied during the day, and to return to a more sensitive setting when a location is not occupied.

### 3.5.4 Alarm Test Level Measurement

The panel software periodically commands each detector to simulate an alarm level reading from the sensing chamber.

Note: Only for Apollo XP95A detectors excluding Heat detectors.

### 3.5.5 Automatic Test Operation

The control panel performs an automatic test of each detector once every 24 hours. Failure to meet the test limits causes a Service Alert trouble type. System Reset clears this trouble.

### 3.5.6 Type Code Supervision

The control panel monitors hardware device type codes on a regular basis. Mismatch of type compared to the program will cause a point trouble. Trouble label is DEVICE TYPE WRONG.

### 3.5.7 LED Control Operation

The panel includes a global program selection to control blink of detector LEDs during normal conditions. This is often desired in sleeping areas where the flashing light may be objectionable (**For detectors ONLY**).

### 3.5.8 Alarm Verification Operation

The panel performs alarm verification on selected intelligent smoke detectors. The verification time is a global system program selection of 0 to 60 seconds.

## 3.6 Notification Appliance Circuit (NAC) Operation

The four output circuits may be programmed as Notification Appliance Circuits or 24VDC auxiliary power outputs. The outputs are programmable for event- or time-based operation and function similar to output modules on the SLC loop. Notification Circuits may be used for Continuous Output or **coded functions** - March Time or Temporal. NACs may be Silenceable (for horns or bells) or continuous (for strobes), or as Input zones.

Notification Appliance Circuits may be programmed at the global system level for certain timing operations including: Silence Inhibit for up to 5 minutes and Auto Silence from 0, 15, 30, 45 and 60 minutes.

NOTE: Auto silence set to "0" means that the auto silence feature is disabled.

## 3.7 Module Operation

There are three basic types of Modules available on the SLC loops:

- Switch (Contact) Monitor Modules
- I/O Module
- Sounder Control (Output) Module

### 3.7.1 Contact Monitor Module

The contact monitor module is available in two package sizes and two operating modes:

- Priority Mini Monitor Module
- Priority Monitor Module

The regular modules are packaged to mount into a 4-square back box. The mini-modules are reduced in size to mount in a single gang box.

The priority module will interrupt the panel's polling function when initiated, and provide a faster response to initiation. All monitor modules may be programmed to perform the same functions.

Contact Monitor Modules may be programmed for any of the following operations:

- Alarm Input – defaults to Group 201 with associated functions – latching
- Manual pull station – defaults to Group 201 with associated functions – latching
- Water flow alarm input – defaults to Group 200

### 3.7.2 I/O Module

The input/output module functions in two modes. When selected as an I/O-input, a set of Form C contacts follow that input (if the input is activated, the Form C contacts energize or change state). Input defaults to Group 201. When selected as an I/O-relay, the module functions as an output and may be included in up to 10 output Zones (the input is ignored).

Note: The I/O module defaults to relay. This may be changed on the Point Edit Screen (see Appendix E).

### 3.7.3 Sounder Output/Sounder Control Module

The Sounder Output modules control and supervise compatible 24VDC notification appliances. Each Sounder Output has the following programmable attributes:

- Silence ability
- All Call
- Output Schedule
- Output Group Assignments
- Courtesy Label

### 3.8 The Active Events Screen (History)

By using the  $\uparrow$  UP and  $\downarrow$  DOWN arrow keys we are able to read the Alarm or Supervisory events. The  $\uparrow$  UP arrow key allows you to see the last or first Alarm or Supervisory events.

The  $\downarrow$  DOWN arrow key allows you to see the last Alarm or Supervisory event, and to return to Active Events Screen.

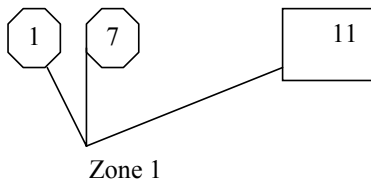
By using the  $\leftarrow$  LEFT and  $\rightarrow$  RIGHT arrow keys we able to read the Troubles events. The  $\leftarrow$  left arrow key allows you to see the last or first Troubles events. The  $\rightarrow$  right arrow key allows to see the last Trouble event, and to return to Active Events Screen.

### 3.9 Zones Settings

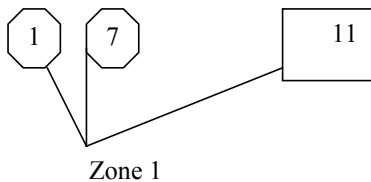
There are 250 Zones. Each programmable point (detectors, monitor points, I/O-inputs, or Conventional Inputs and Outputs) may be a member of ten Zones.

Each Zone performs one function operation via output device or devices.

Examples of two conditions as shown in Fig.3-7. First example is activating sounder 11, if one of the detectors is in an alarm condition. Example two is activating sounder 11, if two detectors 1 & 7 are in an alarm condition.



1. Sounder (11) – ON condition, if detector 1 **OR** detector 7 is in an alarm condition.
2. Sounder (11) – ON condition, if detector 1 **AND** detector 7 are in an alarm condition.



3. Sounder (11) – ON condition, if detector 1 **OR** detector 7 is in an alarm condition.
4. Sounder (11) – ON condition, if detector 1 **AND** detector 7 are in an alarm condition.

Formatted: Bullets and Numbering

Fig.3-7. Example of Zones setting

There are ten Zones LEDs Alarm and Trouble. Each Led may be programmed for identification condition of Zones e.g. If I wanted Zone: 1 LED to come on when group one is in an Alarm condition.

## 4 System Programming

### 4.1 Before you begin programming

To enter the Main Menu the GF-4200 must be in **normal operation condition**, which appears in the first five seconds after initialization process (Screen "Please Wait") or all time, when the system works without active event(s).

#### 4.1.1 Access Privilege code

For entering the Main Menu press the **PROG** key, you can see the Enter Access Codes screen enter the level 1 code or level 2 codes to enter the Main Menu access your level 2 codes (default 22222222). If the system has active event/s press the **RESET** key and wait until the normal operation condition screen will appear, then press the **PROG** key. The Normal Screen example is shown on Fig. 4-1



Fig.4-1 Normal Screen View

### 4.2 Program Menu

The Main Menu has two options:

1. Program
2. Status

Press "1" for entering to Program Menus. The Program Menu has nine options:

1. Real Time Clock
2. System Options
3. Network Settings
4. Input Settings
5. Output Settings
6. Point Settings
7. Group Settings
8. PC Com
9. Factory Default

These options are in two screen pages, in the first page item 1 up to 6, and in the second screen items 7 to 9 to move to one page to another use the **UP** or **DOWN** arrow keys.

Below describes the Program Menu Options.

#### 4.2.1 Real Time Clock

Press: **1** to set the clock date and time by using the **UP** or **DOWN** arrow keys to move to the next point. Use the **LEFT** or the **RIGHT** arrow keys to change the value of the point. Press the **SILENCE** key to move back to the previous screen.

## 4.2.2 System Options

The System Options Screen has 7 options.

1. Banner Message
2. Access Codes
3. Options & Timing
4. Day/Night Setting
5. ON/OFF Setting
6. Holidays

### 4.2.2.1 Edit Banner Message

Press: **1** to change the banner message, press either the ⇐LEFT or the ⇒RIGHT arrow keys to move back or forth to the next letters or numbers. To change a letter or number press the required number key until you have reached the required value. Press **ENTER** to store Banner Message or **SILENCE** to move back to previous screen

### 4.2.2.2 Access Codes:

Press: **2** to change the Access Codes levels 1 or 2 press either the ⇐LEFT or the ⇒RIGHT arrow keys to move back or forth to the next numbers. Press **ENTER** to store Access Codes or **SILENCE** to move back to previous screen.

### 4.2.2.3 Options & Timing

These options have 8 items:

1. Latch Troubles
2. Trouble Reminder
3. Auto Silence
4. Sil. Inhibit
5. Alarm Verify
6. Output Delay
7. Hour Format
8. AC Fail Delay

By using the ↑ UP or ↓ DOWN arrow keys to move to the next point. Execute required setting Press **ENTER** to store Options & Timing or **SILENCE** to move back to previous screen.

#### 4.2.2.3.1 Latch Troubles:

Press the ⇐LEFT or the ⇒RIGHT arrow keys for Y (Yes) or N (No) Y will cause all trouble conditions to latch. Latching means that all trouble conditions will require the trouble to be resolved and the system reset prior to returning the system to normal operating condition. When the N (NO) option is selected it will allow the trouble-restore operation. A restore operation will return the panel to normal operating condition when a trouble condition has cleared or resolved. Any relays not selected for a latching operation will return to normal state, and a 'trouble-cleared' message will be sent to the event history.

#### 4.2.2.3.2 Trouble Reminder:

Press the ⇐LEFT or the ⇒RIGHT arrow keys for Y (Yes) or N (No) Y. Select yes to silence trouble conditions and provide an audible "error" signal every 5 minutes. Subsequent new Troubles will cause trouble operation to resound, and Silence will recycle the 5-minute trouble reminder signal.

#### 4.2.2.3.3 Auto Silence:

The Auto Silence function can be set by pressing the ⇐LEFT or the ⇒RIGHT arrow keys toggling between 0, 15, 30, 45, and 60 minutes. This will automatically silence alarm and trouble alerts after the specified time.

**4.2.2.3.4 Sil. Inhibit:** To provide a silence inhibit period, Press the ⇐LEFT or the ⇒RIGHT arrow keys to toggle between 0, 30, 60, 90, 120, 180, 240, and 300 seconds. This selection will prevent silencing of all enabled NAC or sounder outputs for the specified time.

#### 4.2.2.3.5 Alarm Verify:

Program the alarm verification time (Alarm Verify) by pressing the ⇐LEFT or the ⇒RIGHT arrow keys and entering any amount of time from 0 to 60 seconds. This sets a period of time in which the panel can confirm an alarm condition on inputs that have been selected for Alarm Verification before reporting an alarm.

**Alarm verification is only available for Photoelectric and Ionization detectors.  
Alarm verification may not be used with devices having their own alarm verification capabilities.**

#### 4.2.2.3.6 For Future Use:

#### 4.2.2.3.7 Hour Format:

Press the ⇐LEFT or the ⇒RIGHT arrow keys to toggle and select 12- or 24-hour clock modes.

#### 4.2.2.3.8 AC Fail Delay:

AC Fail Delay defines the time delay of report to DACT about this event. The AC Fail Delay is released the time values 0, 8 and 16 hours.

### 4.2.2.4 Day/Night Setting (Used for Detectors)

The day night setting has four schedules each schedule consists of six lines of options for detectors. You can toggle between the point's position by using the ↑ UP or ↓ DOWN arrow keys, and toggle to change the point's value by pressing the ↑ UP or ↓ DOWN arrow keys.

First line changes the schedule from 1 to 4 by pressing the ⇐LEFT or ⇒RIGHT arrow keys.

In the second line, chose the days of the week when the schedule is active by pressing

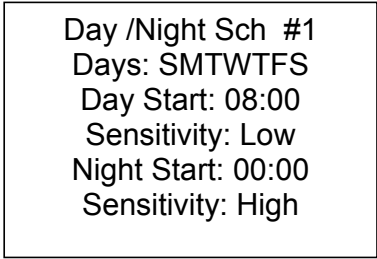
In the third line choose the schedule day start time.

In the fourth line chose schedule day sensitivity between low, medium and high.

In the fifth line chose the schedule night start time.

In the sixth line chose schedule night sensitivity between low, medium and high.

