

SSL Listed, UL, ULC Listed
FM Approved*

Fire Alarm Controls
4100 and 4120 Series Addressable
Network Control and Indicating Systems

STANDARD FEATURES:

- **SSL Listed to AS1603.4 – 1997 – afp1165**
- **UL Listed for:**
 - Fire Detection and Control (UOJZ)
 - Process Management Equipment (QVAX)
- 80 Character Super-Twist LCD Display
- Dedicated Isolate and Fault Indicator and Acknowledge Keys and Indications
- Nonvolatile Flash EPROM Memory
- Battery Supervision (Low/No Battery)
- Expandable up to 1000 Circuits

SOFTWARE FEATURES:

- WALK TEST System Test**
- Four Operator Access Levels
- 600 Event Historical Log
- Individual Circuit Disconnect/Disable
- **Programmable:**
 - Alarm Verification by Zone or Point
 - Selective Signaling and/or Relay Control
 - Signal Silence Reminder

OPTIONAL FEATURES:

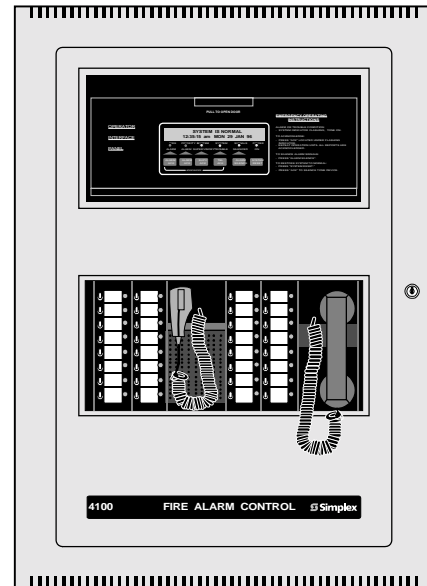
- Voice Communications and Fire Fighter's Phones
- 25Watt / 50 Watt Emergency Warning System Amplifiers approved to AS2220
- **Interface to Remote:**
 - MAPNET II® Addressable Devices
 - TrueAlarm® Analog Sensors†
 - 4-20 mA Analog Monitor ZAMs (AMZs)
 - MINIPLEX® Transponders
 - Supervised Serial Annunciators

OPTIONAL MODULES:

- 4120 Network Interface
- Style B or D Initiating Device Circuits (IDCs)
- Style Y or Z Notification Appliance Circuits (NACs)
- Control Relays with Feedback
- Dial-In Service Modem
- RS-232 Interface to Graphics Command Center, Remote Printer or CRT Keyboard Terminal
- Panel Mount Printer
- Simplex 2120 Interface

* Applicable FM approval information is available on request.

** WALK TEST is protected under US Patent # 4,725,818.



**4100/4120 Series Fire Alarm Control Panel
with Optional Voice Control**

INTRODUCTION:

Simplex 4100/4120 series Fire Alarm Detection and Control Panels provide an extensive and powerful feature list to satisfy a wide variety of applications and local code requirements. They are on-site programmable to provide mapping logic for inputs and outputs and for custom labeling additions and revisions. Their flexible site-specific software features can be quickly and securely generated, modified, and archived by trained service personnel using computer based programming tools. With this flexibility, last minute changes can be made on-site, minimizing delays in job completion.

Monitor and control point expansion is available up to a maximum of 1000 circuits in any combination of IDCs, NACs, auxiliary control relays, and addressable devices. Annunciation capacity is up to 2000 points. Where system capacities exceed 1000 circuits multiple 4100 panels are networked to form a 4120 network system.

Note: For 4120 Network Control panel operation, substitute the 4100 for 4120. Refer to data sheet S4120-0001 for additional Network information.

† MAPNET II addressable communications is protected under U.S. Patent # 4,796,025. TrueAlarm analog detection is protected under U.S. Patent # 5,155,468 and 5,173,683.

