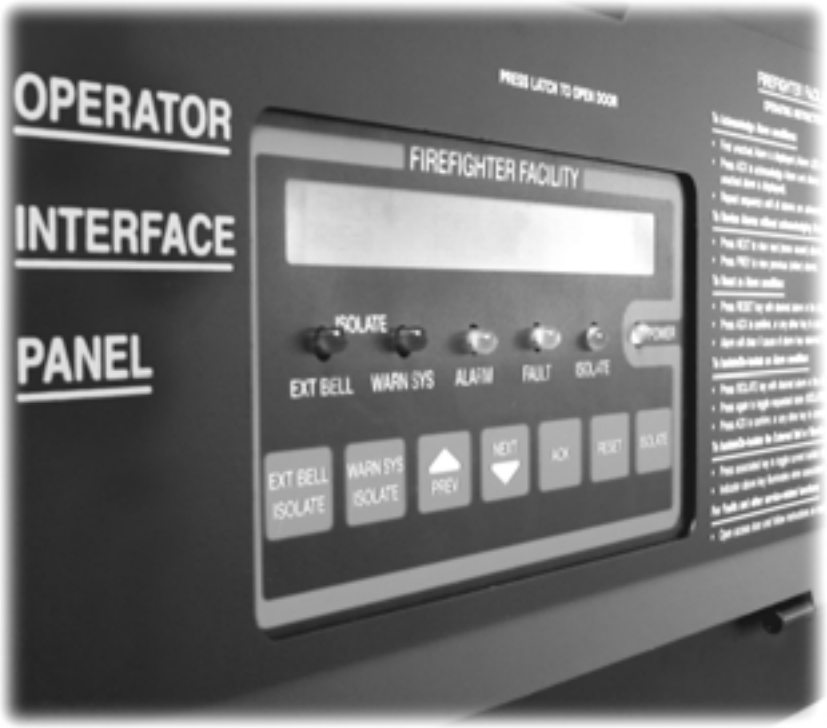
FIRE

4100/4120
Fire Alarm System
Installation Manual



LT0294
579-315
Rev 1.1

Simplex

Manufacturer's Details

Approvals

Australian Standard AS 4428.1, Control and Indicating Equipment. SSL Listing No. afp1165

Manufactured by

Simplex International Pty Ltd
140 Old Pittwater Road
Brookvale N.S.W. 2100 Australia
Phone: (02)-9466-2333

Copyrights and Trademark Information

Product Name and Model No.

NAME:	4100/4120 FIP
SERIAL NUMBER:	
MANUFACTURE DATE:	

Cautions and Warnings

READ AND SAVE THESE INSTRUCTIONS. Follow the instructions in this installation manual. These instructions must be followed to avoid damage to this product and associated equipment. Product operation and reliability depends upon proper installation.

DO NOT INSTALL ANY SIMPLEX PRODUCT THAT APPEARS DAMAGED. Upon unpacking your Simplex product, inspect the contents of the carton for shipping damage. If damage is apparent, immediately file a claim with the carrier and notify Simplex.

ELECTRICAL HAZARD - Disconnect electrical field power when making any internal adjustments or repairs. Servicing should be performed by qualified Simplex Representatives.

STATIC HAZARD - Static electricity can damage components. Therefore, handle as follows:

- Ground yourself before opening or installing components (use the 553-484 Static Control Kit).
- Prior to installation, keep components wrapped in anti-static material at all times.

EYE SAFETY HAZARD - Under certain fiber optic application conditions, the optical output of this device may exceed eye safety limits. Do not use magnification (such as a microscope or other focusing equipment) when viewing the output of this device.

Table of Contents

How to Use this Publication

Introduction

Before you start using the *4100/4120 Fire Alarm System Installation Manual*, it's important to understand the typographic conventions used in this publication.

General Conventions

The following conventions are used in this publication to identify special names or text.

Convention	Meaning
Bold type	Indicates words or characters that you type. Unless it is specifically noted, you can type the text in lowercase or uppercase characters. For example, **cd access** means that you type the lowercase letters “cd” followed by a space and the lowercase word “access.”
Italic type	Indicates information that the user must supply, such as filenames. For example, cd *directory_name* means that you type the letters “cd” followed by a space and a directory name. Indicates important terms or titles of publications.
“Text in quotes”	Indicates the title of a chapter or section of the manual, such as “How to Use This Publication.”
• Bulleted lists	Provides you with information. They are also used to indicate alternatives in numbered procedural steps.
1. Numbered lists	Indicates procedures that you must carry out sequentially.

Related Documentation

Information Covered in Other Manuals

The following table shows the recommended reading path for information related to the 4100/4120 Fire Alarm System. The document in boldface, italic type represents this manual.

Document Name	Part #
4100/4120 Fire Indicator Panel Operator Manual	574-314
4100/4120 Fire Alarm System Installation Manual	***579-315***
4100/4120 Fire Indicator Panel Technical Manual	579-316

Chapter 1
Contractor Installation Instructions

Introduction

This chapter provides a logical sequence of procedures to follow when installing a 4100+ system. Refer to the notes below before moving on with the installation procedure. Also, see the next section for a list of documents referred to during the installation.

Important: The installer is responsible for safeguarding all 4100+ material shipped to the job site. During system installation, store all 4100+ items (including all documentation) in a clean, dry, safe place until needed.

Important: If an existing system must be shut down while the 4100+ system is being installed, notify the appropriate personnel (building occupants, fire department, monitoring facility, etc.).

Warning: After reading the information contained in this manual, call your local Simplex Representative before proceeding to connect field wiring. Do not apply AC or battery power to the 4100+ system unless in the presence of a Simplex Technical Representative.

In this chapter

Refer to the page number listed in this table for information on a specific topic.

Supplied Documentation

The envelope that contained this publication also contains the following documents:

- *Factory Documentation (packed in a clear plastic envelope)*
- *4100 Field Wiring Diagram (841-731)*
- *Field Wiring Diagrams, Smoke Detectors (841-687)*
- *Field Wiring Diagrams, MAPNET II® Devices (841-804)*
- *4100/4100+ Fire Alarm Operating Instructions (579-314)*

Except for the last publication, all of the above documents are required for system installation.

The 4100 Field Wiring Diagrams (841-731) are used when wiring peripheral devices to the 4100 panel. These diagrams provide a pictorial reference on how to terminate wiring on all motherboards in a 4100 system.

Field Wiring Diagrams (841-687) should be available for the installer during installation of all peripheral devices (auxiliary relays, indicating appliances, initiating devices, etc.).

Note: The first page of each Field Wiring Diagram is an index, which should be used to identify the correct page for a specific installation procedure.

Installation Overview

The next ten steps outline the installation process for the 4100 Fire Alarm System. Each step in the procedure is followed by an explanation of exactly what needs to be done and how. If possible, proceed through the installation process in the sequence that follows.

1. Inventory the delivered equipment.

   The delivered equipment includes the envelope that contained this publication, the materials listed in the Packaging Information section of the Factory Documentation, and the envelope labeled System Hardware (shown in Figure 1-1).

Note: The contractor is not responsible for inventorying or installing daughter cards, or for interconnecting panel components. All cartons that contain daughter cards are to be opened, inventoried, and installed by Simplex personnel.

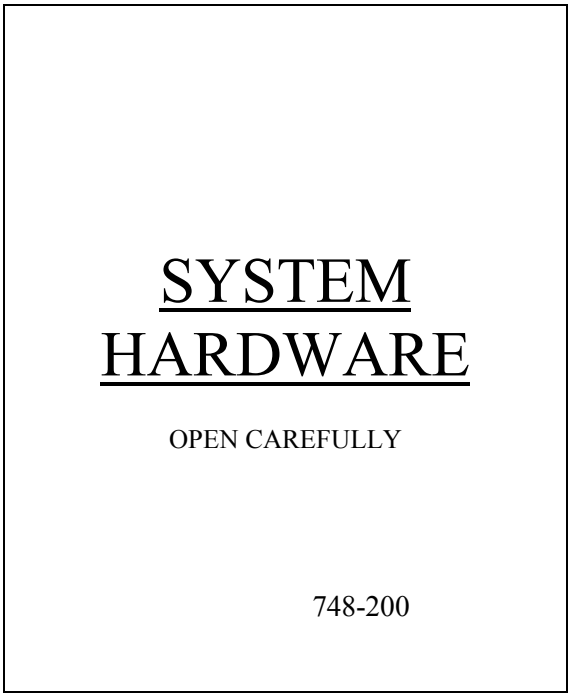


Figure 1-1. System Hardware Envelope Label

Continued on next page

2. Install the back box. Refer to the *4100+/4120/UT Back Box Installation Instructions* (Pub. No. FA4-21-203).
3. Install and tag all system wiring. Refer to the *SYSTEM POINT SUMMARY* Report for the points that must be wired (Figure 2-3 shows an example) and the appropriate page in the *4100 Field Wiring Diagram* (841-731) for instructions on wiring that type of point.
4. Install the peripheral devices and E.O.L. resistors. Refer to the Point Type column in the System Point Summary Report for device type.
   - Wire peripherals in accordance with the appropriate 4100 Field Wiring Diagram (841-731).
   - Wire a MAPNET II® device in accordance with the appropriate MAPNET II® Field Wiring Diagram (841-804).
     a. Use a small screwdriver or ballpoint pen to set the MAPNET II device's address switches. Refer to the note below for instructions on setting proper addresses.

Notes: A MAPNET II® device's address is represented by the final digit(s) in the zone's name. See Table 1-1 for a complete listing of MAPNET II® addresses.

(address examples)

A device that connects to a zone named M1-2 must have its switches set to address 2. A device that connects to a zone named M1-117 must have its switches set to address 117.

- Address zero (all switches turned OFF) is not a valid address.
- Switch number 8 is never turned ON.

b. After setting the device address, write the device's address on the address label to agree with the address switches.

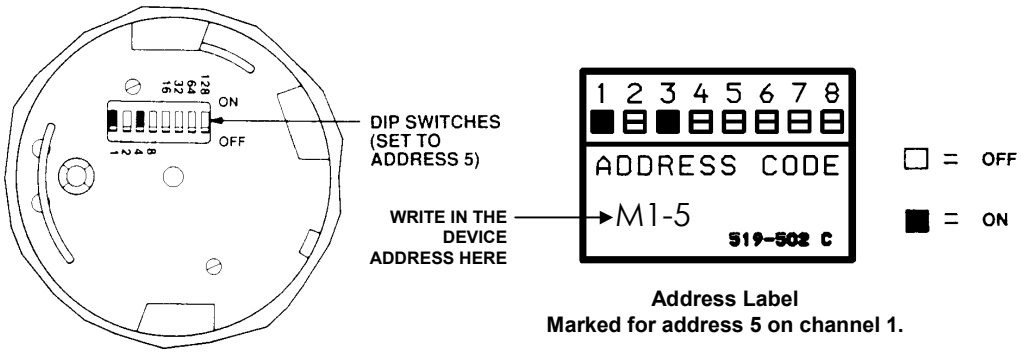


Figure 1-2 and Figure 1-3. Location of DIP Switches on a Typical Device and Device Address Label