Press **ENTER** to store Day/Night Setting or **SILENCE** to move back to previous screen. By default the Day /Night Sch #1 with full days of the week. Default Day/Night Setting is shown on Fig. 4-2



```
Day /Night Sch #1
Days: SMTWTFS
Day Start: 08:00
Sensitivity: Low
Night Start: 00:00
Sensitivity: High
```

Fig.4-2. Default Day/Night Setting Screen

### 4.2.2.5 On/Off Setting (Used for Outputs)

The On/Off Setting has four schedules each schedule consists of four lines of options for output devices. Each output device can be activated and deactivated three times during a 24hr day according to its schedule. Outputs may be used in anyway needed in any schedule. Example of this Screen as shown in Fig. 4-3

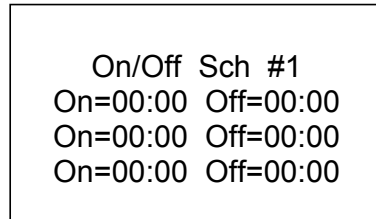


Fig.4-3. On/Off Setting screen Example

### 4.2.2.6 Holidays (Used for Detectors)

The holiday function is used only with detectors. The Panel allows to program up to 20 annual holidays to work in conjunction with day or night sensitivity schedules. When day is a holiday panel choice is night sensitivity level. You can toggle between the point's position by using the ↑ UP or ↓ DOWN arrow keys, and toggle to change the point's value by pressing the ⇐LEFT or the ⇒RIGHT arrow keys. Press **ENTER** to store holidays or **SILENCE** to move back to previous screen.

### 4.2.3 Network Settings

The Network menu allows you to scan the RS-485 network for network residents and auto-scan, or review the network residents and addresses.

The Network settings consist of the following three functions:

1. Scan Devices
2. Browse Devices
3. Remote Reset

You can toggle between the point's position by using the ↑ UP or ↓ DOWN arrow keys.

The Scan key searches for all network devices.

To browse through the network devices press number **2** this screen displays the address, type, status of each device, and firmware version and allows you to scroll through the network of devices by using the ↑ UP and ↓ DOWN arrow keys.

#### Remote Reset

Remote reset is used to disable or enable the Reset function of the remote keyboards. Up to 15 remote GF-4200-LCD's can be installed to a system. Use the ⇐LEFT or the ⇒RIGHT arrow keys for Y (Yes) or N (No).

### 4.2.4 Configuring Inputs.

The input options consist of two items:

1. Options
2. Sensitivity

#### 4.2.4.1 Input Options

Options have Test Time and Disc LEDs Flash.

Test Time: the default test time is 00:00 to change the default time use the ⇐LEFT or the ⇒RIGHT arrow keys to change the value and the ↑ UP and ↓ DOWN keys to move to the next point, excludes Heat detectors and detectors.

The control panel performs an automatic test of each sensor once every 24 hours. Failure to meet the test limits causes a Service Alert trouble type. System Reset clears this trouble.  
Disc LEDs Flash: LED Blink allows you to toggle between “yes” and “no” for enabling or disabling the blinking of the sensors’ LEDs (note that enabling LED blink is for detectors only).  
Press ENTER to store Options or SILENCE to move back to previous screen

#### 4.2.4.2 Alarm Sensitivity Levels

The Sensitivity menu is used to set the high, medium, low system and Pre-Alarm settings for the ion, photo, multi and heat detectors at the system level. To change the ranges for Ion Photo and Multi, and set the Heat Sensor alarm point, press the respective number and a screen with Low, Medium, and High will appear. To program each range, press the ⬆ UP or ⬇ DOWN keys to move to the next point and the ⬅LEFT or the ➡RIGHT arrow keys to change the value. Press ENTER to save the levels.  
Note: You will select the individual device sensitivity (High, Medium or Low) in Point Programming. Multi and Ion are at fixed levels for High, Medium and Low.  
Press ENTER to store Sensitivity or SILENCE to move back to previous screen.

#### 4.2.5 Configuring System Outputs

The Output Settings consist of four items:

1. Define NACs
2. Configure NACs
3. GF-4200-RCs On MCC
4. GF-4200-RCs On GF-4200-CZ10s

This option configures the four 24V DC outputs of the panel. Output circuit options for each of the four NACs include 24V DC auxiliary power (resettable or not-resettable), and Reversing Polarity continuous (Steady), March time, and ANSI temporal 3 patterns.

##### 4.2.5.1 Notification Appliance Circuits (NACs)

Define NACs allows to select either as Input or Output.  
The Configure NACs menu is used to program the 24VDC output circuits found within the system. By pressing the ⬆ UP or ⬇ DOWN arrow keys moves the cursor to the next point, the ⬅LEFT or the ➡RIGHT arrow keys allows you to select between five options for each output: NAC-ST (Steady output) NAC-TC (Temporal Code output) NAC-MT (March Time output), PSRst (Power Supply, Resettable), and PS-Con (Power Supply, Continuous).  
Press ENTER to store Configure NACs or SILENCE to move back to previous screen.

##### 4.2.5.2 Zone Relay Modules (GF-4200-RC)

The GF-4200-RC screen provides the MCC with the number of GF-4200-RC programmable relay modules installed on the system.  
Use the ⬅LEFT or the ➡RIGHT arrow keys to move between 0 and 5 to set how many zone relay modules are connected to the system. Each GF-4200-RC relay can be configured under the Points menu from network number 17:017.  
Press ENTER to store GF-4200-RCs on MCC or SILENCE to move back to previous screen.

#### 4.2.6 Point Programming

Point Settings Screen has 6 options:

1. Scan Points
2. Browse Points
3. Features
4. Sync Sounder
5. Manual Scan Point
6. Single Loop Scan
7. Maintenance Value



### 4.2.6.1 Auto - Program

The Point Settings menu is used to automatically program the system by scanning the system, each GF-4200-LC, and the network for programmable points.

Each time a change is made in programming the system, GF-4200-LC, or Network devices (adding or deleting and changing type), you must rescan the loops by either Auto-Program, Manual Scan Point or Single Loop Scan.

If device has changed, added, removed, device multiplied you can see this message on the screen. Choose one of the following options:

- 1. Okay 3. Okay to All
- 2. No 4. No to All

Okay means when you agree to change this one point, Okay to all you agree to change all of the points, No you agree to change this one point and No to All you agree to change all of the points.

### 4.2.6.2 Point Programming Options - Browse

The Browse Point menu will allow the user to edit a point, or browse through the point data, one point per screen, by pressing the  $\uparrow$  UP and  $\downarrow$  DOWN arrow keys to move between them.

Pressing **ENTER** allows the user to edit the point data on that screen. Pressing either the  $\uparrow$  UP and  $\downarrow$  DOWN arrow keys will allow you to move between the points parameters. This menu will allow you to program the MCC, GF-4200-LCs, GF-4200-CZ10s and GF-4200-RCs points.

There are different point parameters for Detectors, Outputs and Inputs. The Detectors and Outputs parameters are displayed by two Screen pages and Inputs parameters by one page.

The common parameters are shown below:

- Enable or Disable.
- Point Description (two lines).
- Groups (ten groups).

The parameters of the Detectors are:

- Mode can be used for Alarm or Supervisory
- Sensitivity - Sch #1, Sch #2, Sch #3, Sch #4, Low, Medium or High
- Alarm Ver (Verification) Time -Y or N

The Output parameters are:

- Sil.(Silenceable) – Y or N
- Call – Y or N
- Schedule - Sch #1, Sch #2, Sch #3, Sch #4, NoSch
- Delay – Y or N

The input parameter Mode can be used for – Alarm, Waterflow, Switch or Supervisory

The example below Fig.4-4 shows the first page for the NAC Output point.

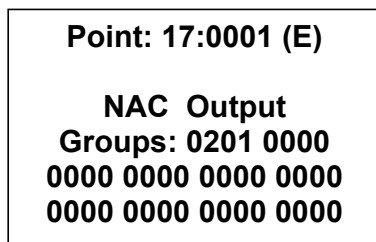


Fig.4-4. Browse screen example

### 4.2.6.3 Features

features screen is used to program the advanced features of detectors.

address

Loop: 01

Point: 0001

Point: <ENTER>

commands:

0. Type Code Tells you which kind of detector e.g. Ion, Photo, Multi and Heat.
1. Manufacture Date The date the detector was manufactured e.g. January 2003.
2. Approval Data Approval type UL or EN.
3. Drift Data Is the visual indication of the detector contamination. A level of 16 is the factory carbureted limit for 0 contaminations. The flag drift is set when the detector has reached its limit of contamination.
4. Rapid Update Rapid compensation to initiate rapid compensation, the device samples its environment within a 30 second period, and assumes that this constitutes a 'normal' condition.
5. Sensitivity Mode The sensitivity mode may be changed during commissioning. Each detector in the range can operate in one of five sensitivity modes, any of which can be selected from the control panel. Each mode corresponds to a unique response behavior, which can be broadly related to sensitivity to fire. Whatever the type of detector, mode 1 will give the higher sensitivity to fire than mode 5. Therefore, detectors set to mode 1 will be most suitable for environments in which sources of unwanted alarms are rare, for example clean rooms and computer suites. At the other extreme, response mode 5 will be suited to more dusty or smoky environments such as loading areas where diesel forklift trucks are operating. Response mode 3 is a general-purpose setting for which the response is similar to that of the corresponding XP95 detector.
6. Test is to test detectors (excluding heat detectors) the test takes about 45 sec.

### 4.2.6.4. Sounder Control Module (Synchronization Facility)

#### General

The sounder control module is intended to monitor and control one circuit of alarm sounders. The module incorporates a synchronization facility which allows the outputs of groups of modules to be synchronized by commands from the control panel. The unit is mounted on a plastic fascia plate suitable for fitting on a 4 "square box. A red LED indicator, visible through the fascia is provided.

#### Synchronization

In order to allow groups of modules to be operated synchronously, each sounder module can be arranged to respond to a second address, independently of its own unique device address.

This second address must be in the range of 112 to 126 (Look Fig.4-5) and can be shared by any number of sounder modules on the loop. Any module in which this feature is enabled will respond to its unique device address (Look Fig.4-6) in the normal way, but will also accept commands at the sounder group address. An eight position dip switch allows for setting the device address and whether the notification appliance circuit (NAC) is wired to the module as a Class A (Style Z) or Class B (Style X) circuit.

When synchronization is used you are able to use points from address 1 to 111, because points 112 to 126 are used as group addresses for the sounder control.

#### Note:

**If you employ the synchronization feature and return to normal mode YOU MUST SCAN POINTS AGAIN. The sounder control module must be programmed as no schedule for a group device.**

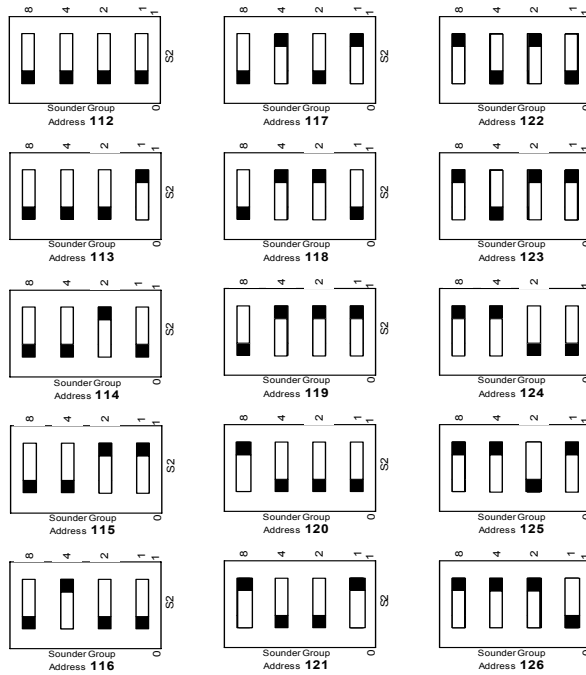


Fig.4-5 The Group Address Setting on Sounder Control Module (55000-825)

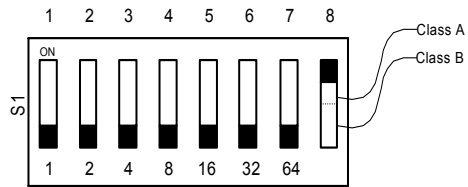


Fig.4-6 Individual address and Class A/B setting dip switch (55000-825)

