⑤ Simplex

4100 Fire Alarm System

Installation Instructions For
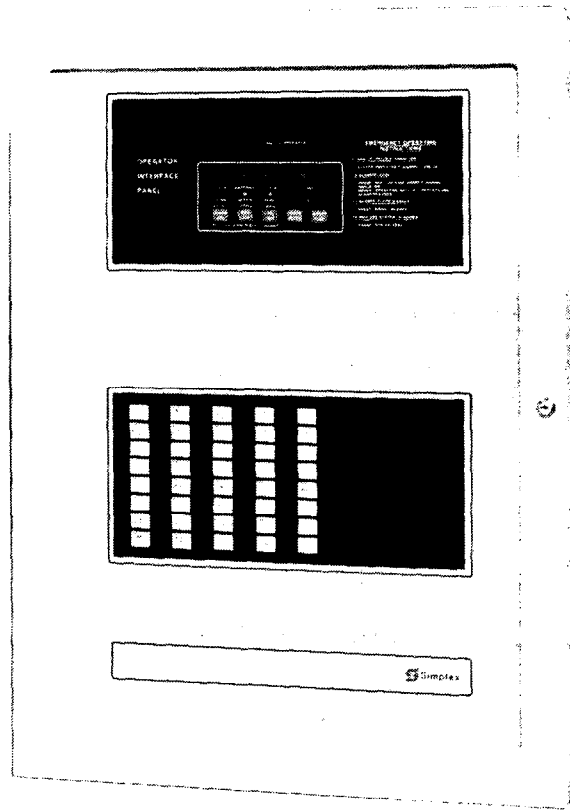## 24-Point Graphic I/O Interface Module

TABLE OF CONTENTS

GENERAL DESCRIPTION

A hard-wired annunciator can be accommodated using a 24 Point Graphic I O Interface Module at either a local or remote location. This module allows up to 24 inputs or outputs to be programmed and connected to the system. These 24 I O points can be split up into any combination of the two (inputs or outputs) to meet customer requirements.

The 24-Point I/O module provides a graphic annunciator interface for both lamps and switches. The lamp driver circuitry is rated at 150 mA per circuit. This rating provides for both incandescent and LED annunciation. Each output may be programmed to be on steady, slow pulse or fast pulse. Inputs may be unsupervised, supervised for opens only, supervised for opens and shorts or monitor HOA switches, depending on how the switches are externally wired. Switch inputs can originate from 2 or 3-position switches. This module also accepts up to three special inputs such as lamp test and remote power supply trouble.

This module also provides supervised or unsupervised point-wired annunciation. It provides up to 24 points of supervised or unsupervised annunciation from point-wired peripheral devices.

This module can provide for supervised monitor and control functions in smoke control applications. It may be configured to supervise outputs which operate any remotely located relay and supervise their feedback status points.

The 24-Point I/O module may be located in either the local Master Panel or any remote annunciator panel. If mounted in a remote location, power to drive the switch inputs and lamp outputs must come from an external power supply. It, like other daughter cards, requires a system card address.

DETAILED DESCRIPTION

A. LED INDICATOR

LED 1, the module trouble indicator, will illuminate any time there is an on-board trouble or when forced on using the front panel keys.

B. SWITCH SW1 (Refer to Figure 1 for switch locations)

Switch SW1 is an 8-position DIP switch which is used to set the module's address and select its input baud rate. SW1-2 thru 8 are used for address selection while SW1-1 is used for baud rate selection. Baud rate and address selection are explained below.

SW1-1 Baud Rate Selection

Open = 9600 Baud Rate
Closed = 1200 Baud Rate

**NOTE:** All current *local* slave daughter cards communicate with the Master Controller via the Internal Serial Communication Bus which by default is set for 9600 BAUD; therefore, ensure that SW1-1 is always set to OPEN. If the Graphic I/O module is mounted in a *remote* annunciator, it may be configured to communicate at either 1200 or 9600 BAUD, depending on the output from the Remote Annunciator Interface Module (RAI).

Module address selection is determined at order entry or by the Programming Unit and recorded in the Programmer's Report. The address on the DIP switches is a binary representation of the card address. See Figure 1 and the chart below for address selection.