Continued on next page

Table 1-1. MAPNET II Addresses

SW1-1	SW1-2	SW1-3	SW1-4	SW1-5	SW1-6	SW1-7	SW1-8		
ON	OFF	OFF	OFF	OFF	OFF	OFF	OFF	=	ADDRESS 1
OFF	ON	OFF	OFF	OFF	OFF	OFF	OFF	=	ADDRESS 2
ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	=	ADDRESS 3
OFF	OFF	ON	OFF	OFF	OFF	OFF	OFF	=	ADDRESS 4
ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	=	ADDRESS 5
OFF	ON	ON	OFF	OFF	OFF	OFF	OFF	=	ADDRESS 6
ON	ON	ON	OFF	OFF	OFF	OFF	OFF	=	ADDRESS 7
OFF	OFF	OFF	ON	OFF	OFF	OFF	OFF	=	ADDRESS 8
ON	OFF	OFF	ON	OFF	OFF	OFF	OFF	=	ADDRESS 9
OFF	ON	OFF	ON	OFF	OFF	OFF	OFF	=	ADDRESS 10
ON	ON	OFF	ON	OFF	OFF	OFF	OFF	=	ADDRESS 11
OFF	OFF	ON	ON	OFF	OFF	OFF	OFF	=	ADDRESS 12
ON	OFF	ON	ON	OFF	OFF	OFF	OFF	=	ADDRESS 13
OFF	ON	ON	ON	OFF	OFF	OFF	OFF	=	ADDRESS 14
ON	ON	ON	ON	OFF	OFF	OFF	OFF	=	ADDRESS 15
OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF	=	ADDRESS 16
ON	OFF	OFF	OFF	ON	OFF	OFF	OFF	=	ADDRESS 17
OFF	ON	OFF	OFF	ON	OFF	OFF	OFF	=	ADDRESS 18
ON	ON	OFF	OFF	ON	OFF	OFF	OFF	=	ADDRESS 19
OFF	OFF	ON	OFF	ON	OFF	OFF	OFF	=	ADDRESS 20
ON	OFF	ON	OFF	ON	OFF	OFF	OFF	=	ADDRESS 21
OFF	ON	ON	OFF	ON	OFF	OFF	OFF	=	ADDRESS 22
ON	ON	ON	OFF	ON	OFF	OFF	OFF	=	ADDRESS 23
OFF	OFF	OFF	ON	ON	OFF	OFF	OFF	=	ADDRESS 24
ON	OFF	OFF	ON	ON	OFF	OFF	OFF	=	ADDRESS 25
OFF	ON	OFF	ON	ON	OFF	OFF	OFF	=	ADDRESS 26
ON	ON	OFF	ON	ON	OFF	OFF	OFF	=	ADDRESS 27
OFF	OFF	ON	ON	ON	OFF	OFF	OFF	=	ADDRESS 28
ON	OFF	ON	ON	ON	OFF	OFF	OFF	=	ADDRESS 29
OFF	ON	ON	ON	ON	OFF	OFF	OFF	=	ADDRESS 30
ON	ON	ON	ON	ON	OFF	OFF	OFF	=	ADDRESS 31
OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF	=	ADDRESS 32
ON	OFF	OFF	OFF	OFF	ON	OFF	OFF	=	ADDRESS 33
OFF	ON	OFF	OFF	OFF	ON	OFF	OFF	=	ADDRESS 34
ON	ON	OFF	OFF	OFF	ON	OFF	OFF	=	ADDRESS 35
OFF	OFF	ON	OFF	OFF	ON	OFF	OFF	=	ADDRESS 36
ON	OFF	ON	OFF	OFF	ON	OFF	OFF	=	ADDRESS 37
OFF	ON	ON	OFF	OFF	ON	OFF	OFF	=	ADDRESS 38
ON	ON	ON	OFF	OFF	ON	OFF	OFF	=	ADDRESS 39
OFF	OFF	OFF	ON	OFF	ON	OFF	OFF	=	ADDRESS 40
ON	OFF	OFF	ON	OFF	ON	OFF	OFF	=	ADDRESS 41
OFF	ON	OFF	ON	OFF	ON	OFF	OFF	=	ADDRESS 42
ON	ON	OFF	ON	OFF	ON	OFF	OFF	=	ADDRESS 43
OFF	OFF	ON	ON	OFF	ON	OFF	OFF	=	ADDRESS 44
ON	OFF	ON	ON	OFF	ON	OFF	OFF	=	ADDRESS 45
OFF	ON	ON	ON	OFF	ON	OFF	OFF	=	ADDRESS 46
ON	ON	ON	ON	OFF	ON	OFF	OFF	=	ADDRESS 47
OFF	OFF	OFF	OFF	ON	ON	OFF	OFF	=	ADDRESS 48
ON	OFF	OFF	OFF	ON	ON	OFF	OFF	=	ADDRESS 49
OFF	ON	OFF	OFF	ON	ON	OFF	OFF	=	ADDRESS 50
ON	ON	OFF	OFF	ON	ON	OFF	OFF	=	ADDRESS 51
OFF	OFF	ON	OFF	ON	ON	OFF	OFF	=	ADDRESS 52
ON	OFF	ON	OFF	ON	ON	OFF	OFF	=	ADDRESS 53
OFF	ON	ON	OFF	ON	ON	OFF	OFF	=	ADDRESS 54
ON	ON	ON	OFF	ON	ON	OFF	OFF	=	ADDRESS 55
OFF	OFF	OFF	ON	ON	ON	OFF	OFF	=	ADDRESS 56
ON	OFF	OFF	ON	ON	ON	OFF	OFF	=	ADDRESS 57
OFF	ON	OFF	ON	ON	ON	OFF	OFF	=	ADDRESS 58
ON	ON	OFF	ON	ON	ON	OFF	OFF	=	ADDRESS 59
OFF	OFF	ON	ON	ON	ON	OFF	OFF	=	ADDRESS 60
ON	OFF	ON	ON	ON	ON	OFF	OFF	=	ADDRESS 61
OFF	ON	ON	ON	ON	ON	OFF	OFF	=	ADDRESS 62
ON	ON	ON	ON	ON	ON	OFF	OFF	=	ADDRESS 63
OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	=	ADDRESS 64

SW1-1	SW1-2	SW1-3	SW1-4	SW1-5	SW1-6	SW1-7	SW1-8		
ON	OFF	OFF	OFF	OFF	OFF	ON	OFF	=	ADDRESS 65
OFF	ON	OFF	OFF	OFF	OFF	ON	OFF	=	ADDRESS 66
ON	ON	OFF	OFF	OFF	OFF	ON	OFF	=	ADDRESS 67
OFF	OFF	ON	OFF	OFF	OFF	ON	OFF	=	ADDRESS 68
ON	OFF	ON	OFF	OFF	OFF	ON	OFF	=	ADDRESS 69
OFF	ON	ON	OFF	OFF	OFF	ON	OFF	=	ADDRESS 70
ON	ON	ON	OFF	OFF	OFF	ON	OFF	=	ADDRESS 71
OFF	OFF	OFF	ON	OFF	OFF	ON	OFF	=	ADDRESS 72
ON	OFF	OFF	ON	OFF	OFF	ON	OFF	=	ADDRESS 73
OFF	ON	OFF	ON	OFF	OFF	ON	OFF	=	ADDRESS 74
ON	ON	OFF	ON	OFF	OFF	ON	OFF	=	ADDRESS 75
OFF	OFF	ON	ON	OFF	OFF	ON	OFF	=	ADDRESS 76
ON	OFF	ON	ON	OFF	OFF	ON	OFF	=	ADDRESS 77
OFF	ON	ON	ON	OFF	OFF	ON	OFF	=	ADDRESS 78
ON	ON	ON	ON	OFF	OFF	ON	OFF	=	ADDRESS 79
OFF	OFF	OFF	OFF	ON	OFF	ON	OFF	=	ADDRESS 80
ON	OFF	OFF	OFF	ON	OFF	ON	OFF	=	ADDRESS 81
OFF	ON	OFF	OFF	ON	OFF	ON	OFF	=	ADDRESS 82
ON	ON	OFF	OFF	ON	OFF	ON	OFF	=	ADDRESS 83
OFF	OFF	ON	OFF	ON	OFF	ON	OFF	=	ADDRESS 84
ON	OFF	ON	OFF	ON	OFF	ON	OFF	=	ADDRESS 85
OFF	ON	ON	OFF	ON	OFF	ON	OFF	=	ADDRESS 86
ON	ON	ON	OFF	ON	OFF	ON	OFF	=	ADDRESS 87
OFF	OFF	OFF	ON	ON	OFF	ON	OFF	=	ADDRESS 88
ON	OFF	OFF	ON	ON	OFF	ON	OFF	=	ADDRESS 89
OFF	ON	OFF	ON	ON	OFF	ON	OFF	=	ADDRESS 90
ON	ON	OFF	ON	ON	OFF	ON	OFF	=	ADDRESS 91
OFF	OFF	ON	ON	ON	OFF	ON	OFF	=	ADDRESS 92
ON	OFF	ON	ON	ON	OFF	ON	OFF	=	ADDRESS 93
OFF	ON	ON	ON	ON	OFF	ON	OFF	=	ADDRESS 94
ON	ON	ON	ON	ON	OFF	ON	OFF	=	ADDRESS 95
OFF	OFF	OFF	OFF	OFF	ON	ON	OFF	=	ADDRESS 96
ON	OFF	OFF	OFF	OFF	ON	ON	OFF	=	ADDRESS 97
OFF	ON	OFF	OFF	OFF	ON	ON	OFF	=	ADDRESS 98
ON	ON	OFF	OFF	OFF	ON	ON	OFF	=	ADDRESS 99
OFF	OFF	ON	OFF	OFF	ON	ON	OFF	=	ADDRESS 100
ON	OFF	ON	OFF	OFF	ON	ON	OFF	=	ADDRESS 101
OFF	ON	ON	OFF	OFF	ON	ON	OFF	=	ADDRESS 102
ON	ON	ON	OFF	OFF	ON	ON	OFF	=	ADDRESS 103
OFF	OFF	OFF	ON	OFF	ON	ON	OFF	=	ADDRESS 104
ON	OFF	OFF	ON	OFF	ON	ON	OFF	=	ADDRESS 105
OFF	ON	OFF	ON	OFF	ON	ON	OFF	=	ADDRESS 106
ON	ON	OFF	ON	OFF	ON	ON	OFF	=	ADDRESS 107
OFF	OFF	ON	ON	OFF	ON	ON	OFF	=	ADDRESS 108
ON	OFF	ON	ON	OFF	ON	ON	OFF	=	ADDRESS 109
OFF	ON	ON	ON	OFF	ON	ON	OFF	=	ADDRESS 110
ON	ON	ON	ON	OFF	ON	ON	OFF	=	ADDRESS 111
OFF	OFF	OFF	OFF	ON	ON	ON	OFF	=	ADDRESS 112
ON	OFF	OFF	OFF	ON	ON	ON	OFF	=	ADDRESS 113
OFF	ON	OFF	OFF	ON	ON	ON	OFF	=	ADDRESS 114
ON	ON	OFF	OFF	ON	ON	ON	OFF	=	ADDRESS 115
OFF	OFF	ON	OFF	ON	ON	ON	OFF	=	ADDRESS 116
ON	OFF	ON	OFF	ON	ON	ON	OFF	=	ADDRESS 117
OFF	ON	ON	OFF	ON	ON	ON	OFF	=	ADDRESS 118
ON	ON	ON	OFF	ON	ON	ON	OFF	=	ADDRESS 119
OFF	OFF	OFF	ON	ON	ON	ON	OFF	=	ADDRESS 120
ON	OFF	OFF	ON	ON	ON	ON	OFF	=	ADDRESS 121
OFF	ON	OFF	ON	ON	ON	ON	OFF	=	ADDRESS 122
ON	ON	OFF	ON	ON	ON	ON	OFF	=	ADDRESS 123
OFF	OFF	ON	ON	ON	ON	ON	OFF	=	ADDRESS 124
ON	OFF	ON	ON	ON	ON	ON	OFF	=	ADDRESS 125
OFF	ON	ON	ON	ON	ON	ON	OFF	=	ADDRESS 126
ON	ON	ON	ON	ON	ON	ON	OFF	=	ADDRESS 127

c. The envelope labeled "748-200 System Hardware" contains the required resistors.

3.3K (monitor zone) resistors are colour coded orange, orange, red (and have a gold tolerance band);

10K (Notification appliance [signal] circuit) resistors are colour coded brown, black, orange (and also have a gold tolerance band).

Note: Resistors other than those described above will be used by the Simplex Technical Representative (T.R.) during installation checkout.

