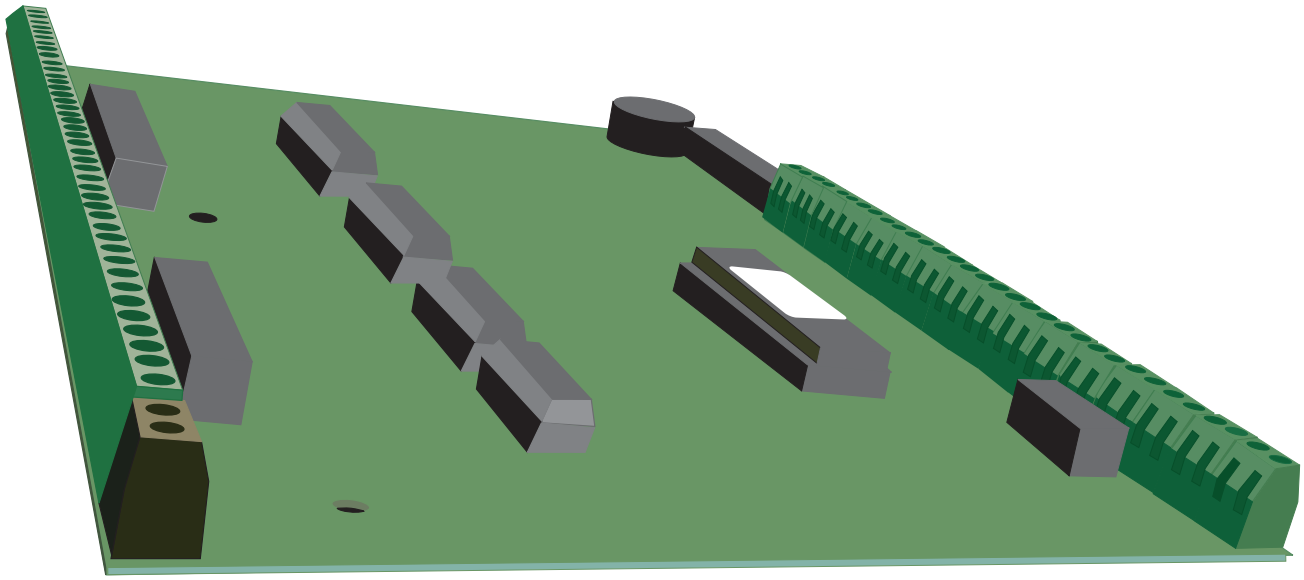
Mircom™

MGD-32 and AGD-048

Remote Multiplex Graphic Driver Annunciators and Adder Boards



Wiring and Installation Manual

LT-847 Rev. 8
February 2011

Table of Contents

1.0 Introduction 7

1.1 Contact Us 8
1.1.1 General Inquiries 8
1.1.2 Customer Service 8
1.1.3 Technical Support 8
1.1.4 Website 8

2.0 Specifications & Features 9

2.1 Enclosure Models 9
2.2 Module Models 9
2.2.1 MGD-32 Annunciator Chassis (32 Display Points) 9
2.2.2 AGD-048 Graphic Annunciator Chassis (48 Display Points) 9
2.3 Environmental Specifications 9

3.0 Installation Instruction 10

4.0 Wiring Instruction 11

4.1 RS-485 Wiring 11
4.2 24V DC Power Wiring 11

5.0 DIP Switch Settings & Cabling 13

5.1 Cabling for the AGD-048 Adder Annunciator 14
5.2 Cabling for the MGD-32 Master Graphic Driver Annunciator 14

6.0 Graphic Drivers And Adder Wiring 15

6.1 Connections For The MGD-32 Graphic Driver Annunciator 15
6.1.1 Terminals Marked L1 To L12 (MGD-32 Only) 15
6.1.2 Wiring Within Same Enclosure or Same Room 16
6.1.3 Terminals Marked L13 To L44 17
6.1.4 Terminals Marked “Buttons” 19
6.1.5 Terminals Marked “Power Relay And Lamp Test Supply” 20
6.1.6 Terminals Marked “RS-485” 20
6.1.7 Terminals Marked “24 V DC Supply” 20
6.2 Connections for the AGD-048 Adder Annunciator Board 21
6.2.1 Getting the AGD-048 to Work with the MGD-032 21
6.2.2 Getting the AGD-048 to Work with the FX-2000 or RAX-LCD 21
6.2.3 Terminals Marked L1 To L48 22