TABLE 1
PRINTED CIRCUIT BOARD ADDRESSES

SWITCHES ARE SET FOR 9600 BAUD AND ADDRESS 2
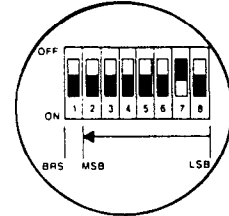
	1 BRS	2 MSB	3	4	5	6	7	8 LSB
	SW1-1	SW1-2	SW1-3	SW1-4	SW1-5	SW1-6	SW1-7	SW1-8
	CPU MODULE IS ALWAYS ADDRESS 0 CPU = ADDRESS 0							
U	ON	ON	ON	ON	ON	ON	OFF = ADDRESS 1	
S	ON	ON	ON	ON	ON	OFF	ON = ADDRESS 2	
E	ON	ON	ON	ON	ON	OFF	OFF = ADDRESS 3	
D	ON	ON	ON	ON	OFF	ON	ON = ADDRESS 4	
	ON	ON	ON	ON	OFF	ON	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	OFF = 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

	OFF	OFF	OFF	ON	OFF	OFF	OFF = ADDRESS 119	

LED 1   **SW1**

PLUGGABLE RESISTORS
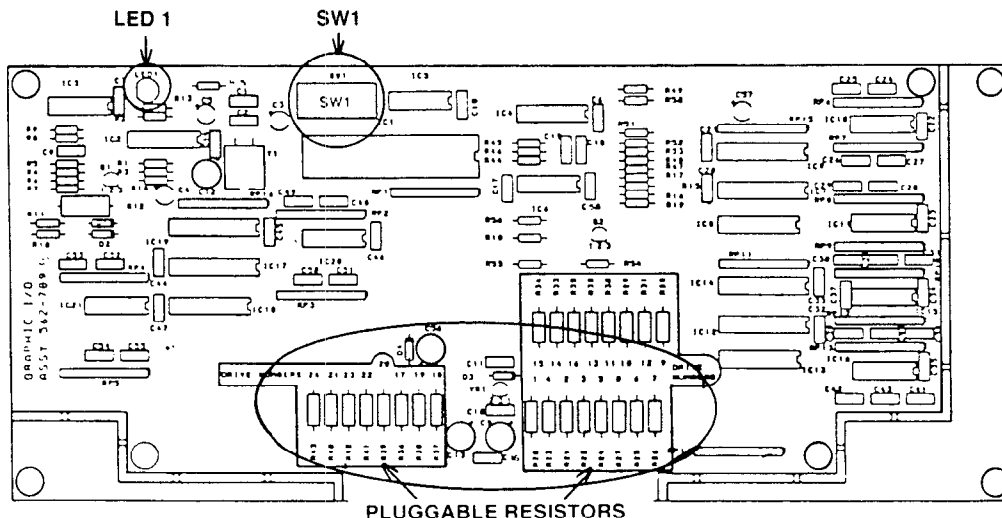
Figure 1
24-POINT GRAPHIC I/O MODULE

C. PLUGGABLE RESISTORS (Refer to Figure 1 for resistor locations)

Resistor selection is based upon whether an I O point is programmed to be an input or an output. Selection is outlined below and shown in Table 2.

INPUT (switch) points use 2K Ohm. ½ watt resistors.
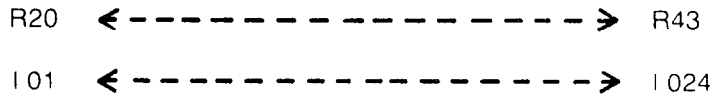
OUTPUT (lamp LED) points use 20 Ohm, 1 watt resistors.

R20 ◄ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ► R43

I 01 ◄ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ► I 024

TABLE 2
24-POINT GRAPHIC I/O CARD PLUGGABLE RESISTORS
(632-789)

Pluggable Resistor Settings			
Device #	Resistors	Input	Output
1	20	2K .5w	20 ohm. 1W
2	21	2K .5w	20 ohm 1W
3	22	2K .5w	20 ohm 1W
4	23	2K .5w	20 ohm 1W
5	24	2K .5w	20 ohm 1W
6	25	2K .5w	20 ohm 1W
7	26	2K .5w	20 ohm 1W
8	27	2K .5w	20 ohm 1W
9	28	2K .5w	20 ohm 1W
10	29	2K .5w	20 ohm. 1W
11	30	2K .5w	20 ohm. 1W
12	31	2K .5w	20 ohm 1W
13	32	2K .5w	20 ohm. 1W
14	33	2K .5w	20 ohm. 1W
15	34	2K .5w	20 ohm 1W
16	35	2K .5w	20 ohm. 1W
17	36	2K .5w	20 ohm. 1W
18	37	2K .5w	20 ohm 1W
19	38	2K .5w	20 ohm. 1W
20	39	2K .5w	20 ohm 1W
21	40	2K .5w	20 ohm. 1W
22	41	2K 5w	20 ohm 1W
23	42	2K .5w	20 ohm. 1W
24	43	2K .5w	20 ohm. 1W

For Switch Monitoring   For LED LAMPS

NOTE: Systems are shipped from the factory with 2K ohm resistors. Use 2K ohm resistors for switch contact monitor points and 20 ohm resistors for LED LAMP outputs.