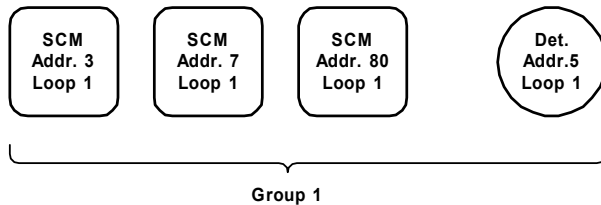


Fig.4-7 Example of combined the any SLC devices in one group

### Synchronization Facility Program example

Lets consider for example, when the Group # 1 includes three Sounder Control Modules that have the individual addresses 3,7, 80 and one Detector with address # 5 (Fig.4-7). For combining of this Group it is need to turn the Group address 112 on combined Sounder Control Modules by them Group Dip Switches (Fig.4-5) and to program on the panel:

1. To set **SYNC** mode for GF-4200-LC module Addr.0 (Loop 1)
2. To set **NO SCHEDULER** mode for SLC devices with addresses 3, 7, 80.
3. To set **NO SCHEDULER** mode for SLC device with address 112

The sequence actions example for Synchronization program is shown on Fig.4-8

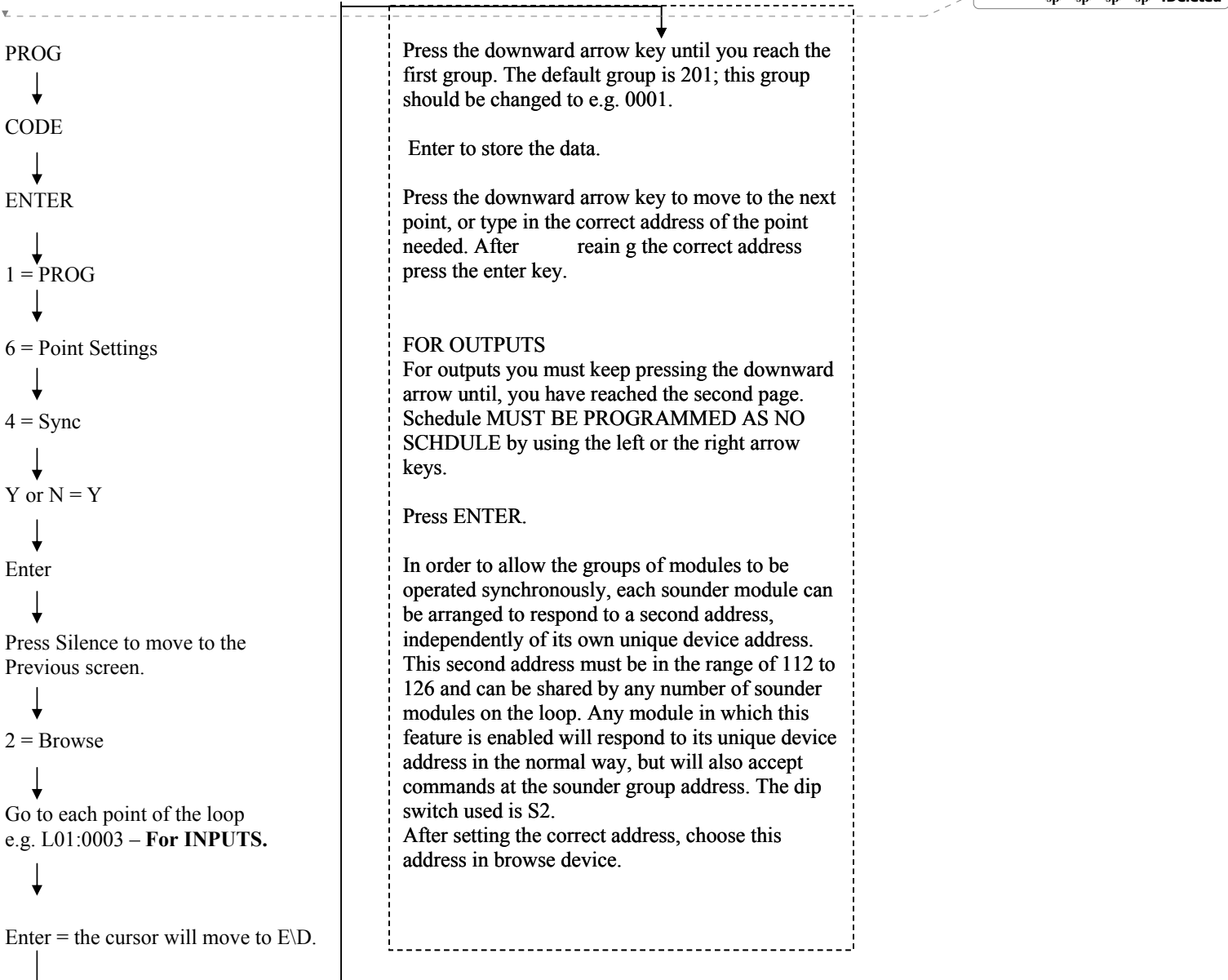


Fig.4-8. The action sequence for Synchronization Facility programming

### 4.2.6.5 Manual scan point

Manual scan point is used to quickly remove or add devices to a loop:

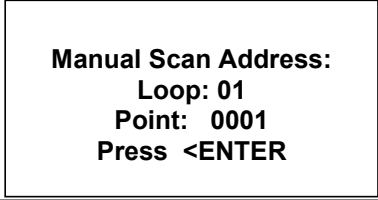


Fig.4-9. The Screen Example for Manual Scan Addresses mode

Toggle to change the point's value by pressing the ←LEFT or the →RIGHT arrow keys and ↑ UP and ↓ DOWN arrow keys to move between the point positions.

### 4.2.6.6 Single Loop scan

Single Loop scan point is used to quickly remove or add devices to a loop:

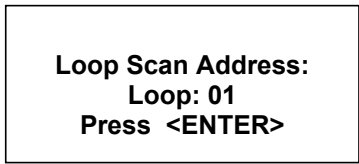


Fig.4-10. The Screen Example for Single Loop Scan mode

Toggle to change the point's value by pressing the ←LEFT or the →RIGHT arrow keys and ↑ UP or ↓ DOWN arrow keys to move between the point positions. By using the Maintenance Value option the panel is able to read the Analog value of the detector.

### 4.2.7 Group Settings

All Input, Output devices, Detectors and Conventional Zones may be combined into separated groups. There are maximum 250 groups. The Output Devices of the specific group will be active at Alarm condition if alarm was recognized by Input Devices and Detectors, which are included in this specific group. Each separated group has an independent alarm counter that counts the recognized alarm events. The Panel comes in Alarm condition, if the counter status will be equaled to its maximum value. For each separated group it is possible to set Alarm counter maximum value and to specify the LED, which will be lighted at Alarm or Trouble condition.

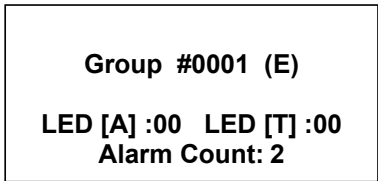


Fig.4-11. The Group Setting screen Example

Where: (E) – enable/disable group; LED [A]:00 – alarm LED and its number; LED [T]:00 – Trouble LED and its number; Alarm Count: 2 – alarm count maximum value

After Factory Default reset the all Input, Output devices, Detectors and Conventional Zones are included into the 201Group that is used as the default group for Alarm condition.

### **4.2.8 Factory Defaults**

The Factory Defaults menu allows you to restore the panel to factory set default values for all programming options. The display will ask you to confirm that you want to reset the panel.

Resetting the panel to factory defaults will clear all edited values.

# 5 Special Application Programming and Operation

## 5.1 Protective Signaling System

The GF-4200 Panel maybe used as a NFPA 72 Remote or Central Station. In this case the DACT must be connected to the GF-4200 Panel. The GF-4200 connection wiring diagram to the DACT Model 5104B of Silent Knight is shown as below.

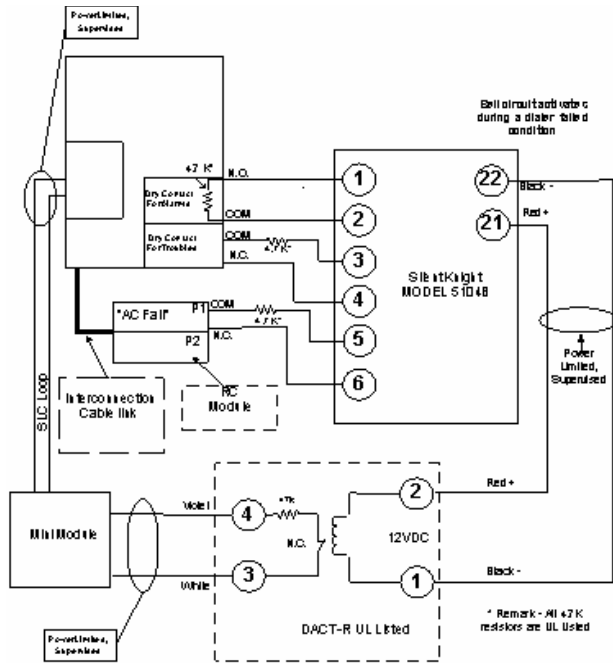
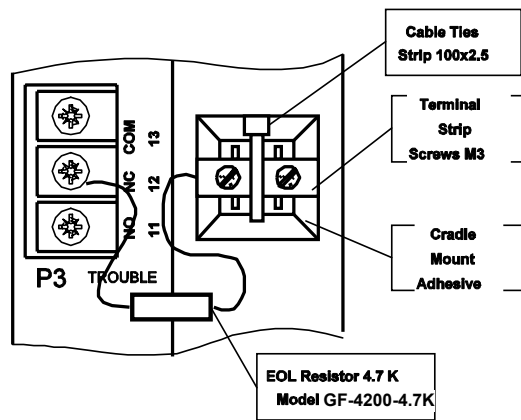


Fig.5-1 GF-4200 Panel to the Silent Knight Model 5104B Dialer connection diagram

The DACT (Silent Knight Model 5104B) receives via three relay the information about ALARM, TROUBLE and AC Fail from GF-4200 panel. The GF-4200 panel receives the DACT TROUBLE signal via feedback, which is implemented by the Mini Module (55000-830) and the GF-4200-DACT-R. The DACT-R diagram is shown below. Mount the EOL resistors as shown in the example below.