OPERATOR INTERACTION:

Primary Operator Functions. The 4100 operator panel maximizes the performance of primary fire alarm functions by displaying only the indications and interaction switches required for responding to emergency situations (see FIGURE 1).

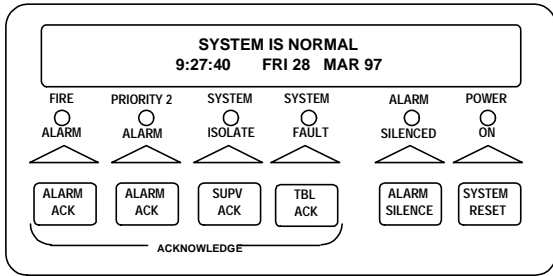


FIGURE 1. Primary Operator Functions

Indications. Alarm, Isolate, and Fault conditions are indicated at the operator's panel by dedicated LEDs and a local tone-alert. An 80 character (2 lines x 40 characters) alphanumeric super-twist liquid crystal display provides information concerning point status (alarm, fault, isolate, etc.), type of alarm (smoke detector, manual call point, flowswitch, etc.), number of alarms in the system, and a custom location label.

Switch Operation. Alarm, Isolate and Fault conditions have dedicated acknowledge push-button switches. Operation of the appropriate acknowledge switch silences the tone-alert with the LED remaining illuminated until all conditions in that category are restored to normal.

The 4100 can be programmed to perform a "global acknowledge" where a single push of the appropriate acknowledge switch will silence the tone-alert for all points in that condition. It can also be programmed for individual acknowledgment of each point in an abnormal condition, as well as their restoration. Both operations are in accordance with the requirements of NFPA 72, the *National Fire Alarm Code*.

Notification appliances can be silenced by pressing the ALARM SILENCE switch. Pressing the SYSTEM RESET switch restores the system to the normal operation mode. The system tone-alert can be programmed to resound at user specified time intervals to serve as an "active status reminder" when a trouble condition remains in the system and the audible trouble signal has been silenced.

Additional Operator Function Keys. For increased functionality, additional operator keys are available by opening the access door (see FIGURE 2). The FUNCTION KEYS, DISPLAY/ACTION keypad, and the ENTRY keypad are the operator interface sections that are not essential in a fire emergency situation. These functions are presented in a self-directing manner and include: circuit/device ENABLE or DISABLE, control point turn ON or OFF, DISPLAY HISTORICAL LOGS, etc.

Operator access is determined by four passcode protected security levels. Level 1 allows routine actions while level 4 is reserved for more sensitive operations requiring higher level operator knowledge. Access in levels 2, 3, and 4 is selectable and passcode protected to ensure proper authorization for that level's control access. Passcode log-ins are stored in the history log for access review.

Display Action and Entry Keypads. The Display Action and Entry keypads allow operators (with proper access levels) to perform controlling functions to system zones, NACs, and auxiliary control relays, or to gain access for system information. DISABLE allows a specific circuit or a specific addressable device to be disconnected from the system to isolate a problem. A fault condition will occur as a reminder of the action taken. ENABLE followed by ENTER restores the circuit or device to active status in approximately 60 seconds. The display will count down the remaining time and will warn the operator if the circuit to be enabled will cause an alarm. The "NET" key is used to display 4120 Network point data located at other network panels.