Continued on next page

5. Using the procedure below, remove the option bay door. See Figure 1-4.
   a. If applicable, mark the top of the ribbon cable. Then pull the cable straight out of its connector.
   b. Remove the hair-pin cotter pins (item 1) from the upper clevis pins (item 2). Then push the clevis pins inward and lower the door.
   c. Free the lower end of the retainer cable (item 3) by removing the screw and washer (items 4 and 5).
   d. Remove the hair-pin cotter pins (item 6) from the lower clevis pins (item 7). Then push the clevis pins inward and remove the door.
   e. Store the door and its hardware in a safe, clean and dry place until the remainder of the steps are complete.

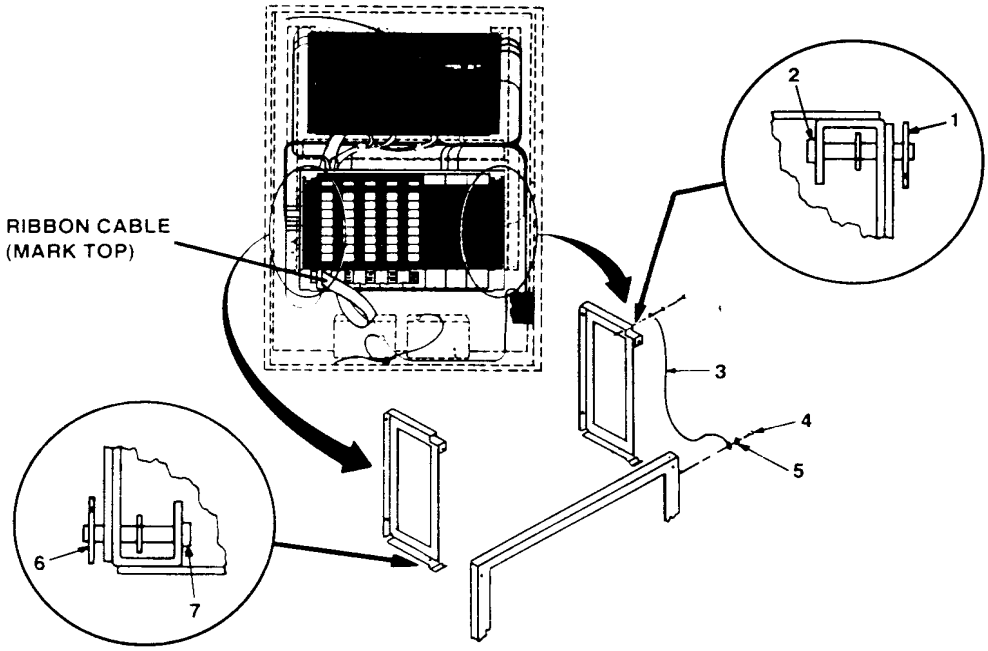


Figure 1-4. Removing the Option Bay Door

Continued on next page

6. Check and terminate all zone (ZN), MAPNET Loops (MAP A, MAP B) and signal (SIG) wiring.

Note: A standard job has at least 3 signal circuits, one of which is wired in the factory (Signal 3). The other two circuits must be wired. The three standard job signal circuits are described in the table below. Refer to the Programmer's Report for the actual configuration of your system.

Table 1-2. Standard Job Signal Circuits*

Signal	Custom Label	Card Location
Signal 3	Sounder (Local/Remote)	Address Label 2
Signal 4	External Bell	Address Label 2
Signal 5	Warning System	Address Label 2

*** This table represents standard job signal circuits only, refer to the Card Summary by Location Report for all of the signal circuits on your job.**

A. Refer to the *Card Summary by Location* Report (Figure 2-2) to determine the location of each card on the motherboard (A stock-on "ADDRESS" label on each motherboard identifies that board's number). The Card Summary by Location Report is found within the computer printout portion of the Factory Documentation.

B. Use the terminal identifier paper labels on the terminal blocks to find specific terminals. See Figure 3-1 (Custom Terminal Wiring Identifiers) for typical custom terminal wiring paper label identifiers.

C. Check each circuit for voltages, shorts or opens as follows:

1. With the meter set on **300V AC**, read the voltage across the circuit.
   - Meter must read 0 volts.
2. With the meter set on **60VDC**, read the voltage across the circuit again (this time in both directions).
   - Meter must read 0 volts.
3. With the meter set on **OHMS x 10** and its (+) and (–) leads connected to the circuit's (+) and (–) wires respectively, check resistance.
   - Readings must compare favourably with those shown in Table 1-3.
   - If reading indicates an open in a circuit that includes a smoke detector, make sure the detector head(s) are properly mounted and seated. (Circuits always read "open" (infinity) if detector power is absent and separately-powered devices (four-wire smoke detectors) are involved.)

D. Connect the wires to their terminals.

Continued on next page

Table 1-3. Acceptable Zone and Signal Circuit Meter Readings

Circuit Type	Meter Reading
Style B (formerly Class B) Initiating Device (Zone) Circuit	
From zone + to zone – (each zone)	3.3K ohms
From zone + to ground	Infinity
From zone – to ground	Infinity
Style D (formerly Class A) Initiating Device (Zone) Circuit	
From zone + to zone – (each zone)	Infinity
From zone + to ground	Infinity
From zone – to ground	Infinity
From zone + OUT to + IN	Less than 50 ohms
From zone – OUT to – IN	Less than 50 ohms
Style Y (formerly Class B) Notification Appliance Circuit (each signal circuit)	
From + to ground	Infinity
From – to ground	Infinity
Resistance across circuit	
In one direction	10K ohms
In opposite direction	Less than 200 ohms
Style Z (formerly Class A) Notification Appliance Circuit (each signal circuit)	
From + to ground	Infinity
From – to ground	Infinity
From + OUT to + IN	Less than 50 ohms
From – OUT to – IN	Less than 50 ohms
Resistance across circuit	
In one direction	Infinity
In opposite direction	Less than 200 ohms
Shielding	
Shield to ground	Infinity
Shield to –	Infinity
Shield to +	Infinity
MAPNET II® Loops (ZAMs and IAMs)	
From MAPNET II® + to ground	Infinity
From MAPNET II® – to ground	Infinity

Continued on next page

7. Check and terminate all remaining circuits (Auxiliary Relays, Brigade, AC Power, MAPNET II, etc) according to the instructions below.

Auxiliary Relays

A standard job has at least two Auxiliary Relays that must be wired. The table below describes these two relays. Refer to the Programmer's Report for the actual configuration of your system.

Table 1-4. Standard Job Auxiliary Relays*

Auxiliary	Custom Label	Card Location
Auxiliary 3	Isolate Relay	Address Label 3
Auxiliary 4	Fail Relay	Address Label 3

*** This table represents standard job auxiliaries only, refer to the Card Summary by Location Report for all of the auxiliary circuits for your job.**

Note: The Fail Relay (Aux 4) is always held on, in a failsafe mode, by the software.

Marked on the termination label for auxiliaries are the connections N.O (Normally Open), N.C. (Normally Closed) and C (Common). These connections are in the de-energised state.

Brigade Circuits

A standard job has two Brigade Circuits that must be wired. The table below describes these two circuits. Refer to the Programmer's Report for the actual configuration of your system.

Table 1-5. Standard Job Brigade Circuits

Brigade	Custom Label	Card Location
Brigade Alarm	none	CPU Board
Brigade Fault	none	CPU Board

As the table points out, the Brigade circuits are now located on the CPU Board. The terminal block identifier label for the Brigade circuits is shown in Figure 3-1.

AC Power

Connect the AC Power after all other circuits are terminated. The AC Power terminal block, like other TBs, is labeled for correct wiring.

Warning: The main breaker for AC Power to the Fire Panel should be turned off when wiring AC Power.

Important: Only Simplex representatives are authorised to apply AC or battery power to the 4100+ system.

Continued on next page

8. Use the tie wraps in the System Hardware envelope to neatly dress the panel wiring.
9. Re-install the option bay door.
10. Call your local Simplex Branch Office (listed in the Yellow Pages) to install the printed circuit boards and test the system.

Chapter 2
Programmer's Report Explained

Introduction

The Programmer's Report identifies peripheral connections within the panel and specifies system operational data. The sections within the Programmer's Report normally required for contractor installation are explained in this chapter.

In this Chapter

Refer to the page number listed in this table for information on a specific section in the Programmer's Report.

General Information

This section contains branch office required information. It details branch personnel involved with the system, system power data, agency, and software information. The title at the beginning of the report should match the panel being installed. Also, note the build date. It should be up-to date. If the report doesn't seem to match the current site, contact the local Simplex TR.

```
XYZ HOSPITAL, BLDG 1           GENERAL INFORMATION                      Page
1
00C0901 node:1 rev:10                                    11:23:35, MON, 08-JAN-
01
------------------------------------------------------------------------------
--
4100 Fire Alarm System
GENERAL
Simplex Time Recorder Co.
INFO

Node Number: 1
System Type: 4100+

            Job Filename :  00C0901
               Job Title :  XYZ HOSPITAL, BLDG 1
            Order Number :
                Customer :  ACME FIRE ALARMS
        Customer Contact :  JOE FLAME
              Contractor :
             Salesperson :
           Branch Number :  909
          Branch Location :  PERTH
            Programmed by :  DJR

          Agency Approval :  NONE
            NFPA Standard :  NONE
      Standby Generator? :  NO
Hours of Standby Battery :

Comments :  SAMPLE 4100A JOB FOR USE IN THE INSTALLATION MANUAL
         :


                  Job Rev : 10
                Built Rev : 10
               Built Date : 08-Jan-01 11:22

                            Current    As Built
                            -------    --------
          Programmer Rev : A9.02.13   A9.02.13
     System Defaults Rev : 100        100
   Database (DBF) Format : 160        160
              CFIG Format : 96         96
```

Figure 2-1. General Information

Card Summary by Location

The Card Summary by Location shows the number of cards within the system, as well as the I/Os on those cards. Mainly, use this section of the report to locate specific cards, whether they are in the local controller unit or in a remote unit, and to identify the specific I/Os mapped to those cards. The report shows a Card Number that corresponds to the address of each printed circuit board and a Zone Range that identifies the I/Os on each card. You can also use this section of the report to verify delivery of system cards from the factory.

```
------------------------------------------------------------------------------
--
XYZ HOSPITAL, BLDG 1        CARD SUMMARY BY LOCATION                    Page
3
00C0901 node:1 rev:10                                    11:23:35, MON, 08-JAN-
01
------------------------------------------------------------------------------
--

CARD
CARD LOCATION LISTING:
LOCATION

LOCAL CONTROLLER UNIT:

     DAUGHTER CARDS:

           Card    Card Type                                 Zone Range
           -----   ---------------------------------------   ----------------
              0    (7003) 4100+ Master Controller
              1    (6005) Power Supply/Charger
              2    (4322) 3 Input Class B Signal w/Sup       SIG3-8
              3    (3003) 8 Pt, 3 Amp Relay w/ Feedback      AUX3-10
              4    (0140) 4120 Network Interface
              5    (0113) 2120/RS232 Interface               RS232-1
              6    (0110) MAPNET Interface                   M1-1 - 9
              7    (0304) Remote Unit Interface (RUI)        RUI 1

     ANNUNCIATORS:

     Annun Card    Card Type                                 Zone Range
     ----- -----   ---------------------------------------   ----------------
                   no local annunciators


REMOTE UNIT INTERFACE 1 (RUI 1):

Type Unit  Card    Card Type                                 Zone Range
---------  ----    ---------------------------------------   ----------------
I/O     1    10    (6005) Power Supply/Charger
I/O     1    11    (3003) 8 Pt, 3 Amp Relay w/ Feedback      AUX11-18
I/O     1    12    (4322) 3 Input Class B Signal w/Sup       SIG9-14
I/O     1    13    (0110) MAPNET Interface                   M2-1 - 6
Ann     2    15    (0302) 24 Pt Graphic Interface            IO1-24
Ann     3    20    (4603-9101) LCD Annunciator
```

Figure 2-2. Card Summary by Location

System Point Summary

Introduction

The System Point Summary is of primary importance to the installer. Simplex personnel must provide this information prior to installation. Call your local Simplex branch office, listed in the Yellow Pages, and request this information be provided. This is used in conjunction with the Layout pages, to determine wiring terminations and the information shown below.

Note: The System Point Summary Report can be found within the computer printout portion of the Factory Documentation.