6.2.4 Terminals Marked “Power Relay Contacts” 22
6.2.5 Terminals Marked “Lamp Test Supply” 22
6.2.6 Terminals Marked “24V DC Lamp Supply” 22
6.2.7 Terminals Marked “24V DC Supply” 22

7.0 Current Drain Calculations 24

7.1 Total Current Draw 24

8.0 Appendix A 25

8.1 Pin Layout for Connectors on MGD-32 and AGD-048 25

9.0 Warranty and Warning Information 30

9.1 Warning Please Read Carefully 30
9.2 Note to Installers 30
9.3 System Failures 30
9.3.1 Inadequate Installation 30
9.3.2 Power Failure 30
9.3.3 Failure of Replaceable Batteries 30
9.3.4 Compromise of Radio Frequency (Wireless) Devices 31
9.3.5 System Users 31
9.3.6 Automatic Alarm Initiating Devices 31
9.3.7 Software 31
9.3.8 Alarm Notification Appliances 31
9.3.9 Telephone Lines 32
9.3.10 Insufficient Time 32
9.3.11 Component Failure 32
9.3.12 Inadequate Testing 32
9.3.13 Security and Insurance 32
9.4 Limited Warranty 32
9.4.1 International Warranty 32
9.4.2 Conditions to Void Warranty 33
9.5 Warranty Procedure 33
9.6 Disclaimer of Warranties 33
9.7 Out of Warranty Repairs 33

List of Figures and Tables

Figure 1 Mechanical Installation 10
Figure 2 RS-485 and 24V DC Power Wiring 11
Table 1 Annunciator 24V DC Power Wiring Table 12
Table 2 Annunciator Addresses 13
Figure 3 Cabling Diagram 14
Table 3 Terminal Indicators for L1 to L12 15
Figure 4 MGD-32 Board Layout Showing Terminals, Jumpers, and Connectors 16
Table 4 Terminal Indicators for L13 to L44 17
Figure 5 Common Indicator and Buzzer Wiring for the MGD-32 18
Figure 6 MGD-32 Indicator Zone Wiring 19
Figure 7 MGD-32 Common Control Button Wiring 20
Figure 8 AGD-048 Board Layout Showing Terminals, Jumpers and Connectors 21
Figure 9 Indicator Zone Wiring for the AGD-048 Adder Board 23
Table 5 Pin Layout for the P1 Connector on the MGD-32 Driver Board 25
Table 6 Pin Layout for the P3 Connector on the MGD-32 Driver Board 26
Table 7 Pin Layout for the P4 Connector on the MGD-32 Driver Board 27
Table 8 Pin Layout for the P3 Connector on the AGD-048 Driver Board 28
Table 9 Pin Layout for the P4 Connector on the AGD-048 Driver Board 29

1.0 Introduction

Mircom's modularly designed Remote Multiplex Graphic Driver Annunciators provide a large capacity of annunciation (up to 224 points) with FA-200, FA-300, FR-320, FX-350, FA-1000 and FX-2000 Series Fire Alarm Control Panels. The MGD-32 Main Annunciator Chassis is a 32 Circuit Annunciator which may be expanded with up to four AGD-048 Adder Annunciator Chassis' to a maximum of 224 Circuit Display Points. The MGD-32 has no button or LEDs on the board. Each Circuit Output will drive off board Indicators such as LEDs or LAMPS on a GRAPHIC DISPLAY to form a graphic annunciator. The drivers may be mounted by using the metal plate (included in the package) to any of the approved backboxes or within a graphic display. It is intended that the MGD-32 and the AGD-048 are combined with a GRAPHIC DISPLAY to make a graphic annunciator. These graphic drivers have individual lamp supervision circuitry which helps to identify burned out lamps.

1.1 Contact Us

For General Inquiries, Customer Service and Technical Support you can contact us Monday to Friday 8:00 A.M. to 5:00 P.M. E.S.T.