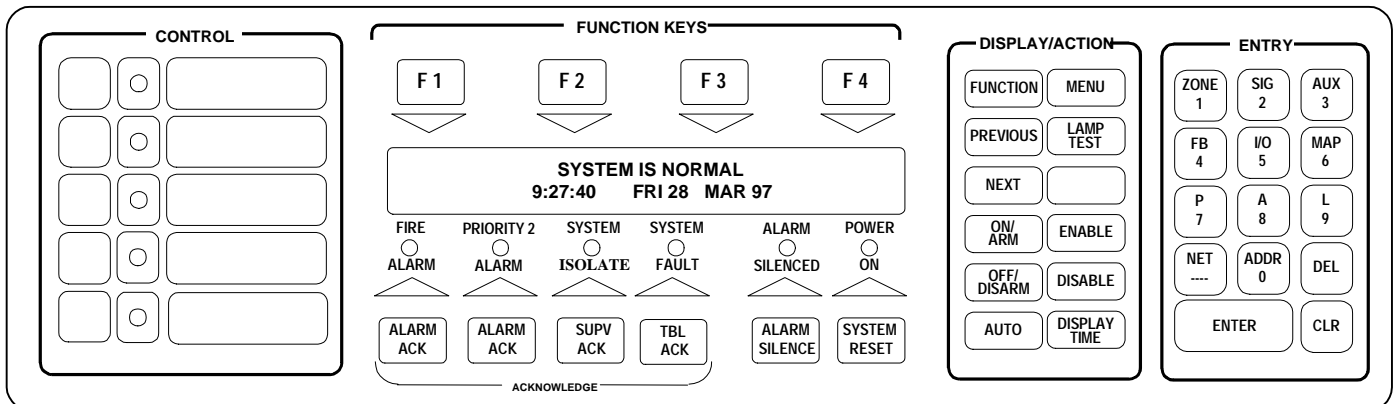


FIGURE 2. Additional Operator Keys

OPERATOR INTERACTION (CONTINUED):

Control Keypad. CONTROL identifies five programmable switches with associated LEDs. Possible applications are: Battery Test, Brigade test, Bell Isolate, ACF Isolate, Alarm Test, Fault test, etc. Control switches can be individually passcode protected such that only certain access level operators can perform that function. (Refer to FIGURE 3).

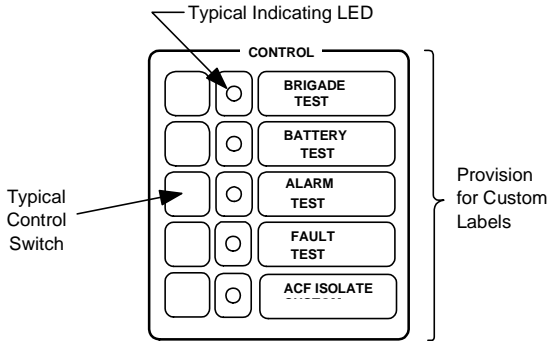


FIGURE 3. Control Key Detail

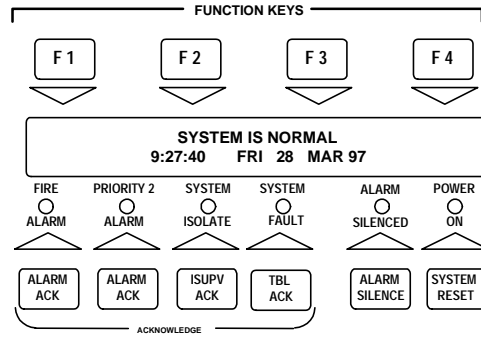


FIGURE 4. Function Key Detail

Function Keys. FUNCTION KEYS identifies the "soft" keys F1 through F4 whose functions vary within each Main Menu Option. Each key's function is described on the top line of the display. For example, in the DISPLAY HISTORICAL ALARM LOGS FUNCTION menu, pressing the F2 key will display the most recent alarm event stored in the history log. (See FIGURE 4).