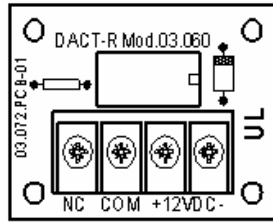


Fig.5-2 GF-4200-DACT-R diagram

### 5.2 GF-4200 and DACT 5104B Installation

The GF-4200 panel and DACT Silent Knight Model 5104B must be installed close one to one on distance not more than 6 m (20 ft). All wires should be placed in the conduits. The DACT Relay (GF-4200-DACT-R) must be secured to the its standoffs The Mini Switch Monitor should be placed in the upper left corner of cabinet and wired according to the Fig.5-3. The wiring example for connection to the DACT Model 5104B is shown below

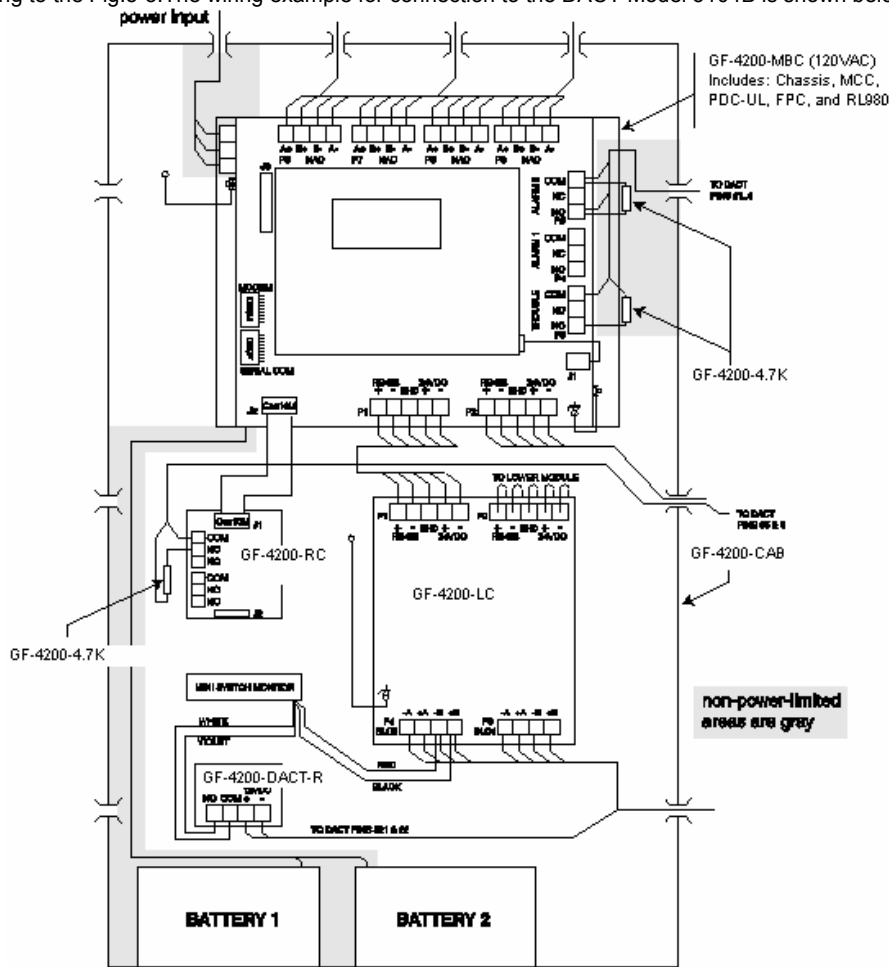


Fig 5-3 Wiring example for DACT Model 5104B connection to the GF-4200



### 5.3 NFPA 72 Central Station

For the UL minimum requirements for a central station monitored system.

To program the panel for NFPA 72 Central Station Operation requires two steps:

1. Establish the AC Fail delay in the System Level
    - Select PROG function key
    - Select 1.Program
    - Select 2 – System Options
    - Select 3 – Options & Timing
    - Select AC Low Delay and toggle to select 8-hour delay
  2. Connect UL listed and compatible Silent Knight Dialer model 5104B as shown in Manual.
- Note: To be used only with GF-4200-RC module (first relay) connected to MCC.

### 5.4 NFPA 72 Remote Station

The UL minimum requirements for a remote station monitored system.

To program the panel for NFPA 72 Remote Station Operation requires two steps:

1. Establish the AC Fail delay in the System Level
    - Select PROG function key
    - Select 1.Program
    - Select 2 – System Options
    - Select 3 – Options & Timing
    - Select AC Low Delay and toggle to select 16-hour delay
  2. Connect UL listed and compatible dialer Silent Knight Model 5104B as shown in Manual.
- To be used only with GF-4200-RC module (first relay) connected to MCC.

### 5.5 Supervisory Point Programming

Any switch monitor module point on the SLC or any conventional input point on the serial bus may be programmed for supervisory operation.

**PLEASE NOTE: For NFPA applications, no more than 20 normally open supervisory devices may be utilized on any zone.**

To program an input point for supervisory alarm operation, follow these steps:

1. Install monitor module and connect.
2. Set module SLC address.
3. Select **PROG** from the menu.
4. Select 1. Points from the main programming menu.
5. Select 6. Point Settings. Then select 1 Scan Points wait while the panel loads the “new” device information.
6. To access the monitor device you wish to use for the waterflow device:
  1. Select 2 Browse. Point, and then enter the loop. Press **ENTER**, then the down arrow, until you reach mode use the ⇐LEFT or the ⇒RIGHT arrow key until you reach supervisory.
  7. Press **ENTER**

# 6 Serial Devices and Networking

## 6.0 General Description

The GF-4200 has the capability to communicate with up to 25 devices over an RS-485 network. All network devices are 4-wire devices, two wires are required to provide 24VDC power and two for the network communications. Connect the network communication and power wires to the network connector on the MCC and any network device, being careful to observe the “+” and “-” connections. The MCC P1 terminal block is used for internal Main Cabinet connection and the MCC P2 terminal block is used for remote devices connection (refer to sec. 2.6.3)

### 6.1 Display Annunciator (PDC)

The Program Display Module (PDC) provides system status indication by LEDs placed on the left hand side of the PDC. The five LEDs indicate the following: AC, Silence, Alarm, Trouble and PreAlarm conditions. The LCD screen shows the system events and is also used for system configuration.

The PDC module view is shown below Fig.6-1.

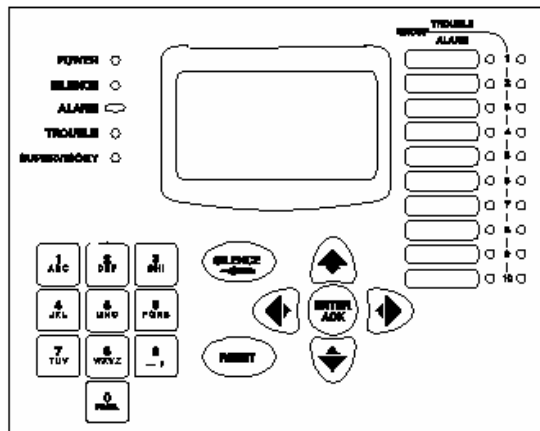


Fig.6-1. PDC module view

There are two PDC versions according to the table shown below. The local PDC-UL keypad is mounted on the Common Device (MCC, FPC, PDC-UL and Power Supply mounted on the chassis) and connected to the MCC module via a specific port.

Model #	Local/Remote	Standard	Name
GF-4200-LCD	Remote	UL-864	GF-4200-LCD
03.083	Local	UL-864	PDC -UL

#### 6.1.1 Remote Display Annunciator

In addition to the local PDC-UL the GF-4200 also allows to connect the remote Display Annunciator (Remote Annunciators). The maximum amount of Remote GF-4200-LCD that can be connected to one Panel is 15. The Remote Annunciator is intended for recessed mounting and includes the Remote module and the Remote Cabinet Enclosure. The annunciator board (pos.1 as shown in Fig.6-2) is tied by four nuts to the frame (pos.3) and from the back side the frame is tied to the box (and shown in pos.2) by four screws (pos.4). The annunciator module is connected to the proprietary RS-485 network. The address of Remote may be from “1” up to “15”, it is put on by DIP switch on the annunciator board. The Remote Annunciator will mimic the Local Display at the main panel and allows Silence and Reset functions.

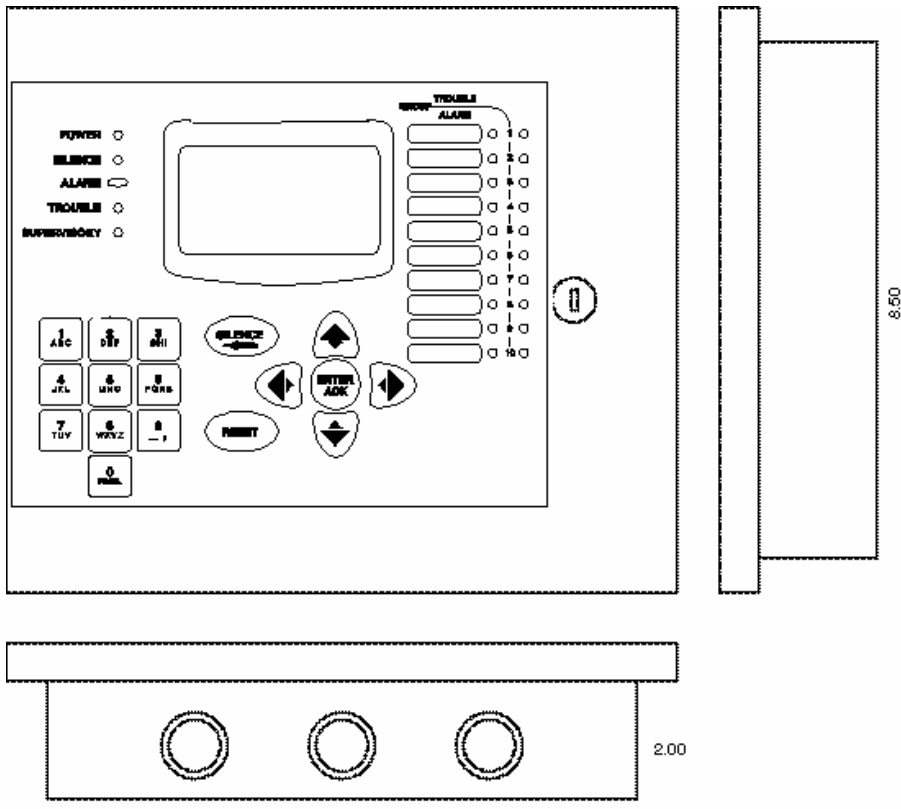


Fig.6-2. Remote Cabinet Diagram

### 6.1.2 GF-4200-LCD SPECIFICATIONS

GF-4200-LCD module contains:

- Graphical LCD display 64x128 points with LED backlight
- 17 key keyboard.
- 25 System Status LEDs
- Piezo buzzer

GF-4200-LCD module provides the following functions:

- Indication by LCD screen of the system events and input/output system configuration parameters.
- LCD indication font – 6x8 points for one character
- Characters quantity – 160 (8 lines x 20 characters)
- Multilanguage options - according to customer order.
- System command entering by keyboard
- System status indication by LEDs
- Communication with main Panel – by RS485 internal network

GF-4200-LCD parameters are shown below

- Nominal power supply voltage - 24 VDC
- The GF-4200-LCD standby current draw – 19 mA
- The GF-4200-LCD alarm current draw without backlight – 25 mA
- The GF-4200-LCD alarm current draw with backlight (10 sec. after push of key) – 80mA

### 6.1.3 Remote Cabinet installing

The Remote Cabinet is intended for recessed mounting. Prepare the hollow (10"x8.5"x2") in the wall and install the wire conduits according to your system configuration. Loosen the screws and remove Frame. Open the needed knock holes and tie the enclosure to the wall by screws in the wall hollow. Connect power and network to GF-4200-LCD according to next paragraph. Place the Frame with module on mounted enclosure and tie it by screws.

### 6.1.4 GF-4200-LCD connection to RS-485 network

The GF-4200-LCD module should be connected to the power and the network according to Fig.6-3. The similar contacts of P2 and P3 are shorted therefore the Control panel or previous devices may be connected to the GF-4200-LCD via P3 and the next device may be connected via P2. Choose the Console address by using the DIP switch on the GF-4200-LCD module according to Fig.6-4. If the Console is to be used as the last on the network, the dipswitch 'END REM' must be put to the ON position (refer to Fig.6-5).

**ATTENTION:** The maximum distance from Panel to GF-4200-LCD module depends to the drop of voltage to the power line wires. The voltage drop must be not more than 3 V on each of the power wire at the current of 80 mA. For example if one GF-4200-LCD is connected directly to the Panel, then the maximum distance may be 5741 feet (18AWG) or 9432 feet (16AWG).