Zone Name

Zone names reference the custom label to specific points for actual customer wiring. They include monitor zones (ZNx), signals (SIGx), auxiliary relays (AUXx), 24 point I/O (IOx) and feedback (FBx) numbers. Zones, signals, relays, feedbacks, etc., are shown in numerical sequence.

Note: Zones with a device type of "LIST" are virtual zones and do not represent actual points.

Note: The last four signals circuits (in Figure 2-3, SIG 15-19) in a job are not used in Australia. You can ignore these.

Address

Each printed circuit board requires a unique address. Address 0 identifies the master termination module. Up to 119 addresses, one per printed circuit board, may be used in a system. Addresses may or may not be in sequential order, but the report always starts with address 0. Two address labels are used for each mother/daughter board combination. The mother board will have its unique address label next to the P.C. board connector. The daughter board will have an identical label.

Custom Label

The custom label identifies a location within a building or area and contains additional information concerning each circuit. Also included with the custom label is the corresponding zone name. This ties the custom label to a zone name and allows the installer to identify where field wires are terminated, according to zone name.

(examples)

```
6TH FLOOR NORTH WING EXHAUST FANS   FB25
1ST FLOOR SOUTH WING VISUALS        SIGNAL 2
3RD FLOOR EAST WING STROBES         SIGNAL 40
```

Point Type

This is the type of device (indicating appliance, initiating device, relays, etc.) connected to each circuit. Each device type is abbreviated. An operational description may also be included in the abbreviation.

(example)

```
AHUM (Air Handling Unit Monitor)
PRI    (Primary    Elevator
Capture)
```

The installer should use the System Point Summary when marking wires to the 4100 panel. These markings should include zones (ZNx+, ZNx-), signals (SIGx), etc., for each circuit within the system. Marking each wire in this matter will facilitate termination and checking of the wiring in the 4100 panel.

Continued on next page

System Point Summary, *Continued*

```
--------------------------------------------------------------------------------
XYZ HOSPITAL, BLDG 1          SYSTEM POINT SUMMARY                      Page   4
00C0901 node:1 rev:10                                  11:23:35, MON, 08-JAN-01
--------------------------------------------------------------------------------
                                                                    POINT SUMMARY
System Point Summary (ascending by zone name):                            ZONE

                                                          Device  Point   PNIS
Zone Name Custom Label                                    Type    Type    Code
--------- --------------------------------------- ------- ------- -----------
ZN1       ZN1: LEVEL 1 SOUTH                      LIST    FIRE
ZN2       ZN2: LEVEL 1 NORTH                      LIST    FIRE
ZN3       ZN3: LEVEL 2 SOUTH                      LIST    FIRE
ZN4       ZN4: LEVEL 2 NORTH                      LIST    FIRE
ZN5       ZN5: LEVEL 3 SOUTH                      LIST    FIRE
ZN6       ZN6: LEVEL 3 NORTH                      LIST    FIRE
SIG3      SOUNDER (LOCAL/REMOTE)                          SIGNAL
SIG4      EXTERNAL BELL                                   SIGNAL
SIG5      WARNING SYSTEM                                  SIGNAL
SIG6      SIGNAL CARD 1 CIRCUIT SIG6                      SIGNAL
SIG7      SIGNAL CARD 1 CIRCUIT SIG7                      SIGNAL
SIG8      SIGNAL CARD 1 CIRCUIT SIG8                      SIGNAL
SIG9      SIGNAL CARD 8 CIRCUIT SIG9                      SSIGNAL
SIG10     SIGNAL CARD 8 CIRCUIT SIG10                     SSIGNAL
SIG11     SIGNAL CARD 8 CIRCUIT SIG11                     SSIGNAL
SIG12     SIGNAL CARD 8 CIRCUIT SIG12                     SSIGNAL
SIG13     SIGNAL CARD 8 CIRCUIT SIG13                     SSIGNAL
SIG14     SIGNAL CARD 8 CIRCUIT SIG14                     SSIGNAL
SIG15     VIRTUAL NAC 1 - ALL APPLIANCE OUTPUTS   A/V     SIGNAL
SIG16     VIRTUAL NAC 2 - ALL AUDIBLE DEVICES     AUD     SSIGNAL
SIG18     VIRTUAL NAC 4 - ALL VISUAL DEVICES      VIS     RVISUAL
SIG19     VIRTUAL NAC 5 - ALL ISOLATOR DEVICES    A/V     RELAY
AUX3      ISOLATE RELAY                                   RELAY
AUX4      FAIL RELAY                                      RELAY
AUX5      AUX RELAY CARD 2 RELAY CKT AUX5                 RELAY
AUX6      AUX RELAY CARD 2 RELAY CKT AUX6                 RELAY
AUX7      LEVEL 1 MDH OUTPUT                              RELAY
AUX8      LEVEL 2 MDH OUTPUT                              RELAY
AUX9      AUX RELAY CARD 2 RELAY CKT AUX9                 RELAY
AUX10     AUX RELAY CARD 2 RELAY CKT AUX10                RELAY
AUX11     AUX RELAY CARD 9 RELAY CKT AUX11                RELAY
AUX12     AUX RELAY CARD 9 RELAY CKT AUX12                RELAY
AUX13     AUX RELAY CARD 9 RELAY CKT AUX13                RELAY
AUX14     AUX RELAY CARD 9 RELAY CKT AUX14                RELAY
AUX15     AUX RELAY CARD 9 RELAY CKT AUX15                RELAY
AUX16     AUX RELAY CARD 9 RELAY CKT AUX16                RELAY
AUX17     AUX RELAY CARD 9 RELAY CKT AUX17                RELAY
AUX18     AUX RELAY CARD 9 RELAY CKT AUX18                RELAY
FB3       AUX RELAY CARD 2 FEEDBACK PT FB3                ONOFF
FB4       AUX RELAY CARD 2 FEEDBACK PT FB4                ONOFF
FB5       AUX RELAY CARD 2 FEEDBACK PT FB5                ONOFF
FB6       AUX RELAY CARD 2 FEEDBACK PT FB6                ONOFF
FB7       AUX RELAY CARD 2 FEEDBACK PT FB7                ONOFF
FB8       AUX RELAY CARD 2 FEEDBACK PT FB8                ONOFF
FB9       AUX RELAY CARD 2 FEEDBACK PT FB9                ONOFF
FB10      AUX RELAY CARD 2 FEEDBACK PT FB10               ONOFF
```

Ignore these Virtual Zones

Ignore the last four SIGs (Virtual NACs)

Figure 2-3. System Point Summary Report

Continued on next page

System Point Summary, *Continued*

```
------------------------------------------------------------------------------
XYZ HOSPITAL, BLDG 1          SYSTEM POINT SUMMARY                    Page   5
00C0901 node:1 rev:10                                  11:23:35, MON, 08-JAN-01
------------------------------------------------------------------------------
                                                                  POINT SUMMARY
System Point Summary (ascending by zone name):                          ZONE
                                                                     continued
                                                  Device  Point   PNIS
Zone Name Custom Label                            Type    Type    Code
--------- --------------------------------------- ------- ------- -----------
 FB11     AUX RELAY CARD 9 FEEDBACK PT FB11               ONOFF
 FB12     AUX RELAY CARD 9 FEEDBACK PT FB12               ONOFF
 FB13     AUX RELAY CARD 9 FEEDBACK PT FB13               ONOFF
 FB14     AUX RELAY CARD 9 FEEDBACK PT FB14               ONOFF
 FB15     AUX RELAY CARD 9 FEEDBACK PT FB15               ONOFF
 FB16     AUX RELAY CARD 9 FEEDBACK PT FB16               ONOFF
 FB17     AUX RELAY CARD 9 FEEDBACK PT FB17               ONOFF
 FB18     AUX RELAY CARD 9 FEEDBACK PT FB18               ONOFF
 M1-1     LEVEL 1 SOUTH DIRECTOR OF NURSING    ZN1 SPHOTO  SMOKE
 M1-2     LEVEL 1 SOUTH STAFF RM               ZN1 SPHOTO  SMOKE
 M1-3     LEVEL 1 SOUTH LAUNDRY                ZN1 OHEAT   HEAT
 M1-4     LEVEL 1 SOUTH BEDSIT 12 BATHROOM     ZN1 OHEAT   HEAT
 M1-5     LEVEL 1 SOUTH BEDSIT 12              ZN1 SPHOTO  SMOKE
 M1-6     LEVEL 1 NORTH KITCHEN STORE ROM      ZN2 SOHEAT  HEAT
 M1-7     LEVEL 1 NORTH KITCHEN                ZN2 SOHEAT  HEAT
 M1-8     LEVEL 1 NORTH KITCHEN                ZN2 SOHEAT  HEAT
 M1-9     LEVEL 1 NORTH DINING RM              ZN2 SPHOTO  SMOKE
 M2-1     LEVEL 2 SOUTH MALE TOILET            ZN3 OHEAT   HEAT
 M2-2     LEVEL 2 SOUTH FEMALE TOILET          ZN3 OHEAT   HEAT
 M2-3     LEVEL 2 SOUTH CLEANERS RM            ZN3 SPHOTO  SMOKE
 M2-4     LEVEL 2 NORTH MALE TOILET            ZN4 OHEAT   HEAT
 M2-5     LEVEL 2 NORTH FEMALE TOILET          ZN4 OHEAT   HEAT
 M2-6     LEVEL 2 NORTH CLEANERS RM            ZN4 SPHOTO  SMOKE
 IO1      LOCAL SOUNDER                                    PIEZO
 IO2      OVERALL STATUS                                   LAMP
 IO3      SOUNDER SILENCE (LOCAL)                          USWITCH
 IO4      POWER LED - ALWAYS ON                            LAMP
 IO5      ZN1:  FIRE WITH ISOLATE STATUS/CONTROL           LAMP
 IO6                                                       LAMP
 IO7                                                       USWITCH
 IO8      ZN2:  FIRE WITH ISOLATE STATUS/CONTROL           LAMP
 IO9                                                       LAMP
 IO10                                                      USWITCH
 IO11     ZN3:  FIRE WITH ISOLATE STATUS/CONTROL           LAMP
 IO12                                                      LAMP
 IO13                                                      USWITCH
 IO14     ZN4:  FIRE WITH ISOLATE STATUS/CONTROL           LAMP
 IO15                                                      LAMP
 IO16                                                      USWITCH
 IO17     ZN5:  FIRE WITH ISOLATE STATUS/CONTROL           LAMP
 IO18                                                      LAMP
 IO19                                                      USWITCH
 IO20     ZN6:  FIRE WITH ISOLATE STATUS/CONTROL           LAMP
 IO21                                                      LAMP
 IO22                                                      USWITCH
 IO23                                                      USWITCH
```

Figure 2-4. System Point Summary Report (continued)

Continued on next page

System Point Summary, *Continued*

Notes:

- Custom label information tells you where the circuit goes.
- At both ends of each circuit, tag wires with zone name and polarity (in cases where polarity applies). For example, SIG 3+ and SIG 3-.
- T-tapping is permitted only for Style 4 (formerly Class B) MAPNET II® circuits.
- All MAPNET II® circuits have zone names that begin with "M*'*.