D. CONNECTOR P1

Connector P1 is the module's edge connector. It allows the module to plug into the motherboard PC socket.

E. MOTHERBOARD TERMINATIONS

The motherboard terminations provide field wiring connections for the I O points (I O 1 thru I O 24), special monitor points (PM 1 thru PM 3) and required power input (PWR IN + and PWR IN −). These connections are shown in Figure 2.
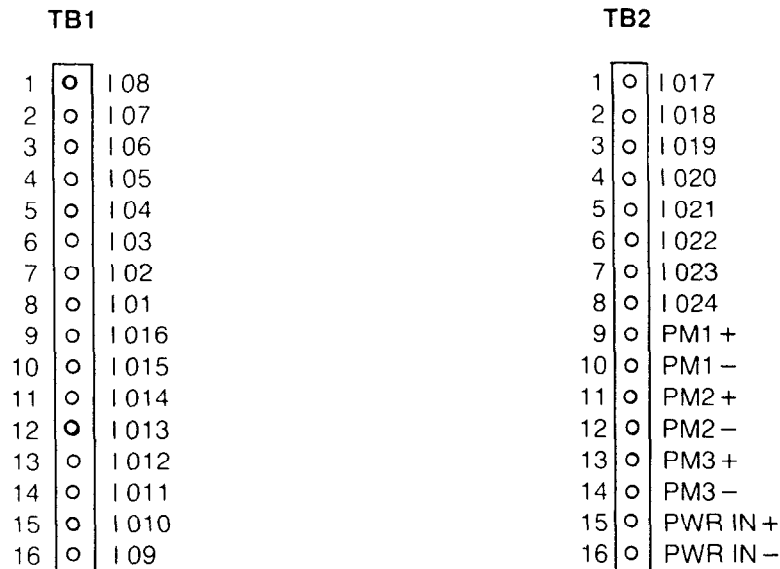
3

		TB1				TB2
1	O	I 08		1	O	I 017
2	O	I 07		2	O	I 018
3	O	I 06		3	O	I 019
4	O	I 05		4	O	I 020
5	O	I 04		5	O	I 021
6	O	I 03		6	O	I 022
7	O	I 02		7	O	I 023
8	O	I 01		8	O	I 024
9	O	I 016		9	O	PM1 +
10	O	I 015		10	O	PM1 –
11	O	I 014		11	O	PM2 +
12	O	I 013		12	O	PM2 –
13	O	I 012		13	O	PM3 +
14	O	I 011		14	O	PM3 –
15	O	I 010		15	O	PWR IN +
16	O	I 09		16	O	PWR IN –

Figure 2
MOTHERBOARD TERMINATIONS

F. IC1 CHIP

The on-board micro-controller (IC1) executes module functions via the internal software, which is "burned" into the chip.

G. OUTPUT DRIVER POWER

The + 24 VDC input is used to generate the supervision reference from the power supply which is feeding the 24 I/O points. The + 24 VDC connects to TB2-15 ("PWR IN + ") and to TB2-16 ("PWR IN – ").

H. COMMUNICATION

Internal Serial Communication between the Master Controller Module and the 24-Point Graphic I/O Module micro-controller chip (IC1) is accomplished via:

● Motherboard Connector P2 (if it is the first in a row)

● Motherboard Connector P1 (if it is the second or subsequent in a row, communication being daisy-chained between motherboards)

External Serial Communication between the Master Controller and the 24-Point Graphic I/O Module is accomplished via the following modules:

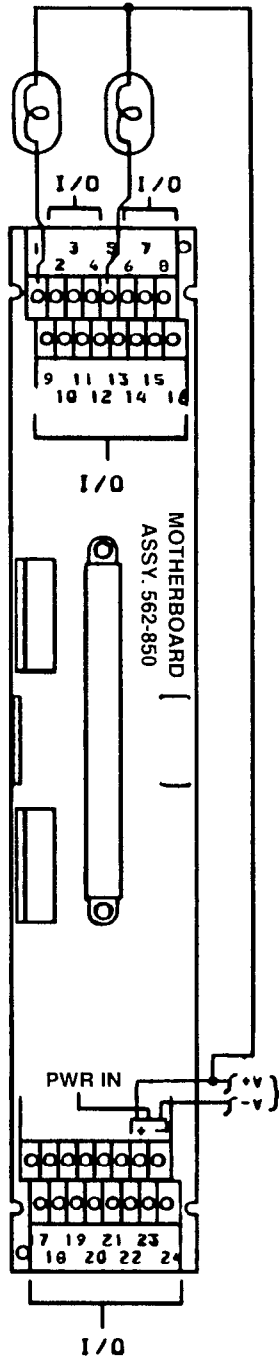● Remote Annunciator Interface (RAI) Module in the local panel

  AND

  Remote Serial Interface Module (RIC) in the remote panel.

FIELD WIRING DIAGRAMS (See pages 5 thru 10)

The Field Wiring Diagrams are used when wiring peripheral devices to the 4100 panel. They provide a pictoral reference on how to terminate wiring on the 24-Point Graphic I O module. Determine your system requirements; then use the appropriate Field Wiring Diagram for all terminations.

GRAPHIC I/O INCANDESCENT LAMP ANNUNCIATOR

TYPICAL INCANDESCENT GRAPHIC ANNUNCIATOR

I/O   I/O

1 3 5 7
2 4 6 8

9 11 13 15
10 12 14 16

I/O

MOTHERBOARD
ASSY. 562-850

PWR IN   +V
          -V

WHATEVER POWER SUPPLY IS USED TO
POWER THE INCANDESCENT ANNUNCIATOR,
CONNECT THAT POWER SUPPLY'S +V
AND 0V TO HERE FOR PROPER LAMP
SUPERVISION.

17 19 21 23
18 20 22 24

I/O

NOTES:

1. ALL WIRING TO BE 18 AWG OR TO LOCAL CODE.

2. CONDUCTORS MUST TEST FREE FROM ALL GROUNDS.

3. MAXIMUM CURRENT....150mA PER OUTPUT.

4. MAXIMUM VOLTAGE....32 VDC.

5. DRAWING DEPICTS TYPICAL WIRING. ALL OUTPUTS MAY NOT BE WIRED.

6. PLUGGABLE RESISTORS ON GRAPHIC I/O ASSY. MUST BE CHANGED TO 20 OHM. 1W (SUPPLIED IN SHIPPING GROUP) FOR EACH CORRESPONDING LAMP OUTPUT. LOOK FOR THE RESISTOR MARKED DRIVER "X." ("X" IS A NUMBER BETWEEN 1 AND 24.) REMOVE 2K, 1/2W RESISTOR AND REPLACE WITH 20 OHM, 1W RESISTOR.