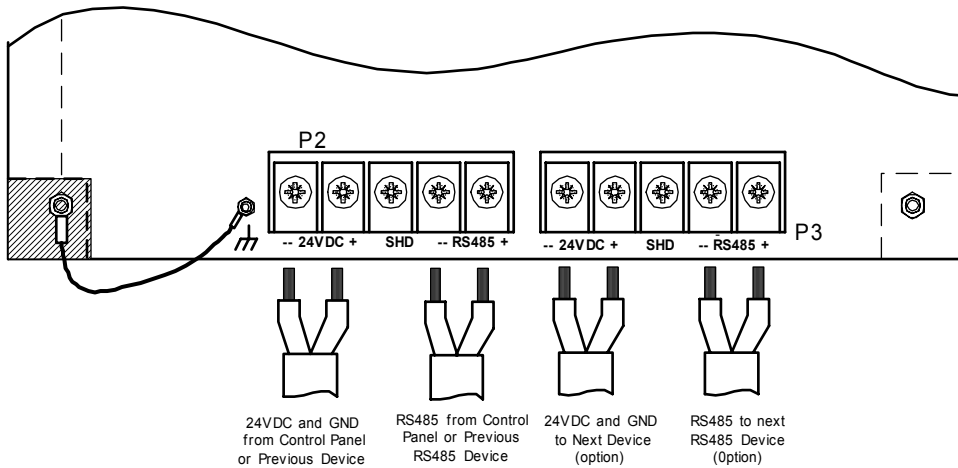
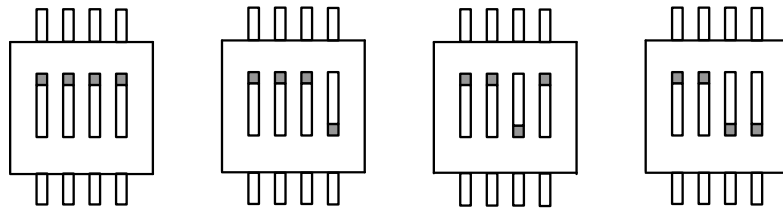


Fig. 6-3. GF-4200-LCD connection to RS-485 network

**All wires must conform to local codes, ordinances and regulations.**

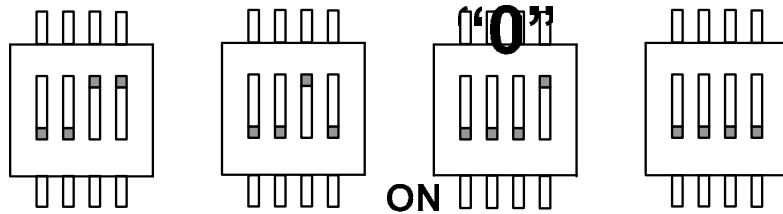
**CAUTION!!!**

***If this module will be connected to an existing operation system, inform operator and local authority that the system will be temporary out of service. Disconnect power to control panel before installing module***



GF-4200-RAN address -

**SW  
1**

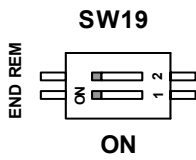


ON

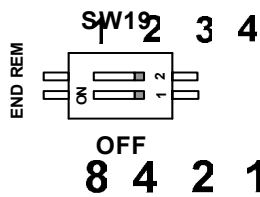
ON

ON

Fig. 6-4 The switched address examples



ON



OFF

8 4 2 1

1 2 3 4

8 4 2 1

1

8 4

Fig. 6-5 Network load connection

**“12”**

**“13”**

“

ON

ON

ON

1 2 3 4

1 2 3 4

1

8 4 2 1

8 4 2 1

8

## 6.2 Signal Line Circuit (GF-4200-LC module)

These GF-4200-LC modules are connected to the proprietary RS-485 network. The GF-4200-LC module provides two loops Class A or B style 4, 6 or 7 for the addressable devices. The GF-4200-LC module provides 252 devices polling, 126 per loop. The modules may be mounted in the Main Cabinet (one or two units) or a Separated Cabinet (GF-4200-EXP) which holds one or two units. The Model GF-4200-EXP cabinet, is used for remote GF-4200-LC mounting. Total GF-4200-LC quantity that is connected to one Panel must not be more than four.

### 6.2.1 GF-4200-LC SPECIFICATIONS

GF-4200-LC module provides the following functions:

- Two Signaling Line Circuits (SLCs).
- To each SLC may be connected up to 126 addressable detectors and input/output devices.
- Compatible with Apollo's Discovery, XP95 and Series 90 devices.
- Automatic detection of Class-A and Class-B connection.
- Each SLC is supervised for removing and adding of devices, and for ground fault for both class A and B.
- Each SLC provides protection for loop overload or shorting with restart mode. Overload or shorting of one loop, does not have an effect on the other loop.

GF-4200-LC parameters are shown as below

Parameter	Condition	Nominal	Unit
Loop voltage		24	V
Maximum Loop current		0.4	A
Maximum Loop capacitance		0.5	uF
Power supply voltage		24	V
Maximum GF-4200-LC Current Draw	@ 24 VDC power, 50 Ohm load in each loop	1.15	A
Current consumption (standby)	@ 24 VDC power, without devices in the loops	65	mA
Maximum 24VDC line resistance to remote GF-4200-LC (one side)	@ 24 VDC Panel power and GF-4200-LC at maximum current draw 1.15A <sup>(*)</sup>	2	Ohms

**\*ATTENTION:**

Use only 14 AWG wires for 24VDC power connection to remote GF-4200-LC. Maximum distance between remote GF-4200-LC and panel must be not more than 761 Feet (2 Ohm one wire) at maximum GF-4200-LC output current (0.4 A) in each loop.

### 6.2.2 GF-4200-LC installing in the Main Cabinet

**Hardware Required:**

- One GF-4200-LC module
- Four plastic screws #6x32 or four #6x32 stand-offs (socket – pin)
- EGND wire
- EGND wire installation set (#6x32 screw, nut, three washers, spring washer)

The loop modules are mounted in Main Cabinet on two layers, according to Fig 2-3. The different GF-4200-LC installing options are shown on Fig.2-5 ...Fig.2-8. Connect EGND wire to each module by its installation set. If GF-4200-LC is mounted in one layer, tie it to Cabinet Bottom by plastic screw. If GF-4200-LC is mounted in two layers, the lower module tie to Cabinet Bottom by stand-offs and upper module by plastic screws. The GF-4200-LC module must be placed in two layers with shifting for easy access to the output terminal blocks of lower module. Before upper module mounting connect Power and Network wires to lower module. EGND wire terminal connect to the closer grounding bolt.

### 6.2.3 GF-4200-LC installation in Separated Cabinet

**Hardware Required:**

- One GF-4200-LC module
- Four plastic screws
- EGND wire
- EGND wire installation set (#6x32 screw, nut, three washers, spring washer)
- Separated Cabinet – GF-4200-EXP

The remote GF-4200-LC module is mounted in the Separated Cabinet according Fig.6-6. Connect EGND wire to module by its installation set. Place module on the plate stand-offs and tie it to stand-offs by plastic screws. Connect the EGND wire to the grounding bolt.

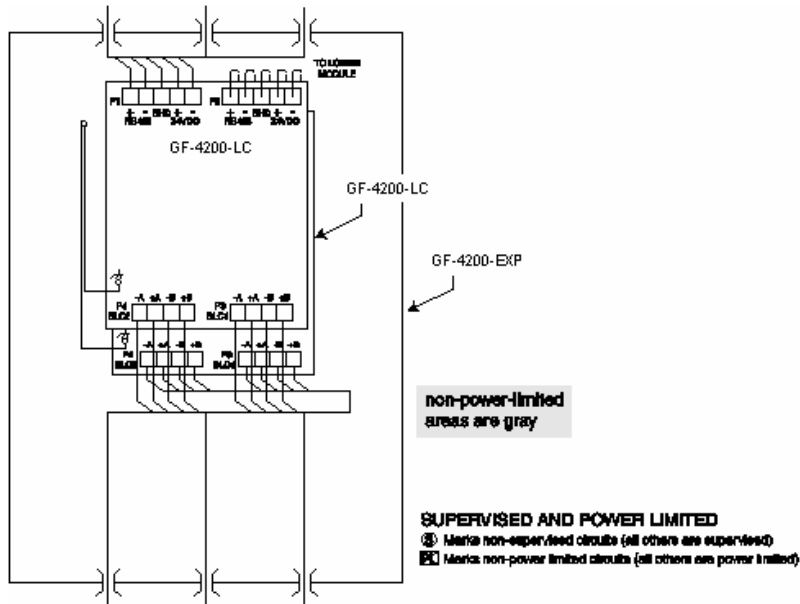


Fig. 6-6. GF-4200-LC installation in the Separated Cabinet GF-4200-EXP

### 6.2.4 GF-4200-LC connection and preparing to performance

The GF-4200-LC module must be connected to power and network according to the Fig. 6-6 and Fig.6-7. The like contacts of P1 and P2 are shorted therefore Control panel or previous devices may be connected to the loop module via P2 and next device may be connected via P1. Set the module address by dipswitch SW1 (Fig.6-8). If the loop module is to be used as the last module on the network, dipswitch 'END REM' must be put to the ON position (Fig.6-9)

**All wires must conform to local codes, ordinances and regulations.**

**CAUTION!!!**

*If this module will be connected to an existing operation system, inform operator and local authority that the system will be temporary out of service. Disconnect power to control panel before installing module*

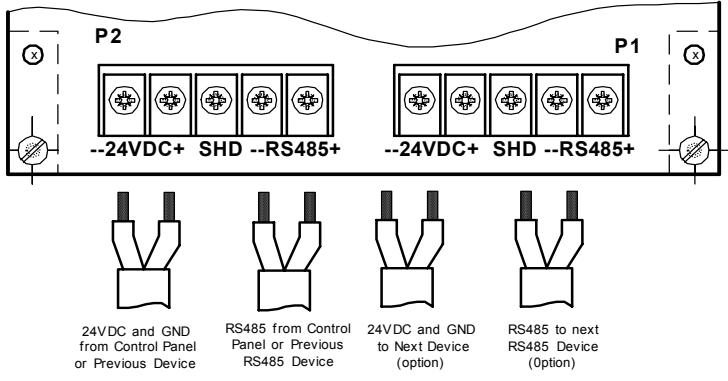


Fig. 6-7 Power and network wiring.

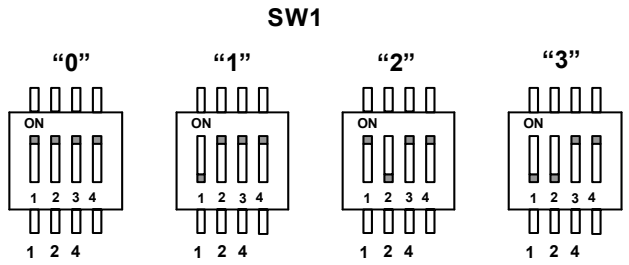


Fig. 6-8 The switched GF-4200-LC addresses

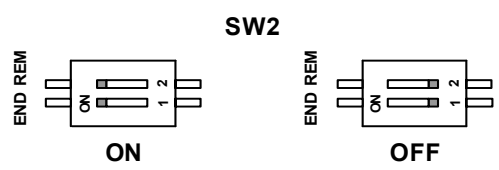


Fig. 6-9 Network load connection



### 6.3 GF-4200-CZ10 Conventional Initiating Zone Expansion

The Conventional Initiating Zone Expansion is implemented by GF-4200-CZ10 module. The **GF-4200** allows for six conventional initiating zone expansion modules. The GF-4200-CZ10 module outputs are compatible with many two wire fire detectors stated in Appendix 5 and any UL listed normally open contact devices. The circuits may also be used as a supervisory circuit to monitor the normally open contacts of the supervisory devices or water flow or pressure switches in sprinkler systems.

The GF-4200-CZ10 operation does not support alarm verification, non-latching alarms, or normally closed alarms. The GF-4200-CZ10 supports GF-4200-RC relay functions (each GF-4200-RC auxiliary relay is linked automatically to an individual zone initiating circuit).