Virtual Zone Summary

A virtual zone contains a number of addressable, MAPNET devices grouped together and acting like a hardwired zone. The Virtual Zone Summary shows the name of each zone on the system and the number of points on each virtual zone.

```
------------------------------------------------------------------------------
--
XYZ HOSPITAL, BLDG 1          VIRTUAL ZONE SUMMARY                      Page
43
00C0901 node:1 rev:10                                    11:23:35, MON, 08-JAN-
01
------------------------------------------------------------------------------
--
CARD  No: 170                                                          VIRTUAL
ZONE
256 Virtual Zone Card                                                    ZN1 -
ZN6


Point             Point
Number   Name     Type    Custon Label                                  Points
-------  -------- ------- ------------------------------------------  ------
  0      ZN1      FIRE    ZN1: LEVEL 1 SOUTH                             5
  1      ZN2      FIRE    ZN2: LEVEL 1 NORTH                             4
  2      ZN3      FIRE    ZN3: LEVEL 2 SOUTH                             3
  3      ZN4      FIRE    ZN4: LEVEL 2 NORTH                             3
  4      ZN5      FIRE    ZN5: LEVEL 3 SOUTH                             4
  5      ZN6      FIRE    ZN6: LEVEL 3 NORTH                             4
```

Figure 2-5. Virtual Zone Summary

Virtual Zone Detail

A virtual zone contains a number of addressable, MAPNET devices grouped together and acting like a hardwired zone. The Virtual Zone Detail Report shows the specific points within each virtual zone.

```
------------------------------------------------------------------------------
XYZ HOSPITAL, BLDG 1          VIRTUAL ZONE DETAIL                    Page  44
00C0901 node:1 rev:10                                 11:23:35, MON, 08-JAN-01
------------------------------------------------------------------------------
CARD  No: 170                                                   VIRTUAL ZONE
256 Virtual Zone Card
Point  No:   0                                                          ZN1
                                                                   continued

Zone Description: ZN1: LEVEL 1 SOUTH
Point Type: FIRE

                                                    Device  Point
Point       Custom Point Label                      Type    Type
----------- --------------------------------------- ------- -------
M1-1        LEVEL 1 SOUTH DIRECTOR OF NURSING    ZN1 SPHOTO  SMOKE
M1-2        LEVEL 1 SOUTH STAFF RM               ZN1 SPHOTO  SMOKE
M1-3        LEVEL 1 SOUTH LAUNDRY                ZN1 OHEAT   HEAT
M1-4        LEVEL 1 SOUTH BEDSIT 12 BATHROOM     ZN1 OHEAT   HEAT
M1-5        LEVEL 1 SOUTH BEDSIT 12              ZN1 SPHOTO  SMOKE

------------------------------------------------------------------------------
XYZ HOSPITAL, BLDG 1          VIRTUAL ZONE DETAIL                    Page  45
00C0901 node:1 rev:10                                 11:23:35, MON, 08-JAN-01
------------------------------------------------------------------------------
CARD  No: 170                                                   VIRTUAL ZONE
256 Virtual Zone Card
Point  No:   1                                                          ZN2
                                                                   continued

Zone Description: ZN2: LEVEL 1 NORTH
Point Type: FIRE

                                                    Device  Point
Point       Custom Point Label                      Type    Type
----------- --------------------------------------- ------- -------
M1-6        LEVEL 1 NORTH KITCHEN STORE ROM      ZN2 SOHEAT  HEAT
M1-7        LEVEL 1 NORTH KITCHEN                ZN2 SOHEAT  HEAT
M1-8        LEVEL 1 NORTH KITCHEN                ZN2 SOHEAT  HEAT
M1-9        LEVEL 1 NORTH DINING RM              ZN2 SPHOTO  SMOKE

------------------------------------------------------------------------------
XYZ HOSPITAL, BLDG 1          VIRTUAL ZONE DETAIL                    Page  46
00C0901 node:1 rev:10                                 11:23:35, MON, 08-JAN-01
------------------------------------------------------------------------------
CARD  No: 170                                                   VIRTUAL ZONE
256 Virtual Zone Card
Point  No:   2                                                          ZN3
                                                                   continued

Zone Description: ZN3: LEVEL 2 SOUTH
Point Type: FIRE

                                                    Device  Point
Point       Custom Point Label                      Type    Type
----------- --------------------------------------- ------- -------
M2-1        LEVEL 2 SOUTH MALE TOILET            ZN3 OHEAT   HEAT
M2-2        LEVEL 2 SOUTH FEMALE TOILET          ZN3 OHEAT   HEAT
M2-3        LEVEL 2 SOUTH CLEANERS RM            ZN3 SPHOTO  SMOKE
```

Figure 2-6. Virtual Zone Detail

Continued on next page

```
--------------------------------------------------------------------------------
XYZ HOSPITAL, BLDG 1          VIRTUAL ZONE DETAIL                    Page  47
00C0901 node:1 rev:10                                 11:23:35, MON, 08-JAN-01
--------------------------------------------------------------------------------
CARD  No: 170                                                    VIRTUAL ZONE
256 Virtual Zone Card
Point  No:   3                                                          ZN4
                                                                   continued
Zone Description: ZN4: LEVEL 2 NORTH
Point Type: FIRE

                                                    Device  Point
Point       Custom Point Label                      Type    Type
----------- --------------------------------------- ------- -------
M2-4        LEVEL 2 NORTH MALE TOILET           ZN4 OHEAT   HEAT
M2-5        LEVEL 2 NORTH FEMALE TOILET         ZN4 OHEAT   HEAT
M2-6        LEVEL 2 NORTH CLEANERS RM           ZN4 SPHOTO  SMOKE


--------------------------------------------------------------------------------
XYZ HOSPITAL, BLDG 1          VIRTUAL ZONE DETAIL                    Page  48
00C0901 node:1 rev:10                                 11:23:35, MON, 08-JAN-01
--------------------------------------------------------------------------------
CARD  No: 170                                                    VIRTUAL ZONE
256 Virtual Zone Card
Point  No:   4                                                          ZN5
                                                                   continued
Zone Description: ZN5: LEVEL 3 SOUTH
Point Type: FIRE

                                                    Device  Point
Point       Custom Point Label                      Type    Type
----------- --------------------------------------- ------- -------
2:M1-1      LEVEL 3 SOUTH BEDSIT 13 BATHROOM                HEAT
2:M1-2      LEVEL 3 SOUTH BEDSIT 13                         SMOKE
2:M1-3      LEVEL 3 SOUTH MALE TOILET                       HEAT
2:M1-4      LEVEL 3 SOUTH FEMALE TOILET                     HEAT


--------------------------------------------------------------------------------
XYZ HOSPITAL, BLDG 1          VIRTUAL ZONE DETAIL                    Page  49
00C0901 node:1 rev:10                                 11:23:35, MON, 08-JAN-01
--------------------------------------------------------------------------------
CARD  No: 170                                                    VIRTUAL ZONE
256 Virtual Zone Card
Point  No:   5                                                          ZN6
                                                                   continued
Zone Description: ZN6: LEVEL 3 NORTH
Point Type: FIRE

                                                    Device  Point
Point       Custom Point Label                      Type    Type
----------- --------------------------------------- ------- -------
2:M1-6      LEVEL 3 NORTH BEDSIT 14 BATHROOM                HEAT
2:M1-7      LEVEL 3 NORTH BEDSIT 14                         SMOKE
2:M1-8      NORTH MALE TOILET                               HEAT
2:M1-9      NORTH FEMALE TOILET                             HEAT
```

Figure 2-7. Virtual Zone Detail (continued)

2120/RS232 Interface Report

The 2120/RS232 Interface Report provides information on any of the 2120/RS232 Interface Cards installed on the system, including what specific settings exist for each port of the card.

```
--------------------------------------------------------------------------------
--
XYZ HOSPITAL, BLDG 1       2120/RS232 INTERFACE REPORT                  Page
59
00C0901 node:1 rev:9                                      09:22:30, FRI, 29-DEC-
00
--------------------------------------------------------------------------------
--
CARD  No:   5                                                 2120/RS232
INTERFACE
(0113) 2120/RS232 Interface
CARD

5

PORT        TYPE            BAUD    PARITY     DATA BITS    STOP BITS

 A       RS232              1200     EVEN          8            1
 B       UNUSED             ----     ----          0            0
```

Figure 2-8. 2120/RS232

Chapter 3
Final Installation, Power Up and Testing of the System

Introduction

This chapter contains information for finishing up the installation of the 4100/4120 system. Final connections, inspections, and additions that may be made are discussed.

In this Chapter

Refer to the page number listed in this table for information on a specific topic.

Installation Checklist for Simplex Technical Representative

	Step	Procedure
❒	1.	Use the Packing List in the "Layout" pages to verify delivery/availability of all required system hardware. This includes the printed circuit boards.
❒	2.	Unlock, then open the panel door. Remove the retainer by removing the top and bottom screws, then squeeze and pull the two black plastic tabs located on the upper part of the retainer. Lift the retainer from the back box.
❒	3.	Visually inspect the 4100 system. Verify that all wiring is connected to the panel, to include the unified ground.
❒	4.	Use a volt/ohmmeter to check system wiring. This includes all wiring to the panel, local and remote annunciators, etc. Check the AC power input to the power supply. Repair required circuits prior to powering up the system.
❒	5.	Check jumpers, switches, capacitors and resistors on all system printed circuit boards. Match the address label on the motherboard to the address label on the daughter board, then install each daughter board.
❒	6.	Install all wiring harnesses and cables (except battery). This includes auxiliary relay and signal cables.
❒	7.	Apply power to the system. • If the system is trouble-free, perform "System Test Procedures". • If the system displays abnormal conditions, perform troubleshooting procedures.

Visual Inspection

A visual inspection of the panel should be performed prior to installation of printed circuit boards, as they obstruct the view of panel terminations when installed. Visually inspect for the following:

- ❒ Neat terminations within the panel.
- ❒ System wiring is complete and unused circuits are terminated.
- ❒ Terminations are tight.
- ❒ Ribbon cables from CPU board are properly installed (both ends).
- ❒ Battery cable is connected to the battery test facility P9 of the master power supply or P1 of an expansion power supply.
- ❒ Green ground screw is connected to a unified building ground.
- ❒ Inspect local and remote annunciators connections.
- ❒ Verify that system is clean and free from wire clippings.
- ❒ Switches are in the proper position (toggle switches are centre).
- ❒ Verify that the configuration chip, and revision shown in the main menu, match the Programmer's Report then check the following:

(i)	File name	(8 digits - example: 809005A)
(ii)	Order number	(X digits - example: XXXXXX)
(iii)	Revision number	(3 digits - example: 006)
(iv)	Date	(9 digits - example: 07-JUL-88)

Install Printed Circuit Boards

There are several types of motherboards and printed circuit boards for the 4100 system. Each printed circuit board must be plugged into its proper motherboard for power and communications with the CPU.

Each 4100 printed circuit board has an 8 bit DIP switch (SW1) that is used to set its address and communication baud rate. Verify each address and baud rate prior to installation of each board. The system may contain up to 119 printed circuit cards (each has its own address). The CPU board is always address 0. Each printed circuit board address is a binary address that corresponds with a Custom Terminal Wiring Identifier (white label) on its motherboard, daughterboard and the Programmer's Report. Match the address label on the motherboard to the address label on the daughterboard, then install each daughterboard. Table 3-1 shows a binary switch setting table which may be used to determine binary address and baud rate. Dip switch positions 2 through 8 are used for addressing, while dip switch position 1 is used for baud rates selection.

Check switch settings, jumpers and resistors on each printed circuit board prior to installation.

Use the Custom Terminal Wiring Identifiers (same address on motherboard and daughterboard), Layout pages and the Programmer's Report to determine proper address and placement for each printed circuit board. The dip switch on each board has been set to its correct binary address at the factory. This binary address corresponds with a Custom Terminal Wiring Identifier (label) on each motherboard. Match the address on the daughter card with the address label on the motherboard, then insert the card.

Install the printed circuit boards from left to right, and from top to bottom.