1.1.1 General Inquiries

Toll Free	1-888-660-4655 (North America Only)
Local	905-660-4655
Email	mail@mircom.com

1.1.2 Customer Service

Toll Free	1-888-MIRCOM5 (North America Only)
Local	905-695-3535
Toll Free Fax	1-888-660-4113 (North America Only)
Local Fax	905-660-4113
Email	salessupport@mircom.com

1.1.3 Technical Support

Toll Free	1-888-MIRCOM5 (North America Only)
	888-647-2665
International	905-647-2665
Email	techsupport@mircom.com

1.1.4 Website

www.mircom.com

2.0 Specifications & Features

2.1 Enclosure Models

1. Steel enclosure finish: painted semi-gloss off-white
2. Material:BB-5008 16 GA. (0.060") thick CRS
   BB-5014 16 GA. (0.060") thick CRS
   Doors are available in 14 GA (0.075") thick CRS, painted or Anodized Aluminum Extrusion.
3. Enclosure Dimensions:BB-5008 30"w x 36"H x 7"D
   BB-5014 30"w x 60"H x 7"D

2.2 Module Models

2.2.1 MGD-32 Annunciator Chassis (32 Display Points)

- 24V DC nominal, range 20 to 39 V DC (filtered or full-wave-rectified).
- Connections for Indicators (Lamp Fail, Common Trouble, Remote Failure, A.C. General Alarm, Acknowledge, and Signal Silence), and Controls (System Reset, Lamp Test, Fire Drill, Aux. Disconnect, General Alarm, Buzzer Silence, Acknowledge, and Signal Silence), Local Buzzer
- Annunciation of up to 32 Points.
- Expandable by using up to four AGD-048 Adder Modules.
- Standby: 35 mA, Alarm: 1.6A Max.

2.2.2 AGD-048 Graphic Annunciator Chassis (48 Display Points)

- 24V DC nominal, range 20 to 39 V DC. (filtered or full-wave-rectified)
- Annunciation of up to 48 Points.
- Up to four AGD-048 Adder Modules may be driven from one MGD-32
- Standby: 25 mA, Alarm: 2.4A Max.

2.3 Environmental Specifications

This annunciator is intended for indoor use only.

3.0 Installation Instruction

In Figure 1 below, the MGD-32 and AGD-048 may be mounted into backboxes BB-5008 and BB-5014. The MGD-32 and the AGD-048 are packaged with a metal cover plate and are mounted into the backbox.