The GF-4200-CZ10 module provides five Class A initiating loops or ten Class B initiating loops. The GF-4200-CZ10 supervises Apollo smoke detectors – S60 and S65 type. The GF-4200-CZ10 module is mounted in the Main Cabinet (refer to Sec. 2.2.4) as local or in a Separated Cabinet as remote (refer to Sec.6.3.4). Depending of the GF-4200-RC modules quantity that is connected to GF-4200-CZ10, it is used three versions of separated Cabinets:

- GF-4200-CAB Cabinet, one GF-4200-CZ10 with 2 GF-4200-RC
- GF-4200-EXP– Cabinet– for one GF-4200-CZ10 module with up to two GF-4200-RC modules
- GF-4200-EXP5 – for one GF-4200-CZ10 module with up to five GF-4200-RC modules

#### 6.3.1 GF-4200-CZ10 SPECIFICATIONS (Class B)

Parameter	Condition	Nominal	Unit
Standby loop voltage		26.5	V
Loop Short current		40	mA
End-of-Line Resistor		4.7	kOhms
Total Line Resistance per zone		100	Ohms
Zone Supervision Current		5	mA
Maximum Loop Alarm impedance		1000	Ohms
Power voltage		24	V
Standby Current Draw	The end of line resistors are connected	110	mA
Additional Alarm current Draw per each Zone	@ Detector impedance 500 Ohm	21	mA

1. The Max. Detectors quantity per zone is defined by equation  $N_{max} = I_{max} / I_d$ , where  $I_{max} = 5\text{mA}$ ,  $I_d$  –standby current of the supervised Detectors by specific zone.

#### 6.3.2 GF-4200-CZ10 SPECIFICATIONS (Class A)

Parameter	Condition	Nominal	Unit
Standby loop voltage		27.5	V
Loop Short current		85	mA
End-of-Line Resistor		2.35 <sup>1</sup>	kOhms
Total Line Resistance per zone		50	Ohms
Zone Supervision Current		4.0	mA
Maximum Loop Alarm impedance		1000	Ohms
Power voltage		24	V
Standby Current Draw	With connected end of line resistors	75	mA
Additional Alarm current Draw per each Zone	@ Detector impedance 500 Ohm	36	mA

1. Two EOL parallel resistors 4.7 K must be connected to the last detector per each zone.
2. The Max. Detectors quantity per zone is defined by equation  $N_{max} = I_{max} / I_d$ , where  $I_{max} = 4\text{mA}$ ,  $I_d$  –standby current of the supervised Detectors by specific zone.

### 6.3.3 GF-4200-CZ10 installing in Main Cabinet

**Hardware Required:**

- One GF-4200-CZ10 module
- Four #6x32 stand-offs (male-female)
- EGND wire
- EGND wire installation set (#6x32 screw, nut, three washers, spring washer)

The GF-4200-CZ10 module is mounted in the Main Cabinet on the upper layer according to the Fig.2-4 and Fig.2-7. Connect the EGND wire to the module by its installation set. Wring out four plastic screws and secure lower module by four stands-offs to cabinet bottom. Place the module on stand-offs and tie it to stand-offs by plastic screws. Connect the EGND wire to the closer grounding bolt.

### 6.3.4 GF-4200-CZ10 installing in Separated Cabinet

**Hardware Required:**

- One GF-4200-CZ10 module
- Four plastic screws
- EGND wire
- EGND wire installation set (#8X32 screw, nut, three washers, spring washer)
- Separated Cabinet –GF-4200-EXP Cabinet Model (room for 2 GF-4200-RC)
- Separated Cabinet – GF-4200-EXP5 Cabinet Model (room for 5 GF-4200-RC)

The GF-4200-CZ10 module is mounted in the Separated Cabinet (Fig. 6-10). Connect EGND wire to module by its installation set. Place module on stand-offs and tie it to stand-offs by plastic screws. Connect the EGND wire terminal to the grounding bolt.

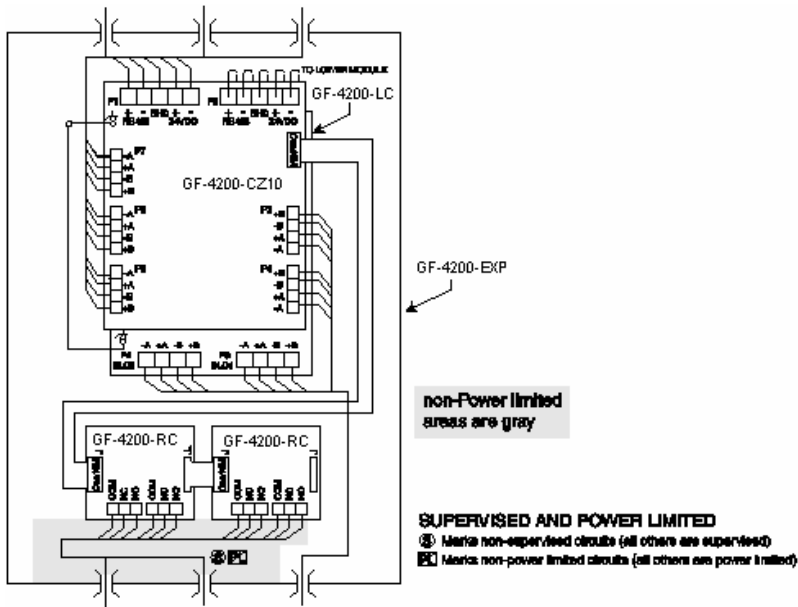


Fig. 6-10. GF-4200-CZ10 installation in the Separated Cabinet (model GF-4200-EXP)

### 6.3.5 GF-4200-CZ10 and GF-4200-RC installing in Separated Cabinet

The GF-4200-CZ10 module may be mounted in the Separated Cabinet with GF-4200-RC modules. It is mounted in one of two types of Separated Cabinet, depending on the GF-4200-RC modules quantity, which are connected to the remote GF-4200-CZ10 module. The following models of Separate Cabinets for the GF-4200-CZ10 installation with GF-4200-RC modules.

- GF-4200-EXP– for one GF-4200-CZ10 module with up to two GF-4200-RC modules
- GF-4200-EXP5 – for one GF-4200-CZ10 module with up to five GF-4200-RC modules

The GF-4200-CZ10 with GF-4200-RC modules mounting is shown on Fig. 6-11 and Fig.6-12. The GF-4200-RC modules are mounted on stand-offs (that provides distance minimum 1/2 inch from the Relay Pins to the plate. It allows connecting a 120-240 VAC power to the relay dry contacts. The GF-4200-CZ10 module is mounted similar to Sec. 6.3.3. The GF-4200-RC modules should be connected together by connectors and after should be tied to stand-offs by plastic screws. The right side GF-4200-RC is connected to GF-4200-CZ10 by flat cable. Put jumper JP1 in “END DEVICE” position on the left side GF-4200-RC and in opposite position on others GF-4200-RC

#### Hardware Required:

- One GF-4200-CZ10 module
- Four plastic screws per each mounted module
- GF-4200-RC modules from one up to five
- Flat Cable Model GF-4200-RCCBL
- EGND wire
- EGND wire installation set (#8-32 screw, nut, three washers, spring washer)
- Separated Cabinet – GF-4200-EXP or GF-4200-EXP5

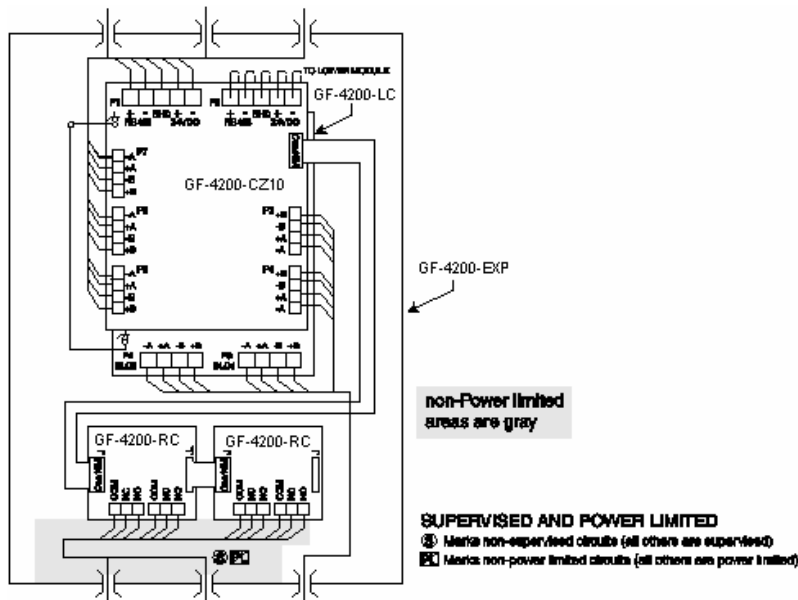


Fig. 6-11. GF-4200-CZ10 and two GF-4200-RC installing and wiring in the GF-4200-EXP Cabinet

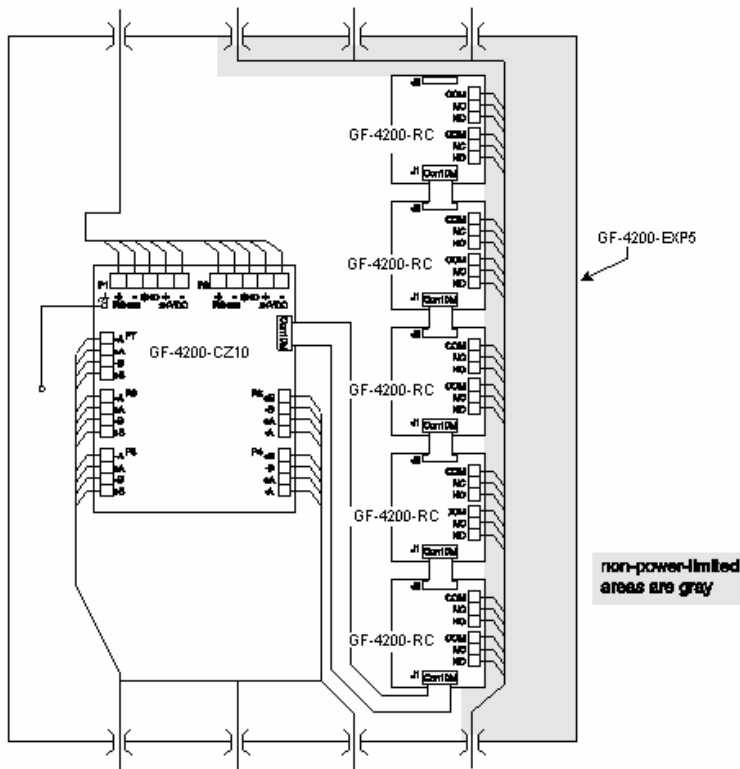


Fig. 6-12. GF-4200-CZ10 and five GF-4200-RC installing and wiring in the GF-4200-EXP5 Cabinet

### 6.3.6 GF-4200-CZ10 connection and preparing to function

The GF-4200-CZ10 module must be connected to the power and to the network according to Fig.6-13

Choose class A or B by dipswitch SW2 (Fig. 6-15). Set the module address by dipswitch SW1 (Fig.6-16). The detectors and EOL wiring in class A is shown in Fig. 6-14. Two EOL resistors should be connected in parallel together to the last detector per each zone.

If the GF-4200-CZ10 is to be used as the last module on the network, dipswitch 'END REM' must be put to the ON position (Fig.6-15).