MODULE DESCRIPTIONS

MASTER CONTROLLER MODULE:

The 4100 Master Controller Board provides system control, synchronization, and supervision of all modules, continuously scanning each module for status changes. Features include:

- **Operator's Panel** with LCD and operator keys
- **SPDT Auxiliary Fault Relay** rated 2 A @ 30 VDC, resistive loads
- **4100- 3003 Aux Relay card for Brigade Interface Connection, provided by four form "C" contact outputs** – Alarm, Fault, Isolate, Panel Fail,
- **Battery Charger** for up to 110 Ah Batteries
 - Batteries up to 80 Ah may be mounted in the bottom of the control cabinet
- **Compatible with Lead Acid or NiCad Batteries**
- **Intelligent Power Supply (Power Limited):**
 - Two isolated outputs of 4 Amps each at 28.5 VDC when AC powered (24 VDC during battery operation)
 - Tap "B" provides 4 A for general purpose control power ie: Door holders, Flowswitch test Solenoids etc.
 - Tap "A" provides 2 A (typical) for NACs controlling "clean" loads with controlled inrush current and proper transient suppression (actual available power depends on total system power requirements)
 - LCD Readout of System Voltage and Current, and Battery Voltage and Current
 - **4100-0019**, Optional 12 VDC converter rated 2 A @ 12 VDC, requires 1.1 A max from 28 VDC
 - AC input 3 A @ 240 VAC, 50/60 Hz

REDUNDANT MASTER CONTROLLER

(4100-7023) Provides monitored dual control with automatic switch-over hardware.

INITIATING DEVICE CIRCUITS (IDCs) (4100-5000 series):

- Eight Circuit Zone Modules provide system expansion as Style B (Class B)
- Capable of supporting two-wire standard 20V DC conventional smoke detectors and electronic heat detectors plus normally open contact devices (manual call points, flowswitches, etc.)
- Accepts Mechanical Coded Inputs

NOTIFICATION APPLIANCE CIRCUITS (NACs) (4100-4000 series):

- Two, four, or six circuit modules provide system expansion as Style Y (Class B) or Style Z (Class A)
- Circuit ratings: 2 A @ 24 VDC; 50 W @ 25 VRMS, 100 W @ 70 VRMS (for speaker circuits), or for up to 6 firefighter telephones
- Supervised for opens, grounds, and wire-to-wire shorts
- Outputs can be programmed for temporal code or march time code

GENERAL OPERATING SPECIFICATIONS:

Humidity 85% Non-Condensing
 Temperature..... 0° C to 49° C

MODULE DESCRIPTIONS (Continued)

RS-232/2120 COMMUNICATION MODULE (4100-0113):

- Provides two RS-232 outputs for remote printers and or CRT/Keyboards (terminals)
- Up to Five RS-232 ports per 4100 panel
- Each port can be vectored by event category
- Can be configured to connect to a Graphic Command Center (GCC)
- Can be configured to communicate with a host 2120 Multiplex System using 2-wire, 2120 communications (DC Comm.)
- **4100-0137** module option provides Style 7, RS-232, 2120 communications for connection options to 2120 BMUX

STYLE 7, 2120 (DC COMM) INTERFACE MODULE (4100-0123):

- Maintains 2120 communications during a wire-to-wire short fault condition
- Primary, secondary, and transmit status indicators

AUXILIARY CONTROL RELAYS:

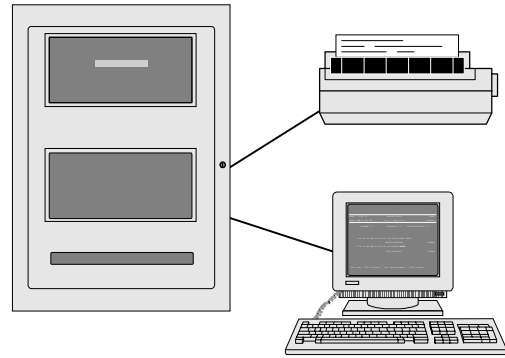
- Built-In fuse protection per contact
- Feedback tracks on/off status of remote devices
- **4100-3003**, Eight CPU controlled relays, SPDT contacts rated 3 A @ 24 VDC or 120 VAC, resistive

EXPANSION POWER SUPPLY, POWER LIMITED, 120 VAC INPUT (4100-0118):