Continued on next page

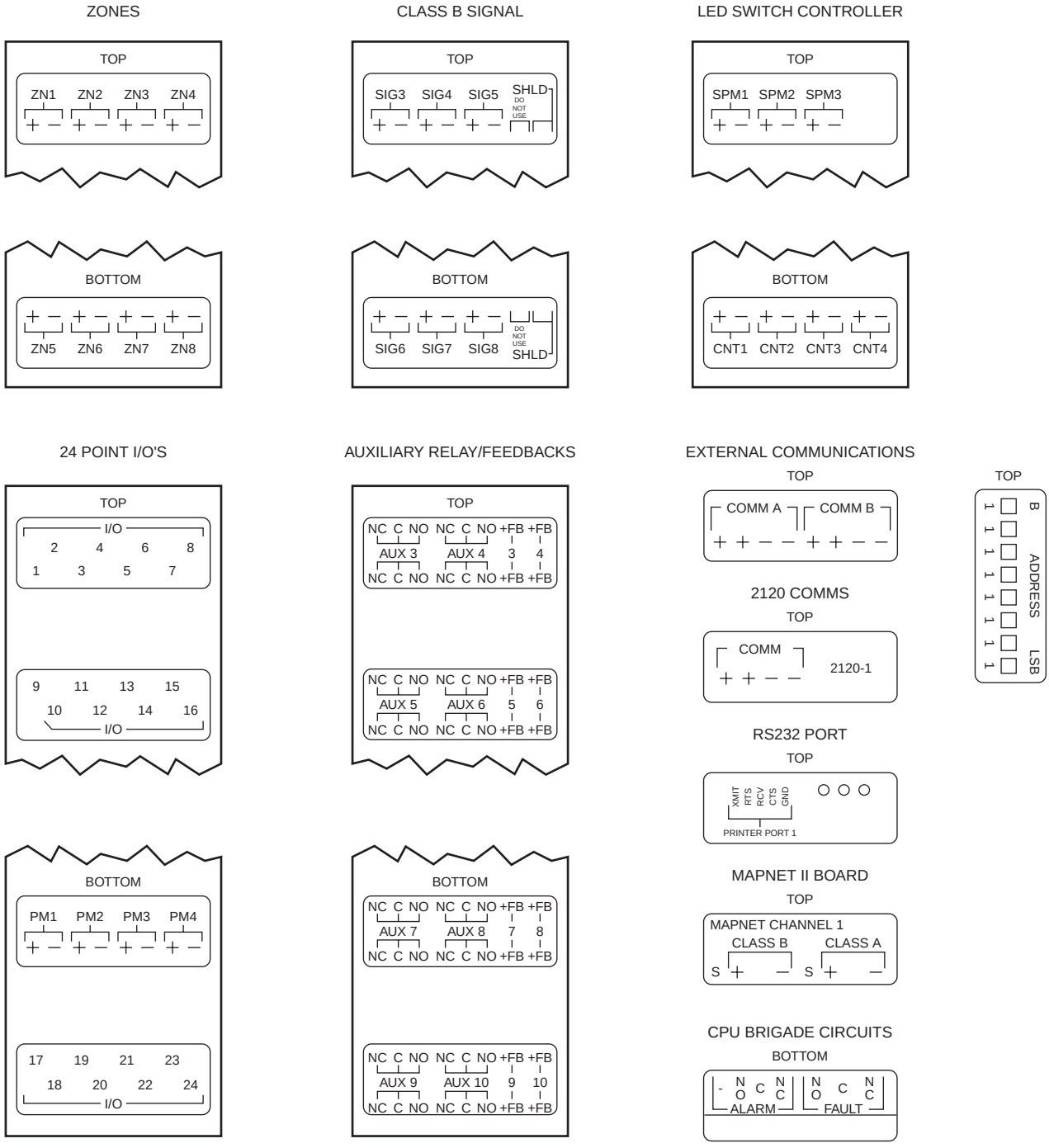


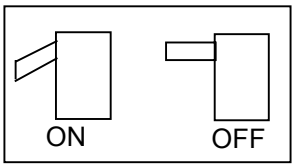
Figure 3-1. Terminal Block Labels

Continued on next page

Table 3-1. Printed Circuit Board Addresses

1	2	3	4	5	6	7	8
	MSB						LSB

Side View of Dip Switch



SW-1	SW1-2	SW1-3	SW1-4	SW1-5	SW1-6	SW1-7	SW1-8	
		CPU MODULE IS ALWAYS ADDRESS 0					CPU	= ADDRESS 0
U	ON	ON	ON	ON	ON	ON	OFF	= ADDRESS 1
S	ON	ON	ON	ON	ON	OFF	ON	= ADDRESS 2
E	ON	ON	ON	ON	ON	OFF	OFF	= ADDRESS 3
D	ON	ON	ON	ON	OFF	ON	ON	= ADDRESS 4
	ON	ON	ON	ON	OFF	ON	OFF	= ADDRESS 5
F	ON	ON	ON	ON	OFF	OFF	ON	= ADDRESS 6
O	ON	ON	ON	ON	OFF	OFF	OFF	= ADDRESS 7
R	ON	ON	ON	OFF	ON	ON	ON	= ADDRESS 8
	ON	ON	ON	OFF	ON	ON	OFF	= ADDRESS 9
B	ON	ON	ON	OFF	ON	OFF	ON	= ADDRESS 10
A	ON	ON	ON	OFF	ON	OFF	ON	= ADDRESS 11
U	ON	ON	ON	OFF	OFF	ON	ON	= ADDRESS 12
D	ON	ON	ON	OFF	OFF	ON	OFF	= ADDRESS 13
	ON	ON	ON	OFF	OFF	OFF	ON	= ADDRESS 14
R	ON	ON	ON	OFF	OFF	OFF	OFF	= ADDRESS 15
A	ON	ON	OFF	ON	ON	ON	ON	= ADDRESS 16
T	ON	ON	OFF	ON	ON	ON	OFF	= ADDRESS 17
E	ON	ON	OFF	ON	ON	OFF	ON	= ADDRESS 18
			CONTINUES TO A BINARY 119					
ON	OFF	OFF	OFF	ON	OFF	OFF	OFF	= ADDRESS 119

Continued on next page

Table 3-2. All Expansion Cards

DIP SWITCH SW1 ADDRESS AND BAUD RATE SELECT									
SWITCH POSITION	#1	#2	#3	#4	#5	#6	#7	#8	
	BRS	**MSB**						**LSB**	
BRS = BAUD RATE SELECT 0-9600 baud (INTERNAL/REMOTE)									
ON = 0 OFF = 1									

Continued on next page

Table 3-3. 24 Point Graphic I/O Card Pluggable Resistors

PLUGGABLE RESISTOR SETTINGS			
DRIVE #	**RESISTOR #**	**INPUT**	**OUTPUT**
1	20	2.0K 0.5W	20 OHM 1W
2	21	2.0K 0.5W	20 OHM 1W
3	22	2.0K 0.5W	20 OHM 1W
4	23	2.0K 0.5W	20 OHM 1W
5	24	2.0K 0.5W	20 OHM 1W
6	25	2.0K 0.5W	20 OHM 1W
7	26	2.0K 0.5W	20 OHM 1W
8	27	2.0K 0.5W	20 OHM 1W
9	28	2.0K 0.5W	20 OHM 1W
10	29	2.0K 0.5W	20 OHM 1W
11	30	2.0K 0.5W	20 OHM 1W
12	31	2.0K 0.5W	20 OHM 1W
13	32	2.0K 0.5W	20 OHM 1W
14	33	2.0K 0.5W	20 OHM 1W
15	34	2.0K 0.5W	20 OHM 1W
16	35	2.0K 0.5W	20 OHM 1W
17	36	2.0K 0.5W	20 OHM 1W
18	37	2.0K 0.5W	20 OHM 1W
19	38	2.0K 0.5W	20 OHM 1W
20	39	2.0K 0.5W	20 OHM 1W
21	40	2.0K 0.5W	20 OHM 1W
22	41	2.0K 0.5W	20 OHM 1W
23	42	2.0K 0.5W	20 OHM 1W
24	43	2.0K 0.5W	20 OHM 1W

For Input Contact Monitors For Relays LED/Lamps

Note: Systems are shipped from the factory with 2.0K OHM resistors. Use 2.0K OHM resistors for contact monitors and 20 OHM resistors for RELAY or LED/lamp outputs.

CPU/Main Power Supply Boards with Components

Introduction

When power is first applied to the panel, or when the processor has been reset, the system will self-test the integrity of its memory and verify proper card installation. At the end of the self-test, the system will display "SYSTEM STARTUP IN PROGRESS" followed by at least two fault conditions (battery and time-and-date). After the battery is connected and the time and date has been entered, the system should then display the message "SYSTEM IS NORMAL" along with the time and date.

Notes:

- When a printed circuit board is not properly inserted, the system will display a fault condition.
- When a printed circuit board is inserted, but configured incorrectly or not defined in software, the system will display a fault condition, normal operation will be suspended for that card until the fault has been corrected.
- Other failures will cause a message to be displayed to the operator and may cause the system to become inoperative and the tone alert to sound continuously.
- Refer to Appendix C for a list of Fault Messages and likely causes and rectification

Power Up Procedure

To power up the 4100 system, perform the following steps:

1. Ensure that the mains isolate switch is OFF and batteries are disconnected. Ensure that 240V AC supply is connected to the panel from the mains distribution board.
2. Turn the panel mains isolate switch ON. When the green Power LED turns on (after approximately 30 seconds), connect the batteries.
3. Acknowledge all abnormal conditions by pressing the appropriate "ACK" (Alarm and Fault) pushbutton(s). Press the "ACK" pushbutton to review all abnormal conditions within each list. Once all abnormal conditions are cleared, press the "CLR" key.
4. Set the correct time and date. The system should then display "SYSTEM IS NORMAL" followed by the time and date.
5. Repair/restore all abnormal conditions. (refer to Appendix A - Troubleshooting Procedures).

System Test Procedures

Introduction

These procedures should be followed when the system is first installed, during periodic tests, or as required by local code. Check local codes to determine how frequently your system should be tested. Always inform appropriate personnel that you will be testing the system (city Fire Brigade, customer, etc.)

Important: On completion of the tests ensure that all switches are in the correct operating position and that the system has been returned to its normal status. Should a fault condition exist, or if a circuit indicator did not illuminate when tested, immediately contact your maintenance company to rectify the problem.

Battery Test

The battery test is performed to determine battery status. To test the batteries, perform the following procedures:

Note: The system automatically tests the battery once a week, on Tuesdays at 8 AM. Any tests performed with the battery test key are in addition to these weekly tests.

1. Unlock, then open the panel door and remove the retainer.
2. Read the battery labels. If either battery is more than 4 years old, replace the battery(s).
3. If the battery is less than 4 years old, press the battery test key, the system will load the battery for one hour and signal a fault if the test fails.

Alarm Test

Carry out a fire alarm call by simulating an alarm on detector zones as follows:

1. Isolate any system outputs you wish not to respond to the testing of the system such as the exterior bell (using the EXT BELL ISOLATE button), the warning system (using the EXT BELL ISOLATE button, and any other Auxiliary Control Functions (ACF) including AC Shutdown and MDH controls using the ACF ISOLATE FUNCTION.
2. Place the fire brigade transmitter selector switch in the isolate position.
3. Select a point or zone upon which to perform the test (refer to the Point Summary Report)
4. Press the Alarm test key to activate the actuating devices that will test the system's signals.

To check the alarm bell, or any other ancillary circuit operation press the EXT BELL ISOLATE key again.

Note: Under Alarm Test, the brigade relay will operate as well as any other ancillary outputs that have been programmed to operate under alarm conditions.

Fault Test

Perform a fault test by first selecting a point or zone to test and then press the "FLT TEST" key.

The system will automatically create a momentary fault condition on the selected point or zone and will indicate a system fault during testing.

Continued on next page

Lamp Test

The lamp test pushbutton on the control panel is used to determine local lamp failures within the system. Only lamps on the 4100 control panel will illuminate along with the five function and acknowledge LEDs. All segments on the LCD will also change. Perform the following procedures to determine lamp failure:

1. Press the "LAMP TEST" pushbutton.

   All LEDs should illuminate (lamps should stay illuminated as long as the pushbutton is depressed). Holding the Lamp Test pushbutton in for more than three seconds will test the piezo.

2. Perform an individual lamp test on all remote annunciators, to include the 24 point I/Os, RCUs, SCUs and LED/switch modules.
3. Remove and replace defective lamp(s).

Note: The serial annunciator lamps/LEDs will not illuminate during the lamp test.

Remounting Retainer

1. Install the retainer assembly onto the back box assembly utilising the two bottom hook-tabs and secure it by using two plastic squeeze release tabs located on the upper centre of the retainer assembly.
2. Install two screws to secure the retainer assembly, one at the top centre of the retainer assembly and the other at the bottom centre of the retainer assembly.