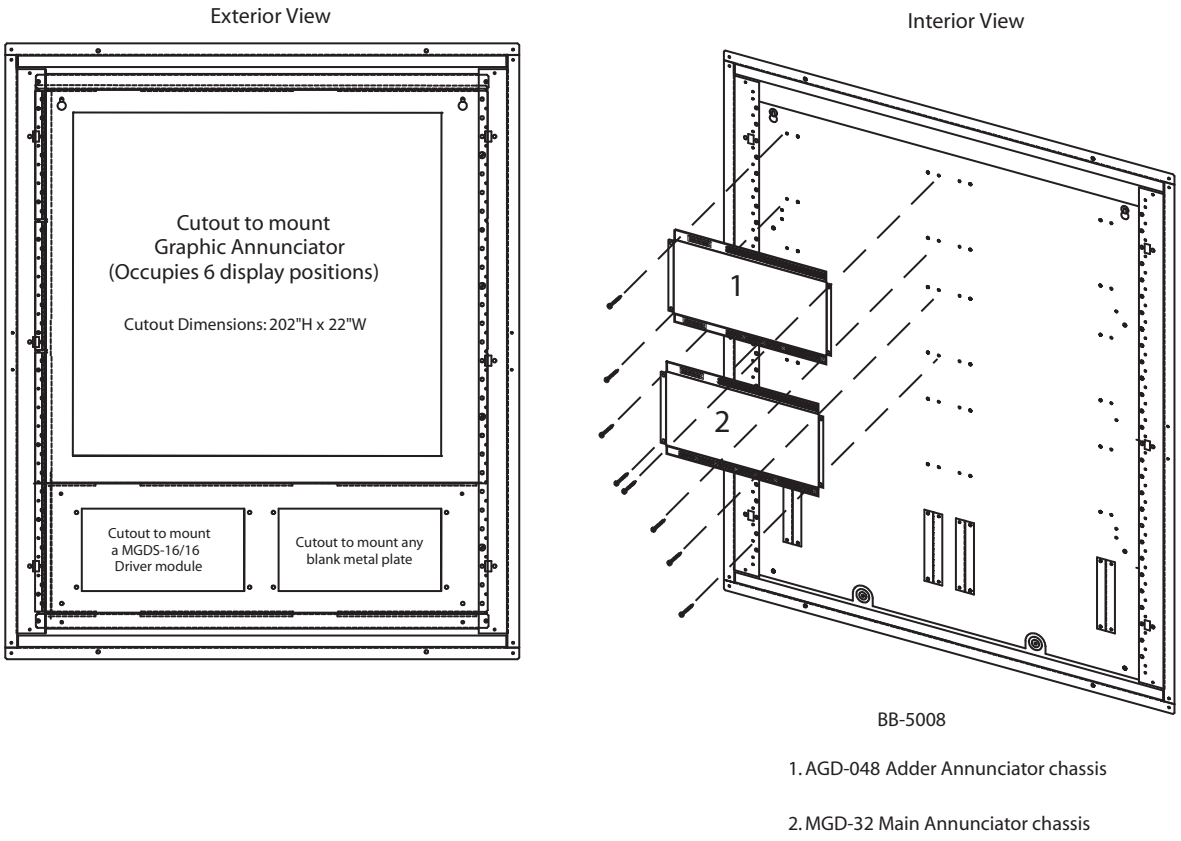


Figure 1 Mechanical Installation

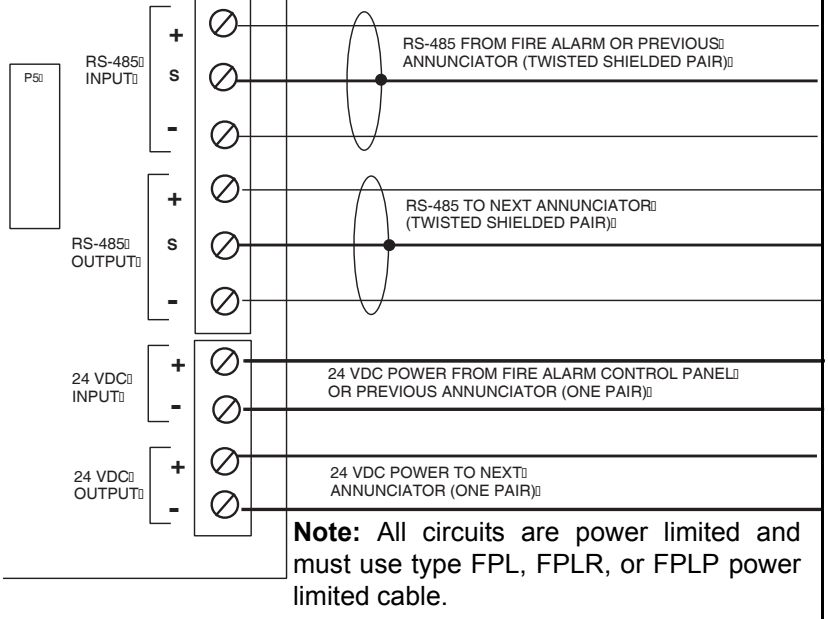
4.0 Wiring Instruction

4.1 RS-485 Wiring

The RS-485 Wiring to the MGD-32 Annunciator Driver module needs to be Twisted Shielded Pair as shown in the diagram. The wire gauge may be

- 22 AWG up to 2000 ft.
- 20 AWG up to 4000 ft.

The RS-485 wiring from the Fire Alarm Control Panel to the Annunciator(s) must be point-to-point from the FA Panel to the first Annunciator, then the next Annunciator, and so on. **No star-wiring or T-tapping is allowed.**



Note: All circuits are power limited and must use type FPL, FPLR, or FPLP power limited cable.

Figure 2 RS-485 and 24V DC Power Wiring

4.2 24V DC Power Wiring

Each MGD-32 Annunciator Driver module has a 120 ohm End-of-Line Resistor on its RS-485 output terminals. This is removed on all except the last wired Module.