- 8 A, (two taps of 4 A each) filtered, unregulated 24 VDC output for standard peripheral devices
- AC input is 1.25 A @ 240 VAC, 50/60 Hz

MINIPLEX® REMOTE INTELLIGENT POWER SUPPLY, POWER LIMITED (4100-1057A):

- Tap “B” provides 4 A at 28.5 VDC for general purpose control power ie: Door holders, Flowswitch test Solenoids etc.
- Tap “A” provides remote module power, 4 A maximum, 2 A is typically available for “clean” loads with controlled inrush currents and proper transient suppression (actual available power depends on remote module requirements)
- Tap “C” provides 4 A for battery charging
- Addressable electronics communicate status, voltage, and current information for viewing at the panel LCD. Operator panel can be used to control output taps.
- AC input is 3 A @ 240 VAC, 50/60 Hz



Typical 4100, RS-232 Connections

EXPANSION POWER SUPPLIES, NON-POWER LIMITED:

SUPPLY	INPUT	OUTPUT
4100-0115	240 VAC, 50/60 Hz, 1 A	5 A @ 24 VDC ± 5%, for regulated peripheral power
4100-0118	240 VAC, 50/60 Hz, 1.25 A	8 A (two taps of 4 A each) @ 24 VDC filtered, unregulated

ADDITIONAL BATTERY CHARGER & OPTIONS:

4100-0104, 120 VAC input, 2 A, or **4100-0114**, 240 VAC 50/60 Hz input, 1 A:

- Charges up to 110 Ah batteries, lead acid or NiCad
- Monitors for AC power failure, low/no battery, and high battery level

4100-0124 ENHANCED BATTERY CHARGER:

- Charges up to 110 Ah batteries, lead acid or NiCad
- Manual switches for high rate charge and AC disconnect
- LEDs for AC fail/disconnect, low/no battery, and high battery level
- Meters to indicate battery voltage and charging current, 0-50 VDC voltmeter, 0-5 A ammeter
- AC input is 2 A @ 120 VAC

4120 NETWORK INTERFACE:

4100-0140 provides dual wired data communications

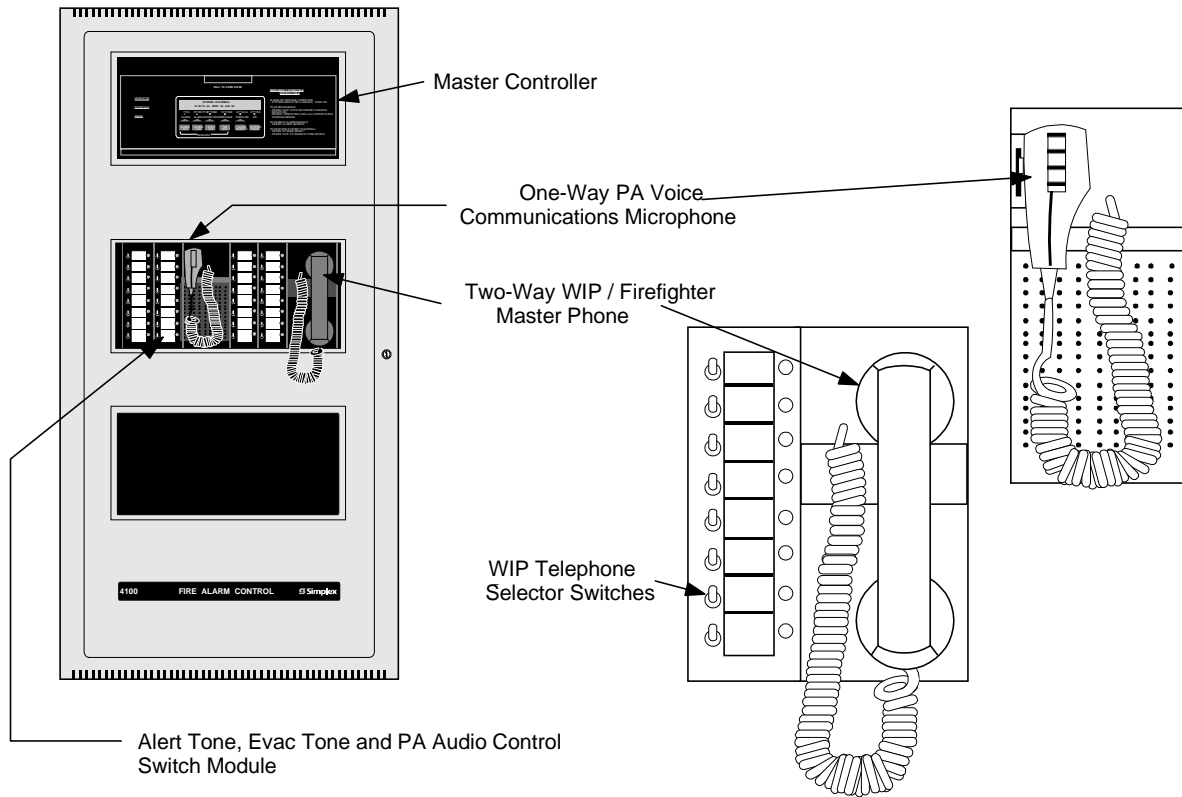
4100-0149 provides a modular interface with media options of:

- **4120-0142**, for wired data
- **4120-0143**, for fiber optics
- **4120-0144**, for modem connections
- refer to data sheet S4120-0003 for details

Physical Bridge Modules (4120-6023, Style 4, or **4120-6024**, Style 7) provide extended modem connection flexibility (refer to data sheet S4120-0005).

MODULE DESCRIPTIONS (Continued)

4100/4120 Voice Communication Command Center Components



ONE-WAY COMMUNICATIONS SYSTEMS:

- Approved to AS2220
- 25 watt / 50 Watt AS2220 Audio Amplifiers
- Multiple Supervised Remote Microphone Inputs
- AS2220 Digitized Voice/Tone Generation
- Automatic or Manual Audio Control
- MINIPLEX Voice Transponders for Distributed Audio
- Network Interface for 4120 Network EWIS Systems

WIP / FIREFIGHTER TELEPHONE SYSTEMS:

- Multiple Remote Master Phones
- Ring Signal on Remote Firefighters Telephone Indicates Call Request
- Telephone Circuits are Supervised for Open and Short Circuit Conditions
- Up to 3 WIP / Firefighters telephones per WIP input circuit

GENERAL:

The 4100 EWIS Audio System provides one-way voice communication, alarm tones, and/or digitally prerecorded voice messages to alert occupants of fire or other emergency situations. Evacuation signaling may be automatically generated via alarm initiated event programs in the 4100 Master Controller or by firefighting personnel operating the system microphone. The system may also be equipped with a WIP Firefighter Master Telephone module to provide the Fire Commander with two-way communications with firefighters or fire wardens located remotely throughout the building. The 4100 EWIS system is approved to AS2220 and is SSL listed –Listing No:afp-1174

OPERATION:

The 4100 EWIS system uses the same basic components as the 4100 Fire Alarm Panel with the addition of AS2220 Audio amplifiers and WIP Control Interface to provide an EWIS system complying to AS2220. Each audio amplifier has its own in-built tone generator complete with digitized voice

MODULE DESCRIPTIONS (Continued)

AUDIO CONTROL BOARD

4100-0302A

Provides Control for up to six (6) audio amplifiers

PA Microphone & Keypress Module

4100-0410

Provides a Public Address paging microphone and Microphone / EWS Control selection 3 position keyswitch .