Note: The two screws must be installed to ensure proper ESD (electro-static discharge) protection.

3. Close and lock the door assembly.

APPENDIX A
Troubleshooting Procedures

Introduction

Before troubleshooting the system, notify the customer and monitoring facility that you are repairing the system and may trip an alarm. Local codes may require notification of additional personnel, therefore check local codes for these requirements.

Tools required for troubleshooting are: a multimeter, side cutting pliers, IC removal/insertion tool (optional) and two sizes of screwdriver. It is also recommended that Field Wiring Diagrams be used as appropriate.

Troubleshooting Chart

The "Voltage Chart" shown on the following page contains voltage readings for various motherboard terminals and connectors and is to be used as required. Do not take voltage readings on the system printed circuit board's ICs.

When troubleshooting the 4100 system, check the obvious things first. These are the LEDs, toggle switches, dip switch settings, power, clipped jumpers, resistors, city jumpers and wiring to include contractor installed field wiring, all of which are located in the fire alarm panel. Perform a visual inspection of the panel.

The following indications should be observed on the fire alarm panel.

(i) Normal LED indications.

- (a) Green "Power" LED is illuminated.
- (b) All other LEDs are OFF.

Note: If the green power LED is not illuminated, check the AC input voltage.

(ii) Toggle switches are in the centre (normal) position.
(iii) Fuses are good and are the correct values.
(iv) Ensure dip switches are properly set.
(v) Field wiring is correct (see Field Wiring Diagrams).
(vi) Correct jumpers and resistors are clipped.
(vii) Ribbon cables are properly installed.

If the alphanumeric display shows an abnormal indication on a module, troubleshoot that circuit/printed circuit board first. Check the return field wiring to that printed circuit board to ensure proper voltage and signals are present. If these signals and voltages are incorrect, the printed circuit board is probably defective.

If the visual inspection of the panel was normal and the voltages are correct, the next step is to test the return field wires from the peripheral devices. This is the next section to troubleshoot because proper voltage terminals are accessible which allows these checks to be made quickly. Check for incorrect voltage or signals with voltmeter. If an incorrect reading is observed, you know the defective printed circuit board is the one you are testing.

Continued on next page

If the voltage and signals are correct on the return field wiring, the next step is to localise the trouble by swapping printed circuit boards of the same type. Perform the following procedure to swap printed circuit boards:

1. Disconnect battery power.
2. Turn system power OFF (AC).
3. Remove the suspected printed circuit board from the motherboard.
4. Remove a printed circuit board of the same type from the system (when available) or from branch stock.
5. Set the "good" printed circuit board address to match the white "address label" on the motherboard (where the "bad" printed circuit card was located). If a printed circuit board is swapped from within the system, set the "bad" printed circuit board address to match the white "address label" on the motherboard (where the "good" printed circuit board was located).
6. Install both printed circuit boards ("good" and "bad").
7. Apply AC power to the system.
8. Apply DC power to the system.
9. "ACK" all abnormal conditions.

If the visual indications change, the problem is in the "bad" printed circuit board. If the symptoms do not change, check inputs and outputs from the now "good" printed circuit board.

Voltages and signals on the terminals should match the Voltage Chart shown below. Note the voltages given in the chart are with reference to the negative (-) of the 24V power Supply. When field wiring is removed, remove and mark one wire at a time. Ensure that the wiring is properly replaced to prevent additional fault indications. Use the Voltage Chart as required.

	Positive Terminal	Negative Terminal	
MONITOR CIRCUIT	28 VDC	3 VDC	Normal Circuit
	28 VDC	6-18 VDC	Current Limited Alarm
	28 VDC	28 VDC	Short Circuit Alarm
	28 VDC	0 VDC	Open Circuit
SIGNAL CIRCUIT	7 VDC	28 VDC	Normal Circuit
	28 VDC	0 VDC	Alarm Condition
	0 VDC	28 VDC	Open Circuit
	16 VDC	28 VDC	Installed Reverse Polarity
SUPERVISED ANNUNCIATOR	28 VDC	25 VDC	Normal Circuit
	28 VDC	0 VDC Pulsing	Alarm Condition
	0 VDC	0 VDC	Lost Annunciation Common
	28 VDC	0 VDC	Open Circuit

Figure A-1. Voltage Chart

Continued on next page

10. Verify the ground status of the system by connecting the negative (black) lead of a voltmeter to the Earth Ground and connect the positive (red) lead of the voltmeter to the positive (+) terminal of the 24V DC supply and check for the following readings:

Voltage Reading	**Circuit Status**
12-14V DC	Normal
15-21V DC	Partial Positive Ground
6-12V DC	Partial Negative Ground

APPENDIX B
4100 Specifications

General

System Capacity	1,000 points of addressable input/output devices or conventional zones.
Cabinet Size(mm)	Dependent on system configuration
Cabinet Material	1.5mm Mild grade steel
Cabinet Finish	Powder coated
Cabinet Colour	Magnolia Ripple
Mounting	Wall mount
Mains Input	240V AC, +6%,-10%, 50Hz
Internal Power Supply	24V DC @ 8.0A
Standby Battery	24V sealed lead acid up 110Ah
Battery Charger	27.6V DC (nominal) @ 4.0A,
PSU Supervision	Charger high/low, Battery low/fail
Temperature	-5 C to 45 C
Humidity	10% to 90% RH non-condensing.

Expansion Modules

Maximum Number: 119 modules

4100-5004 **Conventional Zone Module**
Eight zone circuits per module
Supports standard 20V detectors plus normally open contact devices

4100-3003 **Eight CPU Controlled Auxiliary Relays per Module**

SPDT contacts rated for 3 amps @ 24VDC or 30VAC

4100-0113 **RS-232/2120 Communications Module**
Provides two RS-232-C outputs for remote printers and/or CRT

Five RS-232-C ports maximum per 4100 system. Can be configured for communication with a host 2120 system, or it can be configured as a Computer Port for communications to a remote system (i.e. BMS or BAS Systems).

4100-0149 **4120 Modular Network Interface Module**
Provides Network Interface with plug-in media modules for:
RS485 Communications copper cable
Fiber Optics Media Card

4100-0142 **RS485 Communications Copper Cable Media Module**

4100-0143 **Fiber Optics Media Card**

Continued on next page

4100 Specifications, *Continued*

Expansion Modules, (*continued*)	**4100-0110**	**MAPNET® TRUEALARM™ Addressable Loop Module** Up to 127 MAPNET Addressable devices or TrueAlarm Analog Sensors Up to 10 MAPNET Loop Cards per 4100 system Supports MAPNET Short Circuit Line Isolator Modules
	4100-0304	**Remote Unit Interface Module** Provides a supervised serial communications channel to remotely located distributed Miniplex® Transponders and LCD Annunciators Up to 32 distributed Miniplex® Transponders and/or LCD Annunciators per 4100 system
	4100-3024	**24 Relay Input/Output Relay Motherboard** 24 CPU controlled relays Each of the 24 relays can be individually configured as either an input or an output SPST contacts rated for 0.5 amps @ 24VDC or 30VAC
	4100-0301	**64/64 LED/SWITCH Controller** Interfaces up to 64 LEDs and 64 switches to the master controller for front panel annunciation
	4100-0111	**Mapnet 2 Quad Isolator Module** The Mapnet Quad isolator provides fault tolerance and electrical isolation capabilities to 4100 Mapnet lines. The fault tolerance is twofold: loop open circuit (Class A operation) and short circuit disconnection
	4100-0157A	Provides a **24 VDC, 8 Amp Power Supply** with integral 4 Amp battery charger.
	4100-0302	**24 Point Graphic Input/Output Module** This card provides up to 24 inputs or outputs to be programmed and connected into the system. These 24 points can be split up into any combination of inputs or outputs to suit individual system needs.
	4100-4321	**6 Supervised Relay Module** Each card provides 6 circuits of Style Y (class B) signal circuits. All 6 circuit also have two power inputs, one for every three signal circuits. Every signal circuit is supervised for ground faults, opens and line-to-line shorts
	4100-0154	**VESDA HLI Module** Provides a high level interface to control up to 30 VESDA LaserPlus, Laser Compact , Mini scanners or E70D units. The module occupies a Mapnet channel address and requires a VESDA Net Interface Unit to connect to the VESDA units

Continued on next page

4100 Specifications, *Continued*

INDICATORS and DISPLAY	Zone Status: Display	2 line by 80 character backlight Liquid Crystal
	LED Status Indicators:	Alarm, Fault and Isolate, EXT Bell (Isolate), WARN SYS (Isolate), AC Power
	Audible Buzzer:	Alarm And Fault Indications, Keypress feedback
KEYPAD CONTROLS	Operator Keypad:	
	AS4428 Firefighter Facility	Ext Bell Isolate, Warn Sys Isolate, Prev, Next, Ack, Reset Power
	Service Technician	20 keys including: Alarm Test, Fault Test, Keypad, Fault Isolate, Battery Test and Lamp Test

SOFTWARE FEATURES

- WALK TEST System Test
- 4 Operator Access Levels
- 600 Event Historical Logging
- Zone selectable Alarm Verification
- Individual Circuit Disconnect/Isolate
- Nonvolatile Flash EPROM for field editable program changes

APPENDIX C
4100 Fault Messages

Card Troubles

If the LCD displays ... **Wrong Card Abnormal**

- 1st Line Shows Card Expected at this Address.
- Reprogram System or Insert Proper Daughter Card.

If the LCD displays ... **Extra Card Abnormal**

- A Daughter Card is/was installed but not Programmed.
- Reprogram System or Remove Extra Daughter Card.
- Warm Start is Necessary to Clear this Trouble Condition. Press the CPU Reset Switch located on the Master Controller Board.

If the LCD displays ... **Card Missing/Failed**

- Identify Card from LCD.
- Is Communication Trouble LED illuminated on Card ?
- Check Dipswitch Setting with Programmer's Report.
- Check for 8VDC & 24VDC at Motherboard Harness P3.
- Check for Serial Comm at Motherboard Harness P2.
- If ALL Daughter Cards Report Missing/Failed Check Serial Comm fuse on Master Controller Board (F6).
- If this Trouble only Occurs upon Alarm, Alarm Silence or System Reset it may be Caused by Unsuppressed Relays, Door Magnets, High Current Loads, etc.

Continued on next page

Battery Troubles

If the LCD displays … **Master Battery Backup Status is Trouble**

- Check connector P9 on Master Power Supply.
- Check that Batteries Terminals are Connected.
- Check Fuse(s) in the Battery Harness.
- Check for Charger Output at Battery Harness Terminals with the Batteries Disconnected.
- Measure Battery voltage with Terminals from Harness Disconnected. (>18 VDC)
- Test Batteries under load for 1 minutes. (>23 VDC)

Earth Grounds

If the LCD displays ... **Master Earth Status is Trouble**

- Is Ground on Positive/Negative side of Power Supply?
- If a Positive Ground ... Remove half of the Motherboards.
- Isolated to a Row ... Remove half of the Daughter cards.
- If a Negative Ground ... Check Power, MAPNET and Shields.
- Ground could be Internal to the Control Panels.

If the LCD displays ... **MAPNET Ground Fault Status is Abnormal**

- Determine which MAPNET Power Supply is Reporting Ground.
- Verify that JW2 is Installed and JW1 is Removed unless only 2 Wire Devices are used.
- Disconnect MAPNET Communication Lines.
- Disconnect MAPNET Power Supply Connector P4.

Continued on next page

Annunciator Troubles

If the LCD displays ...

Card X, Led (Switch) Display Slot X
Card Defined But Not Inserted

- Annunciator Display Card Programmed in Software but not connected via the Ribbon Cable.

If the LCD displays ...

Card X, Led (Switch) Display Slot X
Card Not Defined But Inserted

- Annunciator Display Card not Programmed in Software but connected via the Ribbon Cable.
- Check ribbon cable or Verify Annunciator Programming.