5

# GRAPHIC I/O ANNUNCIATOR LED ANNUNCIATOR WIRING
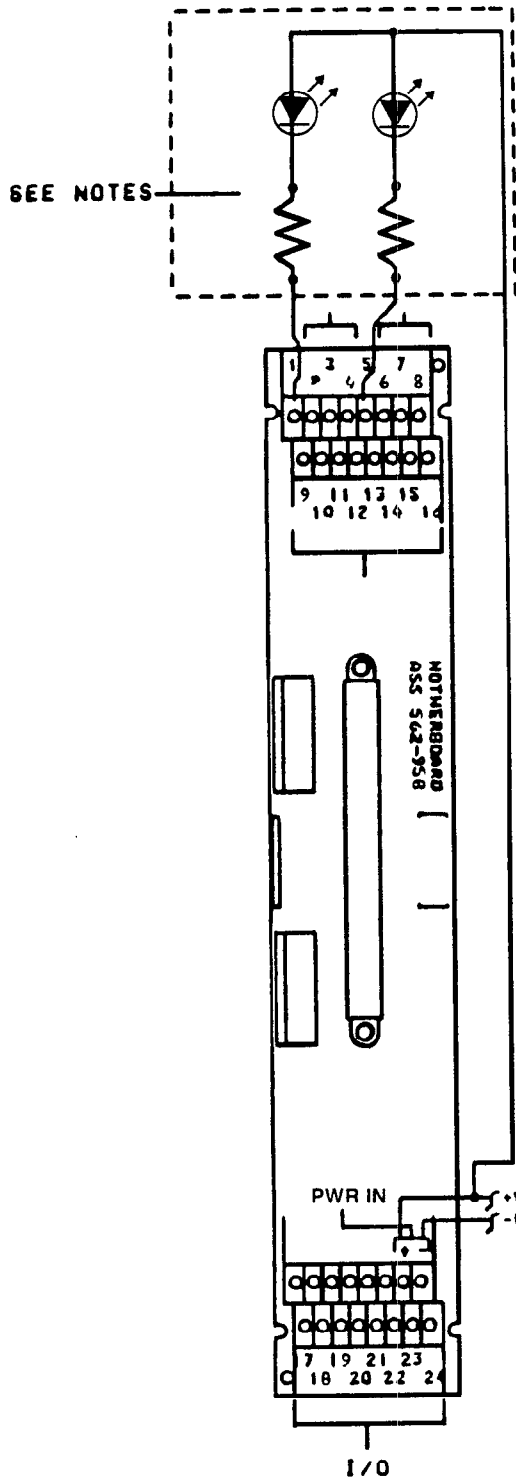
TYPICAL LED ANNUNCIATOR SHOWN

SEE NOTES

MOTHERBOARD
ASS 542-958

WHATEVER POWER SUPPLY IS USED TO
POWER THE LED ANNUNCIATOR, CONNECT
THAT POWER SUPPLIES +V
AND 0V TO HERE FOR PROPER LED
SUPERVISION.

PWR IN

+V
-V

I/O

NOTES:

1. ALL WIRING TO BE MINIMUM NO. 18 AWG OR TO LOCAL
   CODE.

2. CONDUCTORS MUST TEST FREE OF ALL GROUNDS.

3. VOLTAGE 20.4 MIN. TO 32 VDC MAX.

4. MAXIMUM CURRENT – 150mA PER OUTPUT AT 24 VDC.

5. DRAWING DEPICTS TYPICAL WIRING. ALL OUTPUT ZONES
   MAY NOT BE WIRED. SUPERVISION FOR THE UNUSED
   INPUTS ARE BYPASSED IN SOFTWARE.

6. PLUGGABLE RESISTORS ON GRAPHIC I/O ASSY. MUST BE
   CHANGED TO 20 OHM. 1W (SUPPLIED IN SHIPPING GROUP)
   FOR EACH CORRESPONDING LED OUTPUT. LOOK FOR
   THE RESISTOR MARKED DRIVER "X." ("X" IS A NUMBER
   BETWEEN 1 AND 24.) REMOVE 2K, 1/2W RESISTOR AND
   REPLACE WITH 20 OHM, 1W RESISTOR.

GRAPHIC I/O, N/O OR N/C SWITCHES (UNSUPERVISED WIRING)

N.O.
SWITCH

N.C.
SWITCH

I/O

I/O

MOTHERBOARD
ASSY 562-727

PWR IN
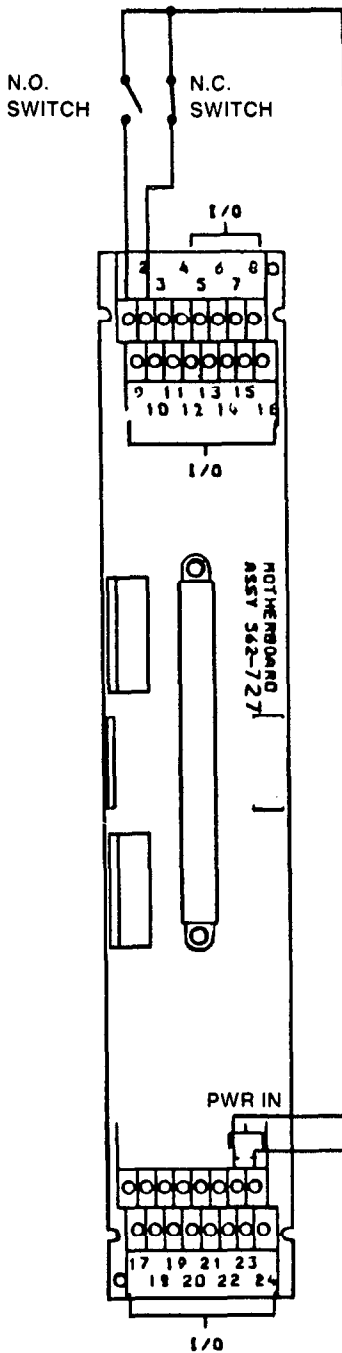
WHATEVER POWER SUPPLY IS USED
FOR SWITCH COMMONS.
CONNECT HERE.