**All wires must conform to local codes, ordinances and regulations.**

#### ***WARNING!!!***

*If this module will be connected to an existing operation system, inform operator and local authority that the system will be temporary out of service. Disconnect power to control panel before installing module*

*A complete evaluation is required to be performed by the local authority having jurisdiction following any system modifications*

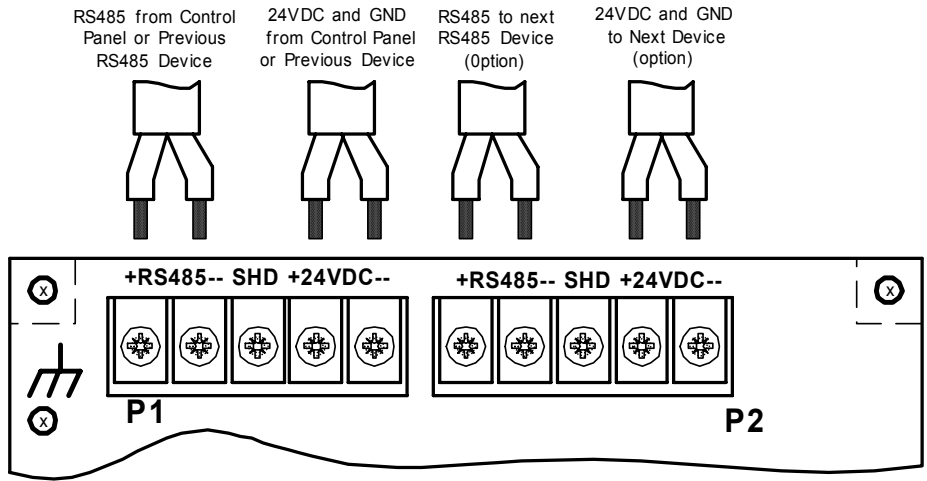


Fig. 6-13 Power and network wiring.

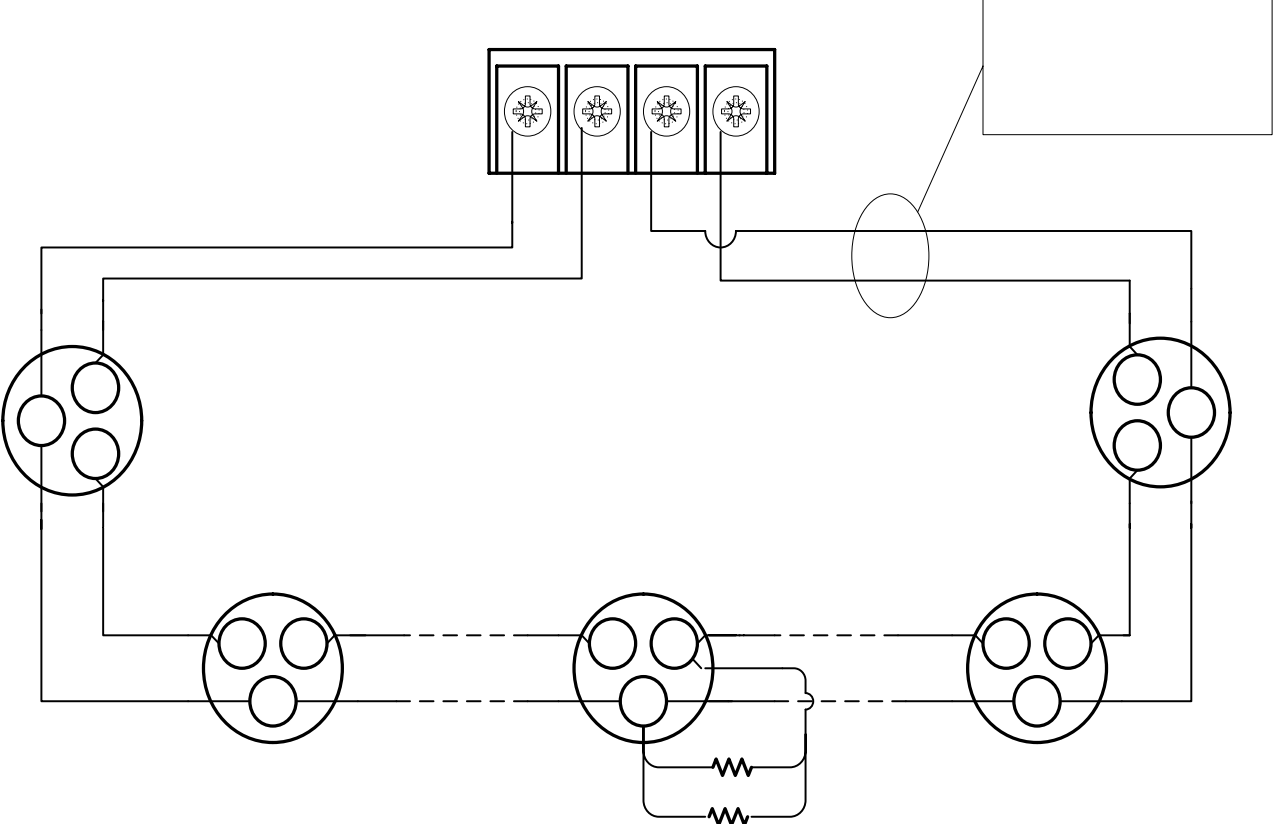


Fig. 6-14. The detectors and EOL resistor wiring in Class A

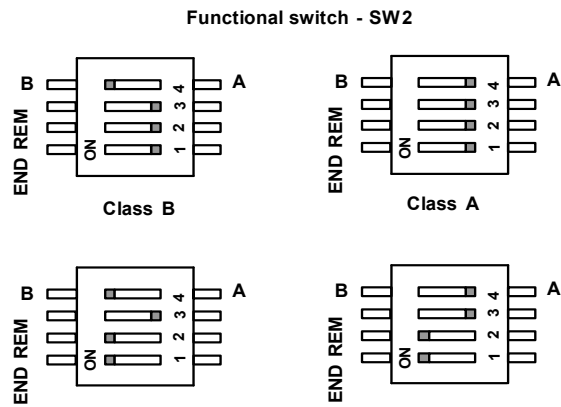


Fig.6-15. Switch 4 for Class A or B. Switch 1 & 2 for connection load of RS485 net in last modules.

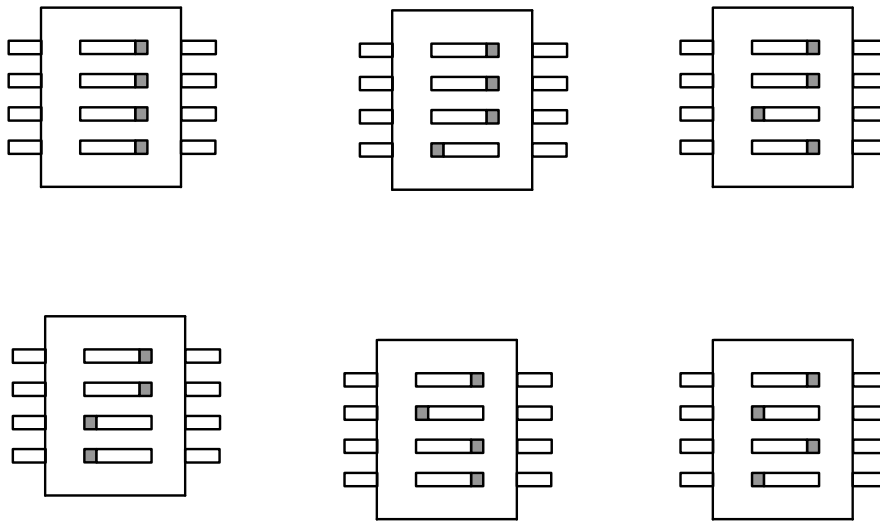


Fig.6-16. Network address setting

## 6.4 Network Configuration

Configuring the network on the GF-4200 requires only three steps:  
 1. Connect all of the devices in accordance with 6.1...6.3.

2. Set Network Devices Addresses. Be careful to give each module an individual address for each type of devices (refer to par.6.1...6.3 for addressing details). Please refer to the device installation instructions for hookup, DIP Switch Configuration, and device specifications

3. Scan the Network. Place the panel into the programming mode, and then select option 3 – “Network Settings”. Select 1. “Scan Network”. The program will begin immediately to search for serial devices on the network. By selecting 2 “Browse Devices”, you can verify that the devices on the network are properly connected and functioning. If a device at a particular address is not detected, check the connections and try once again.

## 7 Appendixes

### Appendix 1

### Glossary of Terms and Acronyms

<b>Term/Acronyms</b>	<b>Definition</b>
TCC	Two loop Communication Control
PWC	Pass Word Code
MCC	Main Central Control
EBO	Event Based Operation
EOL	End of Line Resistor
EOLR	End of Line Power Supervision Relay
FACP	Fire Alarm Control Panel
ICP	Isolated Communication Port
LED	Light Emitting Diode
PDC	Programming Display Module (FACP KeyPad & LCD )
RAN	Remote Programming Display Module (GF-4200-LCD)
NAC	Notification Appliance Circuit
FPC	Power Supply Controller
SCP	Serial Communication Port (Non-isolated)
SLC	Signal Line Circuit
GF-4200-LC	Two SLC Loop Module
GF-4200-CZ10	Convention Zone Module
GF-4200-RC	Two Zone Relay Module

## Appendix 2

### GF-4200 Part Number and Order Information

#	Full name	Model	Description
1	System Common Device	GF-4201-MBC	Common Device, which includes chassis, MCC, PDC-UL, FPC and power supply RL980. This Device is powered by 230VAC
2	System Common Device	GF-4200-MBC	Common Device, which includes chassis, MCC, PDC-UL, FPC and power supply RL980. This Device is powered by 120VAC
3	Loop Module	GF-4200-LC	Two SLC loops for polling of the & Apollo addressable access units. May be use as remote
4	Conventional Module	GF-4200-CZ10	Supervising of Apollo conventional Smoke Detectors S60 and S65 family. May be used as remote.
5	Remote Annunciator with Cabinet	GF-4200-LCD	The Remote Annunciator consists of Remote Cabinet (RCE) and the assembled PDC-UL (Program Display) module within it
6	Remote Program Display Module	PDC-UL	Program Display module. May be delivered separately or consisting of Remote console
7	Remote Annunciator Cabinet	GF-4200-RCE	Remote Cabinet for surface or flush installation of the GF-4200-LCD within it 10"x8.5"x2.0"
8	Relay Module	GF-4200-RC	Module that includes two relay for external loops switching
9	Main cabinet Enclosure	GF-4200-CAB	For mounting inside the System Common Device, two GF-4200-RC, two GF-4200-LC or one GF-4200-LC and one GF-4200-CZ10 with batteries of 8 or 12 Ah. Cabinet size -14.5"x23.5"x4.0"
10	Remote enclosure (small)	GF-4200-EXP	For mounting one GF-4200-CZ10, one GF-4200-LC and up to two GF-4200-RC modules
11	Remote enclosure (large)	GF-4200-EXP5	For mounting one GF-4200-CZ10 one GF-4200-LC and up to five GF-4200-RC modules
12	RC Flat cable connection	GF-4200-RCCBL	For connection any GF-4200-RC modules (up to 5), which are mounted in separated cabinet, to the GF-4200-CZ10 module. Flat cable is delivered in the GF-4200-CZ10 installation kit, if GF-4200-CZ10 will be mounted in Separated Cabinet with GF-4200-RC modules.
13	EOL resistor	EOL-4.7K	EOL Resistor 4.7K
14	EOL resistor	EOL-10K	EOL Resistor 10K
15	EOL resistor	EOL-47K	EOL Resistor 47K
16	DACT-Relay	GF-4200-DACT-R	For DACT trouble signal connection to GF-4200
17	40Ah Battery Wires	GF4200-40BWIRE	For 40Ah Batteries connection, that are placed in external enclosure
18	15/20Ah Battery Wires	GF-4200-15/20BWIRE	For 15/20Ah Batteries connection, that are placed in external enclosure