The 24 V DC field wiring needs to be of an appropriate gauge for the number of annunciators and the total wiring run length. Refer to the *Current Drain Calculations* on page 24 to calculate the maximum current for all annunciators summed together, then use chart below to calculate size of wire for specific length of wire run.

Table 1 Annunciator 24V DC Power Wiring Table

Total Maximum Current for all Annunciators	18AWG		16AWG		14AWG		12AWG		Maximum Loop Resistance
Amperes	ft.	m.	ft.	m.	ft.	m.	ft.	m.	Ohms
0.06	2350	716	3750	1143	6000	1829	8500	2591	30
0.12	1180	360	1850	567	3000	915	4250	1296	15
0.30	470	143	750	229	1200	366	1900	579	6
0.60	235	71	375	114	600	183	850	259	3
0.90	156	47	250	76	400	122	570	174	2
1.20	118	36	185	56	300	91	425	129	1.5
1.50	94	29	150	46	240	73	343	105	1.2
1.70	78	24	125	38	200	61	285	87	1.0

Attention: Accidentally connecting any of the 24 VDC wires to the RS-485 wiring **will result in damage** to the annunciator and/or to the fire alarm control panel to which it is connected.

5.0 DIP Switch Settings & Cabling

Each Master Graphic Driver MGD-32 needs to be assigned a unique, sequential "Address" via the Main Chassis DIP Switch SW1. The AGD-048 does not require addressing.

The Annunciator address (refer to the manual for the specific fire alarm control panel being used) is set according to the table below.

Table 2 Annunciator Addresses

Dip Switch Positions	Annunciator Address						
	1	2	3	4	5	6	7
SW1-1 (A0)	ON	OFF	ON	OFF	ON	OFF	ON
SW1-2 (A1)	OFF	ON	ON	OFF	OFF	ON	ON
SW1-3 (A2)	OFF	OFF	OFF	ON	ON	ON	ON
SW1-4 (A3)	ON - when used with FX-2000, version 2.X.X or higher (16 bit checksum) OFF - when used with an FX-2000, FA-1000, FA-204 or FA-204E (8 bit checksum)						

Notes: Annunciators on a common RS-485 connection must be numbered sequentially; i.e.: 1,2,3,4, and not randomly such as 5,3,2,1.

Not all Annunciator addresses are valid for all fire alarm control panels. Address ZERO (all switches off) is not allowed and will generate an annunciator remote fail trouble. Refer to the Fire Alarm Control Panel Manual for further information.

5.1 Cabling for the AGD-048 Adder Annunciator

P1: Connects to the MGD-32 Main Annunciator Chassis, or to the previous AGD-048 Adder Annunciator Chassis. The AGD-048 receives its power from the Master Graphic Driver

P2: Connects to the next AGD-048 Adder Annunciator Chassis.

Terminals: Terminals L1 to L48 are annunciation zones.

5.2 Cabling for the MGD-32 Master Graphic Driver Annunciator

P2: Connects to the first AGD-048 Adder Annunciator Chassis.

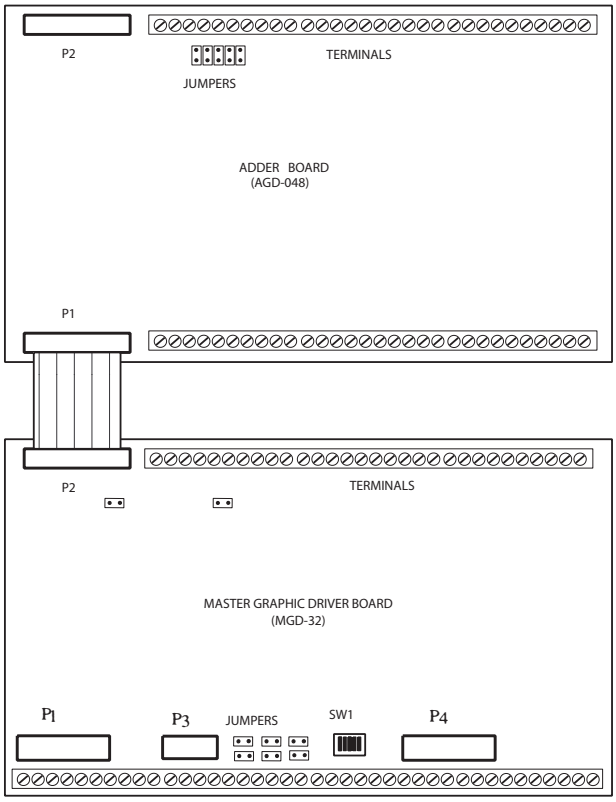


Figure 3 Cabling Diagram

P1,P3,P4: Connectors for custom displays, see the Appendix on page 25 for pin layout connections.