$+V$

$-V$

I/O

NOTES:

1. ALL WIRING MUST BE TO LOCAL CODE.

2. CONDUCTORS MUST TEST FREE OF ALL GROUNDS.

3. ALL WIRE UNSUPERVISED UNLESS OTHERWISE NOTED.
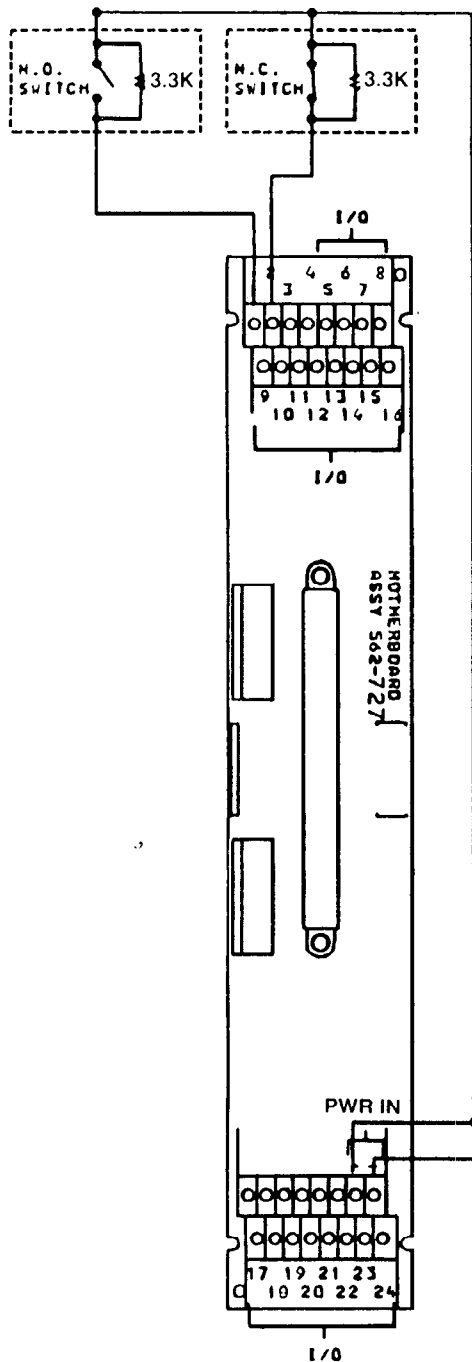
4. SUPERVISORY POWER (SWITCH NORMAL)

   N.O SWITCH – 0mA
   N C SWITCH – 12mA

5. ALARM POWER (SWITCH OFF NORMAL)

   N O SWITCH – 12mA
   N C SWITCH – 0mA

6. WIRING TO THE I O TERMINALS MUST NOT BE RUN WITH
   AC WIRING.

7

GRAPHIC I O, N O OR N C SWITCH WITH SUPERVISION FOR OPEN CIRCUIT.

WHATEVER POWER SUPPLY IS USED
TO POWER THE SWITCH COMMONS,
MUST BE CONNECTED HERE FOR
PROPER SWITCH SUPERVISION.

NOTES:

1. ALL WIRING MUST BE TO LOCAL CODE.

2. CONDUCTORS MUST TEST FREE FROM ALL GROUNDS.

3. ALL WIRE IS SUPERVISED UNLESS OTHERWISE NOTED.
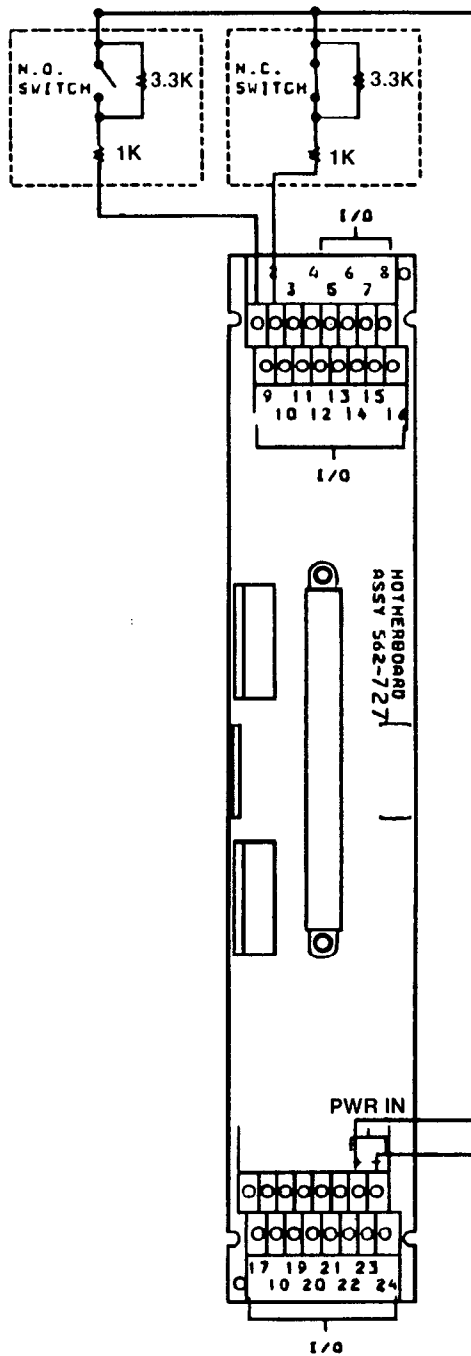
4. SUPERVISORY POWER (SWITCH NORMAL)

   N/O SWITCH – 5mA ● 24VDC
   N/C SWITCH – 12mA ● 24VDC

5. ALARM POWER (SWITCH OFF NORMAL)

   N/O SWITCH – 12mA ● 24VDC
   N/C SWITCH – 5mA ● 24VDC

6. WIRING TO THE I/O TERMINALS MUST NOT BE RUN WITH AC WIRING.

8

GRAPHIC I/O, N/O OR N/C SWITCH WITH SUPERVISION FOR OPEN OR SHORT CIRCUITED WIRING.
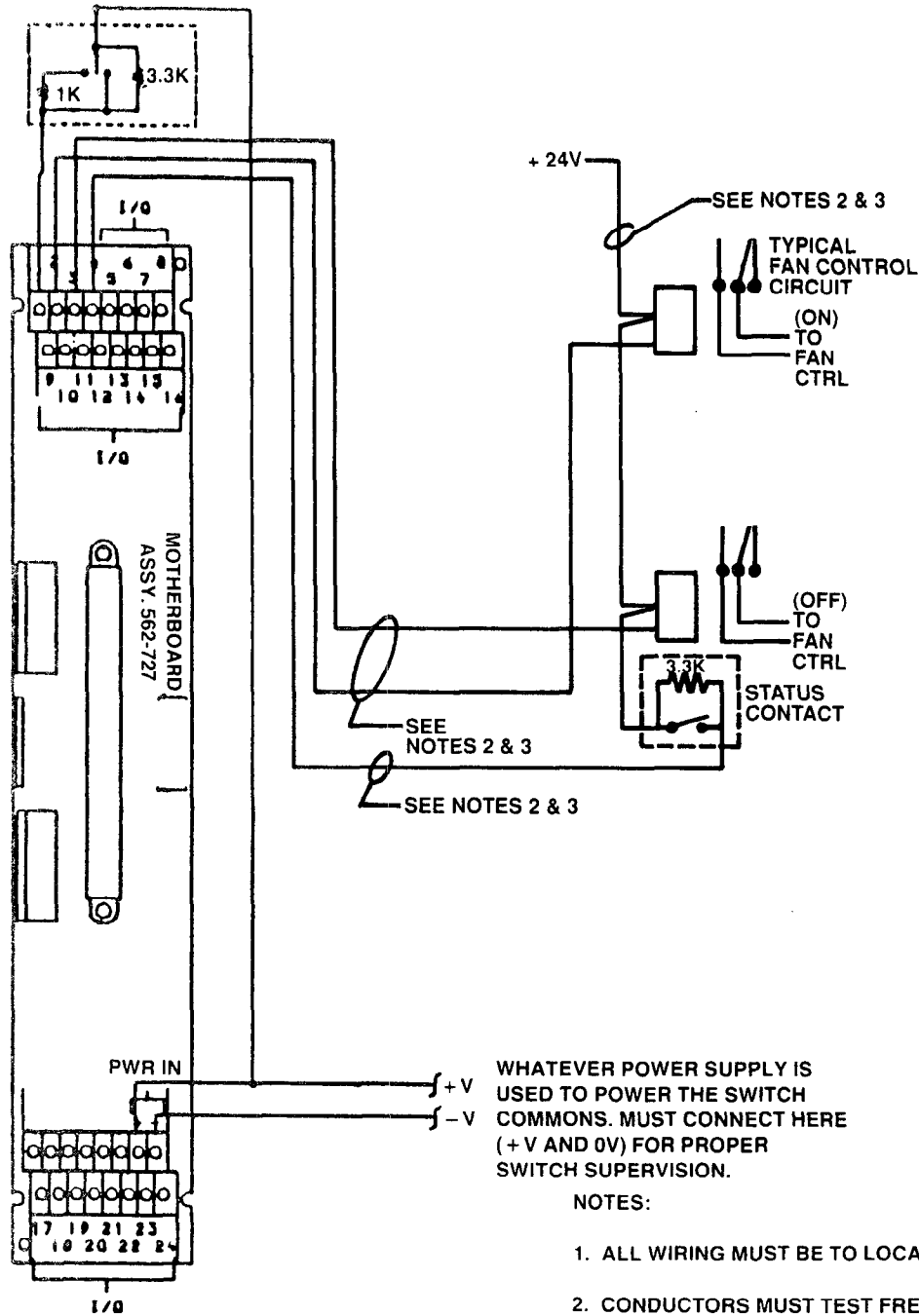