AUDIO AMPLIFIERS (4100-82XX SERIES)

- Models are available with 25 W or 50W output at 100 VRMS , Approved to AS2220
- Short circuit protection with speaker line supervised for open and short circuit conditions .
- Frequency response of 120 to 12,000 Hz
- Signal-to-noise ratio better than 60dB
- Battery backup capability
- Integral amplifier monitor for supervised operation

WIP CONTROL MODULE – (4100-4321W)

- Provides control for up to six WIP circuits
- Each WIP circuit is supervised for open / short circuit condition
- Maximum of three (3) WIPS per WIP circuit
- Approved to AS2220

MAPNET II[®], TRUEALARM[®] MODULE (4100-0110)

- up to 127 MAPNET II addressable devices or TrueAlarm analog sensors per module
- MAPNET II Line Isolator Modules for panel mount (4100-0111) or line powered (2190-9169, surface mount or 2190-9170, flush mount)
- Refer to data sheet S4100-0002 for details

24 Point Input / Output MODULE (4100-3024)

Provides up to 24 Programmable input / output relays.

- Individually configured as either input or output relay.
- Relay SPST Contacts rated 0.5A @24VDC or 30VAC

DIAL-IN SERVICE MODEM (4100-0139)

Provides remote access for a computer equipped with a modem and terminal emulation software.

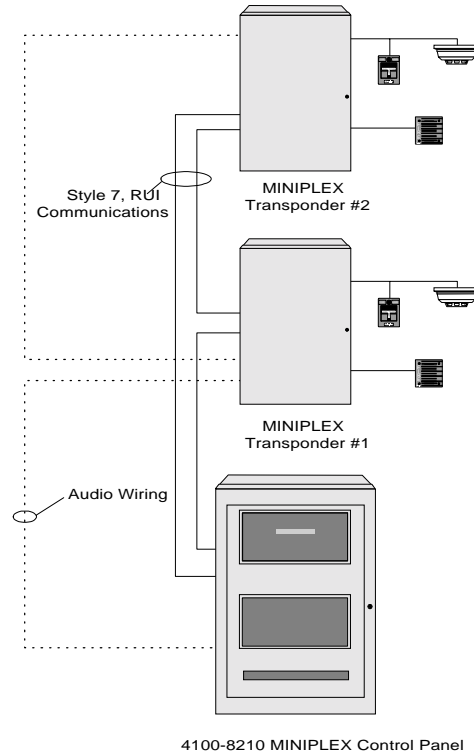
PANEL MOUNT PRINTER (4100-0451)

- 40 column high speed event printer
 - 20 exposed lines with internal take-up reel
 - Operates from system voltage with battery back-up
 - Requires dedicated RS-232 port
- Refer to data sheet S4100-0021 for details

MODULE DESCRIPTIONS (Continued)

MINIPLEX® DISTRIBUTED MODULE OPERATION

- Allows Remote Location of: Amplifiers, MAPNET II and TrueAlarm Interface Modules, Initiating Device Circuits, Notification Appliance Circuits, and Auxiliary Control Circuits
- **4100-EWIS** control panels are for audio operation,
- Up to 31 MINIPLEX transponders can be controlled from the fire alarm control panel
- Refer to data sheet S4100-0015 for Miniplex transponder details
- The figure to the right shows a typical audio/voice MINIPLEX transponder system with initiating devices and notification, each monitored and controlled by the control panel



MINIPLEX System Example

REMOTE UNIT INTERFACE, RUI (4100-0304)

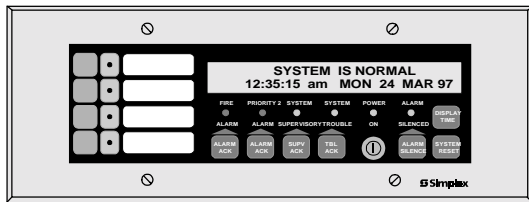
- Supervised serial communication channel for control and monitoring of remotely located annunciators, MINIPLEX transponders, and I/O panels
- Can be wired for either Style 7 (Class A) or Style 4 (Class B) communications
- Up to four RUI modules can be installed

LED ANNUNCIATION

Optional interface modules are available for remote and/or local control panel annunciation. The LEDs are programmable for slow rate, fast rate pulse or steady illumination.