Jumpers: For buzzer and indicator supervision.

Terminals: For zone annunciation. Refer to *Connections For The MGD-32 Graphic Driver Annunciator* on the next page for details.

SW1: DIP switches for annunciation address (Note address ‘zero' is illegal).

6.0 Graphic Drivers And Adder Wiring

6.1 Connections For The MGD-32 Graphic Driver Annunciator

6.1.1 Terminals Marked L1 To L12 (MGD-32 Only)

This first group of connections (L1 to L12) is for the common indicators. If the jumper is installed on JW8 then all connections L1 through L12 will be supervised as a group and any unused outputs will have a factory installed LISTED 3.9 K resistor connected from the particular unused output to the 24 V DC LAMP SUPPLY so as not to cause an erroneous lamp fail condition. This also applies to the external buzzer connection. The GRAPHIC DISPLAY must provide current limit resistors for LED use and the recommend ed value is 6.8 K, ¼ W to provide about 4 mA each; LAMPS can be wired directly and must have a rating of 24 volts at less than 50 mA.

Table 3 Terminal Indicators for L1 to L12

Terminals L1 to L12 Common Indicators for MGD-32 only	
L1	AC On
L2	Test
L3	Reset
L4	Fire Drill
L5	Auxiliary Disconnect
L6	Signal Silence
L7	Common Trouble
L8	General Alarm
L9	Acknowledge
L10	Remote Fail
L11	Lamp Fail
L12	External Buzzer

See Figure 4 on the following page for board layout for MGD-32.

Note: **Removing JW8 on the** MGD-32 eliminates the supervision from indicators L1 to L12.