WHATEVER POWER SUPPLY IS USED FOR SWITCH COMMONS. MUST CONNECT (0V AND +V) HERE FOR PROPER SWITCH SUPERVISION.

NOTES:

1. ALL WIRING MUST BE TO LOCAL CODE.

2. CONDUCTORS MUST TEST FREE FROM ALL GROUNDS.

3. ALL WIRE IS SUPERVISED UNLESS OTHERWISE NOTED.

4. SUPERVISORY POWER (SWITCH NORMAL)

   N/O SWITCH – 4mA
   N/C SWITCH – 8mA

5. ALARM POWER (SWITCH OFF NORMAL)

   N O SWITCH – 8mA
   N C SWITCH – 4mA

6. WIRING TO THE I/O TERMINALS MUST NOT BE RUN WITH AC WIRING.

9

FAN CONTROL WITH AN H.O.A. SWITCH ON A GRAPHIC ANNUNCIATOR.

1K

3.3K

I/O

I/O

MOTHERBOARD
ASSY. 562-727

I/O

PWR IN

+ 24V

SEE NOTES 2 & 3

TYPICAL
FAN CONTROL
CIRCUIT

(ON)
TO
FAN
CTRL

(OFF)
TO
FAN
CTRL

3.3K

STATUS
CONTACT

SEE
NOTES 2 & 3

SEE NOTES 2 & 3

+ V
− V

WHATEVER POWER SUPPLY IS
USED TO POWER THE SWITCH
COMMONS. MUST CONNECT HERE
(+V AND 0V) FOR PROPER
SWITCH SUPERVISION.

NOTES:

1. ALL WIRING MUST BE TO LOCAL CODE.

2. CONDUCTORS MUST TEST FREE FROM ALL GROUNDS.

3. ALL WIRE IS SUPERVISED UNLESS OTHERWISE NOTED.

4. SUPERVISORY POWER

   ON POSITION – 12mA ● 24VDC
   CENTER POSITION – 4.5mA ● 24VDC
   OFF POSITION – 8mA ● 24VDC

5. ALARM POWER SAME AS ABOVE.

6. CENTER POSITION – AUTO
   UP POSITION – ON
   DOWN POSITION – OFF.

7. WIRING TO THE I/O TERMINALS MUST NOT BE RUN WITH
   AC WIRING.

10

WE NEED YOUR FEEDBACK

TAKE A CLOSER LOOK
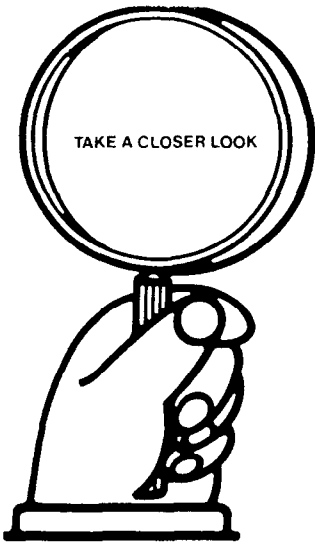
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