4603-9101 SERIAL LCD ANNUNCIATOR:

Simplex LCD annunciators provide remote area annunciation and control using a display and controls similar to those of the 4100 control panel. Information is transmitted over a single twisted, shielded pair. Other styles of serial annunciators can be connected on the same pair of wires. (Refer to data sheet S4603-0001.)



4603-9101 LCD Annunciator

64/64 LED/SWITCH CONTROLLER (4100-0301)

- Interfaces up to 64 LEDs and 64 switches to the master controller via serial communications
- Continuously monitors switches for changes in status
- Supervises and controls LEDs
- Supervises LED/switch module placement

24 POINT I/O GRAPHIC INTERFACE (4100-0302)

- Each of the 24 points can be individually configured as either a switch input or a lamp driver output
- 150 mA lamp driver output (+24 VDC common)
- Outputs can be steady, slow pulse, or fast pulse
- Switch inputs can monitor 2 position or 3 position switches
- Lamp test input
- Provides supervised monitoring and/or control for smoke control applications

LED/SWITCH MODULES

- Modules contain socketed LEDs to allow interchanging with different color LEDs to indicate function
- Switch modules can be used to perform manual control such as for HVAC, pressurization fans, damper control, speaker circuits, etc.

LED/SWITCH MODULE SELECTION

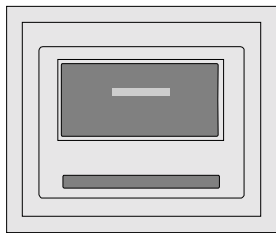
4100-0401	8 red LEDs
4100-0402	8 red & 8 yellow LEDs
4100-0403	8 red LEDs & 8 momentary switches
4100-0404	8 red & 8 green LEDs, & 8 three position maintained switches
4100-0405	8 red & 8 yellow LEDs, & 8 momentary switches
4100-0406	8 yellow LEDs

MOUNTING:

Model Number	Size	Height	Cabinet Width	Cabinet Depth
4100-8921, Glass Door 4100-8920, Solid Door	2-Unit	656 mm	735 mm	204 mm
4100-8923, Glass Door 8926 RHand Hinged Glass Door 4100-8922, Solid Door	4-Unit	1168 mm		
4100-8925, Glass Door 8927 RHand Hinged Glass Door 4100-8920, Solid Door	6-Unit	1530 mm		

Paint Colour: Powder Coat Magnolia Ripple

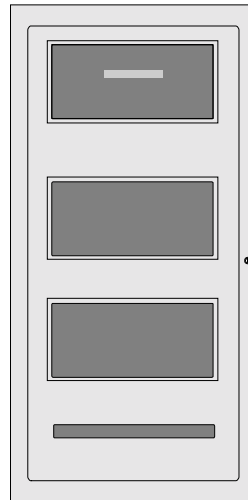
Cabinet Material: 1.2mm Mild grade Steel



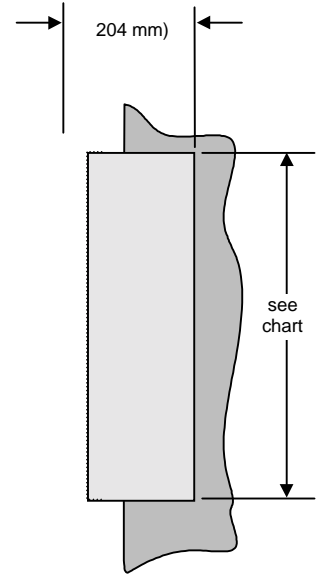
2 UNIT



4 UNIT



6 UNIT



Installation Detail
Side View

NOTE: A system ground must be provided for Earth Detection and transient protection devices. This connection shall be made to an approved, dedicated Earth connection per NFPA 70, article 250, and NFPA 780.

S4100-0013A 8-00



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