**GF-4200 Current Draw/Battery Backup Template**

	QUANTITY OF DEVICE/MODULE	STANDBY CURRENT (Amps)	MAXIMUM ALARM CURRENT (Amps)	TOTAL STANDBY CURRENT (Amps)	TOTAL ALARM CURRENT (Amps)
<b>SYSTEM COMPONENTS</b>					
Main System Part (MCC, PDC, FPC)	1	0.155	0.21	0.155	0.21
<b>SERIAL DEVICES</b>					
GF-4200-LC Addressable Loop Module	1	0.065	0.070	0.065	0.070
GF-4200-CZ10 Conventional Zone Module		0.11	0.14		
GF-4200-LCD Remote Annunciator		0.03	0.04		
GF-4200-RC Two Relay Module		0.002	0.05		
<b>DETECTORS</b>					
55000-450 XP95A Heat Detector		0.000 25			
55000-550 XP95A Ion Smoke Detector		0.000 28			
55000-650 XP95A Optical Smoke Detector		0.000 34			
55000-266 XP95A Beam Detector		0.0165			
55000-886 XP95A Multisensor Detector		0.000 47			
S60 and S65 Conventional (avg current)		0.0001			
<b>MODULES</b>					
55000-750 Short Circuit Isolator		0.000 12			
55000-805 Switch Monitor Module		0.0006			
55000-806 Priority Switch Monitor Module		0.0006			
55000-820 Switch Monitor Input/Output Module		0.000 85			
55000-825 Sounder Control Module		0.001			
55000-831 Mini Switch Monitor Module		0.0006			
55000-830 Mini Priority Switch Monitor Module		0.0006			
<b>Detectors and Modules LED ON current</b>					
A) Detectors and modules, total number					
B) Estimated LED-ON number =(0.05 x A)					
C) Alarm current LED = 0.0035 Amps					
D) Total alarm LED ON current =(B x C)					
<b>NOTIFICATION APPLIANCES</b>					
Other –NAC #1, 3 Amps maximum					
Other –NAC #2, 3 Amps maximum					
Other –NAC #3, 3 Amps maximum					
Other –NAC #4, 3 Amps maximum					
<b>Maximums are subject to total available</b>					
<b>TOTAL CURRENT (Amps)</b>					

	UNITS	FORMULA	RESULT
a) Standby current	Amps	a	
b) Standby time (24 or 60 hours)	hours	b	
c) Standby requirement (demand)	Ah	a x b	
d) Alarm current	Amps	d	
e) Alarm time (5 min = 0.0833, 10 min = 0.167)	hours	e	
f) Alarm requirement (demand)	Ah	d x e	
g) Battery backup capacity (supply)	Ah	c + f	
h) Safety factor	Ah	g x 0.1	
i) Minimum battery size required	Ah	g + h	
<b>REQUIRED BATTERY SIZE</b>			

## **24VDC Notification Circuit Compatible Devices**

### **Gentex**

#### **GX91/GX93 Series**

GX91R GX91W GX93R GX93W GX91  
GXS120177WR GXS120177WW GXS120177CR GXS120177CW

#### **WGE Series**

GEH24R GEH24W WGES-75WR WGES-75WW WGEC-75WR WGEC-75WW

#### **Commander Series**

ST24-15WR ST24-15WW ST24-30WR ST24-30WW ST24-60WR ST24-60WW  
ST24-75WR ST24-75WW ST24-110WR ST24-110WW ST24-15/75WR ST24-15/75WW

HS24-15WR HS24-15WW HS24-30WR HS24-30WW HS24-60WR HS24-60WW HS24-75WR  
HS24-75WW HS24-110WR HS24-110WW HS24-15/75WR HS24-15/75WW

#### **GE SERIES**

GEH12WR GEH12WW GEH24WR GEH24WW GES24-15WR GES24-15WW GES24-30WR  
GES24-30WW GES24-60WR GES24-60WW GES24-75WR GES24-75WW GES24-110WR  
GES24-110WW GES24-177WR GES24-177WW GES24-15/75WR GES24-15/75WW  
GEC24-15WR GEC24-15WW GEC24-30WR GEC24-30WW GEC24-60WR GEC24-60WW  
GEC24-75WR GEC24-75WW GEC24-110WR GEC24-177WR GEC24-15/75WR  
GEC24-15/75WW

#### **GE3 SERIES**

GEH3-24WR GES3-24WR GES3-24WW GES3-24PWR GES3-24PWW GEH3-24WW  
GEC3-24WR GEC3-24WW GEC3-24PWR GEC3-24PWW

#### **GC SERIES**

GCS24CR GCS24CW GCS24PCR GCS24PCW GCC24CR GCC2 4CW GCC24PCR  
GCC24PCW

**AVS44** GANGABLE SYNCHRONIZATION CONTROL MODULE

## **Appendix 4 (continue)**

### **Wheelock**

MIZ-TC24- R MIZ-TC24-W

### **Series AMT**

AMT-12/24-R AMT-241575W-FR AMT-241575W-FW AMT-2475W-FR AMT-2475W-FW  
AMT-12/24-R-NYC AMT-241575W-FR-NYC

### **Series MT**

MT-12/24 MT-241575W-FR MT-2475W-FR MT-121575W-FR MTWP-2475W-FR MT4-115-R MT4-115-WH-VHR  
SM-12/24-R DSM-12/24-R

### **Series AS**

AS-24MCW-FR AS-24MCW-FW A241575W-FR AS-24MCC-FW ASWP-2475W-FR  
AH-24-R AH-24WP-R

### **Series NS**

NS-24MCW-FR NS-24MCW-FW NS-241575W-FR

### **Series SM and DSM SYNC Modules**

SM-24-R DSM-24-R

## Appendix 5

### Compatible conventional devices

**Part No.**            **The following two wire conventional detectors are intended to be used with the GF-4200-CZ10 conventional module.**

Apollo Bases (the compatibility identifier is the same as the model number)

45681-200	Series 60A 4" Mounting Base
45681-220	Series 60A 6" Mounting Base
45681-227	Series 60A 6" Relay Mounting Base
45681-230	Series 60A 6" Mounting Base with Red Flashing LED
45681-231	Series 60A 6" Mounting Base with Green Flashing LED
45681-232	Series 60A 6" Low Profile Mounting Base
45681-251	Series 60A E-Z Fit Mounting Base
45681-252	Series 60A E-Z Fit Mounting Base with Flashing LED

45681-255	Series 65A 4" relay Mounting Base
45681-256	Series 65A 4" Auxiliary Relay Mounting Base
45681-257	Series 65A 4" 12V EOL Mounting Base
45681-258	Series 65A 4" 24V EOL Mounting Base

Apollo Detectors (the compatibility identifier is the same as the model number)

55000-150	Series 60A Heat detector - low (115F)
55000-151	Series 60A Heat ordinary (160F)
55000-152	Series 60A Heat intermediate (210F)
55000-153	Series 60A Heat ordinary (135F)
55000-250	Series 60A Ionization smoke detector
55000-350	Series 60A Optical smoke detector
55000-380	Series 60A Combination Heat/Optical detector
55000-138	Series 65A Heat detector 135F – Ordinary - Flashing LED / Reed Switch
55000-139	Series 65A Heat detector 135F – Ordinary - Flashing LED
55000-140	Series 65A Heat detector 135F – Ordinary - Standard
55000-141	Series 65A Heat detector 170F – Ordinary - Flashing LED / Reed Switch
55000-142	Series 65A Heat detector 170F – Ordinary - Flashing LED
55000-143	Series 65A Heat detector 170F – Ordinary - Standard
55000-144	Series 65A Heat detector 200F – Intermediate - Flashing LED / Reed Switch
55000-145	Series 65A Heat detector 200F – Intermediate - Flashing LED
55000-146	Series 65A Heat detector 200F – Intermediate - Standard
55000-225	Series 65A Ionization detector – Flashing LED / Reed Switch
55000-226	Series 65A Ionization detector – Flashing LED
55000-227	Series 65A Ionization detector – Standard
55000-325	Series 65A Optical detector – Flashing LED / Reed Switch
55000-326	Series 65A Optical detector – Flashing LED
55000-327	Series 65A Optical detector – Standard
55000-328	Series 65A Optical detector – High Sensitivity Flashing LED / Reed Switch

## Appendix 6

### Compatible SLC Addressable devices

**Part No.**            **The following SLC devices are intended to be used with the GF-4200-LC addressable module.**

#### Apollo Bases

45681-210	XP95A 4" Mounting Base
45681-211	XP95A Short-Circuit Isolator Mounting Base
45681-225	XP95A 6" Mounting Base
45681-234	XP95A 6" Low Profile Mounting Base
45681-242	XP95A 4" Low Power Relay Mounting Base
45681-250	XP95A E-Z Fit Mounting Base
45681-321	XP95A Short-circuit Isolating Mounting Base

#### Apollo Detectors

55000-450	XP95A Heat Detector
55000-550	XP95A Ionization Smoke Detector
55000-650	XP95A Optical Smoke Detector
55000-266	XP95A Beam Detector
55000-886	XP95A Multisensor Detector
58000-450	Discovery Heat Detector
58000-550	Discovery Ionization Smoke Detector
58000-650	Discovery Optical Smoke Detector
58000-750	Discovery Multisensor Detector

#### Apollo Modules

55000-750	XP95A Short-circuit Isolator
55000-805	Switch Monitor Module
55000-806	Priority Switch Monitor Module
55000-820	Switch Monitor Input-Output Module
55000-825	Sounder Control Module
55000-831	Mini Switch Monitor Unit
55000-830	Mini Priority Switch Monitor Module

## Appendix 7

### GF-4200 BASIC OPERATING INSTRUCTIONS

*This Instruction Sheet should be framed and placed adjacent to the control unit for easy reference.*

**Display** - The 160-character LCD screen displays all messages and information about the system. It is also used to display program menus, the time and date, and company name.

**LED Indicators** - The system condition LED indicators are provided to indicate Power, Silence, ALARM, Trouble and PreAlarm conditions. Other LEDs indicate Trouble and Alarm groups.

**Panel Control Keys** - Below the LCD screen, the panel control keys **SILENCE** and **RESET** are found. These keys allow you to silence alarms and troubles and reset any off-normal condition. Pressing the **SILENCE** key will silence the panel sounder and external notification appliances, and the corresponding Silenced LED will illuminate and flash until the panel is reset or until another alarm is sensed. A second alarm condition will cause all previously silenced alarm conditions and the panel sounder to resound its audible tone.

Pressing the **RESET** key will return the panel to normal operating mode, clear any off-normal condition from the status display; restore the alarm relay to normal state; extinguish all status LEDs except the green AC LED; and send a message to the display and printer (if applicable) that a System Reset has been performed.

The  $\uparrow$  UP and  $\downarrow$  DOWN keys allow you to view more menu options when available.

**Silence alarms and troubles**

Press the "SILENCE" key

**Acknowledge**

Press the "ENTER" key

**Reset Alarms**

Press the "RESET" key

**View Alarm Conditions**

Use the control keys  $\uparrow$  UP  $\downarrow$  DOWN to view the active events.

**View Trouble Conditions**

Use the control keys  $\leftarrow$ LEFT  $\rightarrow$ RIGHT to view the active events.

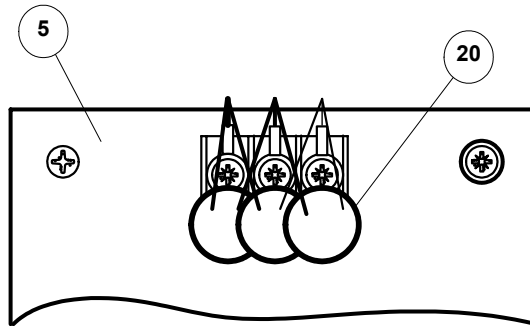
In the Event of Trouble, Please Contact: \_\_\_\_\_  
\_\_\_\_\_

*Periodic testing of this System  
Is recommended no less than annually* \_\_\_\_\_

**Addressing by Dip Switch for Apollo Devices**

1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8	1 2 3 4 5 6 7 8

## APPENDIX 9



The three external varistors must be factory installed at Common System Device GF-4200-MBC and not installed at Common System Device GF-4201-MBC