Mapnet Troubles

If the LCD displays ... **MAPNET Extra Device Trouble**

- Check Trouble Log for Device Number
- Add Device to Program if needed

If the LCD displays ... **MAPNET No Answer Trouble**

- Determine Device Address and Location
- Check Address is set properly
- Check for MAPNET Communication (36VDC)
- Check for DC Voltage if applicable (24DC)

If the LCD displays ... **MAPNET Bad Answer Trouble**

- Check Shield for Open or Ground
- Are any Devices sending No Answer Trouble ?

If the LCD displays ... **MAPNET Communication Failed**

- Check for 36VDC out of MAPNET Power Supply.
- Check for short across the MAPNET Lines (Additional Trouble Message).

Continued on next page

Mapnet Troubles, *continued*

If the LCD displays ... **MAPNET Power Supply Status**

- Check for Power Harness P4.

If the LCD displays ... **MAPNET Open Circuit Fault**

- Check Mapnet communications loop for Open circuit
- Locate and repair wiring break
- Press the "System Reset" key on the front panel to clear the fault message

If the LCD displays **... MAPNET Short Circuit Fault**

- Check Mapnet communications loop for Short circuit condition
- Check that Mapnet wiring to devices has not been reversed
- Locate and repair wiring fault

RUI Troubles

If the LCD displays ... **RUI Open Circuit Fault**

- Check RUI communications loop for Open circuit
- Locate and repair wiring break
- Press the "System Reset" key on the front panel to clear the fault message

Appendix D
Glossary of 4100 Fire Alarm System Terms

Alarm Verification Option:

A field-programmed option that causes the CPU to verify (double-check) all alarm initiations originated by smoke detectors before sounding the signals.

Annunciator:

A remotely-located, electrically-powered display, separate from the control panel, containing lamps to indicate the status of the fire alarm system.

Auxiliary (AUX) Relays:

Control relays that energise only during alarm conditions, and that are used to either apply power to or remove power from other equipment during an alarm condition.

Class A Circuit:

An initiating device or indicating appliance circuit within which all components remain fully functional even though a single pen or ground exists in the circuit.

Class B Circuit:

An initiating device or indicating appliance circuit within which some or all components may be disabled when a single open or ground exists in the circuit.

CPU (Central Processing Unit):

That portion of the fire alarm panel which processes alarm and fault information received from throughout the system, and acts on that information in an appropriate manner.

Master Controller Board:

A panel-mounted module consisting of the CPU itself, eight zone (circuit) monitors, two signal (circuit) monitors and two AUX relays.

End-of-Line (E.O.L.) Resistor:

A resistor installed at the electrically furthermost point in a signal or zone circuit.

Fan Control Module:

A panel-mounted module that consists of manual switches which allow fan or damper control circuits to be turned on, turned off, or operated automatically.

Fire Alarm Control Module:

The portion of the fire alarm system which provides the power and contains the circuitry needed for system operation.

Indicating Appliance (Signal) Circuit:

A circuit consisting of one or more indicating appliances.

Continued on next page

Indicating Appliance (Signaling Device):

A device which produces an audible and/or visual signal in response to a fire condition - horn, bell, chime, flashing light, etc.

ID - Initiating Device:

A manual or automatic device which, when activated, initiates an alarm - pull station, heat or smoke detector, water flow switch, etc.

Initiating Device (Zone) Circuit:

A circuit consisting of one or more initiating devices.

Local Energy Master Box:

A municipal fire department connection box, mounted externally to the panel, that uses electrical energy from the fire alarm panel to energise its (the master box's) electromagnetic tripping mechanism.

Power Supply Module:

That portion of the fire alarm panel which provides the power needed to operate all panel modules, as well as that needed to operate all electrically-powered initiating devices and all indicating appliances.

Signal Module:

A panel-mounted module which supervises two indicating appliance (signal) circuits.

Silence Inhibit Option:

A field-programmed option which, when entered, prevents all alarm indicating appliances from being silenced, and the system from being reset, until the delay's duration expires.

Supervision:

The continuous electrical checking of fire alarm circuits and components for faults (opens and, in some cases, shorts). For example, 4100 signal circuits are supervised for both opens and shorts, while 4100 zone circuits are supervised for opens only (a zone circuit short causes an alarm condition).

Zone Module:

A panel-mounted module containing the circuitry needed to supervise either four or eight zone circuits for both fault conditions and to monitor the circuits for alarm conditions.

Appendix E
Battery Capacity Calculation Methology

BATTERY CAPACITY CALCULATION EXAMPLE

I_Q (quiescent current) calculation

Item	Unit 1 in mA	Quantity	Total mA		
CIE (base)	200.0	1	200.0		
AZ17	20.0	6	120.0		
AC17	20.0	2	40.0		
Detector:					
Hard contact heat	0.0	60	0.0		
Ionisation smoke	0.01	50	0.5		
Photoelectric smoke	0.1	40	4.0		
IR flame	0.25	6	1.5		
UV flame	2.0	2	4.0		
Beam	180.0	4	720.0		
Ancillary loads (normally energised):					
Aircon relays	20.0	2	40.0		
Electric locks	100.0	4	400.0		
Total I_Q (mA)				1530.0	1.53A

NOTE: 1 Ampere (A) 1000 milliamperes (mA)

I_A (alarm current) calculation

All following alarm currents are the values in addition to any quiescent value.

Item	Unit 1 in mA	Quantity	Total mA		
Total I_Q	-	-	1530.0		
Sounders (bells)	80.0	1	80.0		
AZ17s	100.0	2	200.0		
Evac interface relay	20.0	2	40.0		
Fire control stn interface	20.0	1	20.0		
AC17s	300.0	2	600.0		
Warning signs	500.0	2	1000.0		
				3470.0	3.47A
Less loads that de-energise on alarm					
Aircon relays	20.0	2	40		
Electric locks	100.0	4	400.0		
				440.0	
Total alarm load IA (mA)				3030.0	3.03A

Required battery capacity at end of battery life = (I_Q x 24) + (I_A x 0.5)

= (1.53 x 24) + (3.03 x 0.5)

= 36.72 + 1.52

= 38.42 Ah

Therefore required new battery capacity = 38.24 x 1.25

= 47.8 Ah

Rounded up to nearest available battery = 50.0 Ah

4100 Power Supply / Battery Capacity Calculations

Project: SAMPLE 4100/4120 PANEL

			Standby Current (A)		Alarm Current (A)	
Module	Description	Qty	EA	Total	EA	Total
4100-8XXX	Fire Indicator Panel Base Unit	1	0.25	0.25	0.4	0.4
4100-0110	Mapnet 2 Addressable Loop	3	0.33	0.99	0.35	1.05
4100-0111	Mapnet 2 QUAD Isolator		0.05	0	0.05	0
4100-0113	RS232 Modem Interface	0	0.13	0	0.13	0
4100-1017	10 AMP PS/CHARGER					
4100-1018	10 AMP AUX PS ONLY					
4100-1020	2 AMP AUX PS ONLY (AS1668 RTU)					
4100-0301	64/64 Led Switch Controller	0	0.02	0	0.26	0
4100-0302	24 point I/O Module	0	0.04	0	0.12	0
4100-0304	Remote Unit Interface	0	0.08	0	0.08	0
4100-3003	8XSPDT,3A,24VDC Relay module	1	0.03	0.03	0.28	0.28
4100-3024	24 I/O Relay Motherboard + (4100-0302)	0	0.08	0	0.3	0
4100-4321	6 Supervised Relays	1	0.02	0.02	0.07	0.07
4100-5004	8 AZF Monitor Zone	0	0.08	0	0.2	0
4100-0451	Panel Mounted Printer					
4100-CPU	CPU Module	0	0.15	0	0.15	0
4100-0140	RS 485 Network Interface Card - Hardwired	0	0.15	0	0.15	0
4100-0141	Modular Network Card (Requires 2 media cards)	1	0.15	0.15	0.15	0.15
4100-0142	Wired Media Card RS485	0				
4100-0143	Fibre Optic Media Card	2				
4100-8225	25W Amplifier	0	0.25	0	2	0
4100-8250	50W Amplifier	0	0.25	0	3.5	0
4100-0302A	6 Amplifier Control Module	0	0.04	0	0.12	0
2190-9156	ZAM Monitor - Mapnet 2	0	0.02	0	0.09	0
2190-9162	ZAM Signal - Mapnet 2	0	0.015	0	0.065	0
2190-9164	ZAM Control - Mapnet 2	0	0.01	0	0.04	0
4098-9794	Sounder Base - TrueAlarm	0			0.015	0
4907-0012	Evac Tone Sounder - 24VDC	0			0.018	0
	VESDA LaserPlus	1	0.5	0.5	0.5	0.5
	Total Power Supply Capacity		**I (S) =**	1.94	**I(A) =**	1.95

Note: If Power Supply Capacity exceeds 8 Amps then select an additional Power Supply

Battery Capacity Ahr I(S) x 24 + 0.5xI (A) (see Note)

46.56 + 2.975 = 49.535 Ahr

Note: I(A) = Two zones in Alarm (including Ancillary loads)

Total Battery Capacity allowing for battery efficiency x 1.25 = 61.9188 Ahr

Therefore Select 65Ahr

Appendix F
Cable Characteristics

4100 MAPNET II

Line Characteristics

Note: In the following paragraphs the term "MAPNET channel" is used to mean those lines connected to any one Mapnet Transceiver board. Parallel runs from the same board do not constitute separate channels. The term "continuous run" refers to the loop distance from the primary output, through all devices and back to the secondary output.

Line characteristics are based on 0.58uF and/or 35 Ohms total line resistance.

Total length of line on one MAPNET channel shall not exceed 3,000 m including all T-taps and parallel runs.

Maximum length for ONE continuous MAPNET run is 1200 m for up to 128 MAPNET devices using 1.5 mm sq cable.

When the run exceeds 850 m it is necessary to use twisted, shielded pair.

4120 NETWORK

Copper Line Characteristics

4120 Network "Wired" *(formerly called* RS-485) Communication wiring shall be 0.75 mm sq twisted, shielded pair (TSP), or 0.22 mm sq twisted pair (TP). Shielded Cable is recommended for new installations. When shielding is used, the shield shall be connected to Earth Ground, at the Left Port end of span only.

No T-tapping of the Network conductors is allowed. Network wiring is point-to-point, only.

Maximum line length between ports at 57,600 and 9600 bits per second is shown in the table below.

	Maximum wiring distance	
Communication Speed	0.75mm sq TSP Wire. (Maximum capacitance between conductors is 174 pf. per meter)	0.22mm sq TP Wire. (Maximum capacitance between conductors is 66 pf. per meter)
57,600 bps	3,000 m	2,300 m
9600 bps	5,600 m	4,000 m

Table 1 4120 Network: Maximum Transmission Distances, "Wired" Network

Fibre Optic Cable Characteristics

All fibre cables shall be multimode, graded index. ST style connectors must be used. No physical strain shall be put on the cables. There must be no cable bends of less than a 50mm radius.

Two methods are available for joining fibre cable. Splices provide a permanent, very low loss, fibre-to-fibre connection. Couplers provide temporary connection between two ST style connectors with a loss of 1.2dB. Both methods are permitted on a 4120 fibre Network.

The characteristics of the 4100-0143 fibre optic media card are as follows. Mininium Launch Power into a 50/125 cable is 50 uW (-13 dBm). Minimum Launch Power into a 62.5/125 cable is 109.5 uW (-8.6 dBm). The maximum value for the minimum input sensitivity of the receiver is 1.0 uW (-30 dBm).

Maximum line lengths for 50/125 and 62.5/125 cable are shown in the table below.

Fibre CableFibre CableFib	**Loss Per Kilometer**	**Power Margin**	**Maximum distance**
50/125 Fibre	4 db	4 db	3,050 meters
50/125 Fibre	3 db	3 db	4,500 meters
62.5/125 Fibre	4 db	4 db	4,000 meters
62.5/125 Fibre	3.75 db	3 db	4,500 meters

Table 2 4120 Network: Maximum Distances, Optical Fibre

All the information above is based on the **minimum** launch power of the transmitter into the specified cable and the **maximum value** of the minimum input sensitivity of the receiver