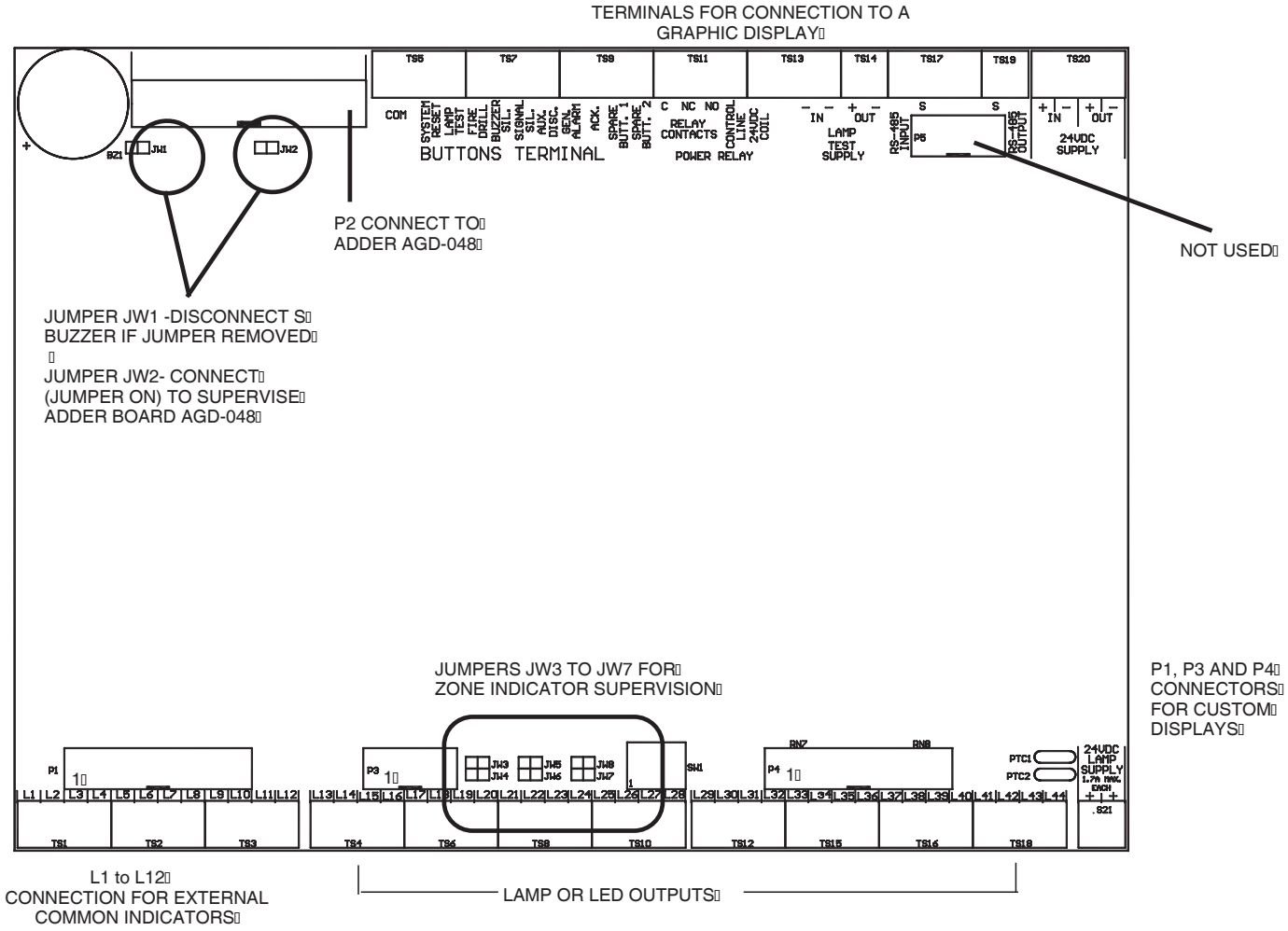


Figure 4 MGD-32 Board Layout Showing Terminals, Jumpers, and Connectors

6.1.2 Wiring Within Same Enclosure or Same Room

All wiring for these products (except the RS485 plus the 24VDC connections indicated in Figure 2) must be in the same enclosure or within the same room.

6.1.3 Terminals Marked L13 To L44

This next group of connections L13 to L44 is for the zone indicators. To simplify indicator supervision, the driver terminals are grouped as follows:

Table 4 Terminal Indicators for L13 to L44

1st Group Terminals		2nd Group Terminals		3rd Group Terminals		4th Group Terminals	
L13	ZONE 1	L21	ZONE 9	L29	ZONE 17	L37	ZONE 25
L14	ZONE 2	L22	ZONE 10	L30	ZONE 18	L38	ZONE 26
L15	ZONE 3	L23	ZONE 11	L32	ZONE 19	L39	ZONE 27
L16	ZONE 4	L24	ZONE 12	L33	ZONE 20	L40	ZONE 28
L17	ZONE 5	L25	ZONE 13	L34	ZONE 21	L41	ZONE 29
L18	ZONE 6	L26	ZONE 14	L35	ZONE 22	L42	ZONE 30
L19	ZONE 7	L27	ZONE 15	L36	ZONE 23	L43	ZONE 31
L20	ZONE 8	L28	ZONE 16	L37	ZONE 24	L44	ZONE 32

If the jumper is installed on JW7 (on MGD-32) then connections L13 through L44 are supervised in groups depending on the installation of jumpers JW3 through JW6 as follows:

- JW6 installed - supervise 1st group of outputs L13 to L20 (MGD-32 only)
- JW5 installed - supervise 2nd group of outputs L21 to L28 (MGD-32 only)
- JW4 installed - supervise 3rd group of outputs L29 to L36 (MGD-32 only)
- JW3 installed - supervise 4th group of outputs L37 to L44 (MGD-32 only)

Any unused supervised outputs must have a 3.9 Kohm resistor installed from the unused terminal to 24 VDC lamp supply. By removing certain jumpers, unused groups of terminals need not have supervision resistors installed.

Note: If jumper JW7 is removed, then none of the indicators on L13 through to L44 will be supervised regardless of the installation of JW3 to JW6.

Figure 5 below, shows the wiring for terminals L1 to L12 of the common indicators for the MGD-32 Master Graphic Driver board only.

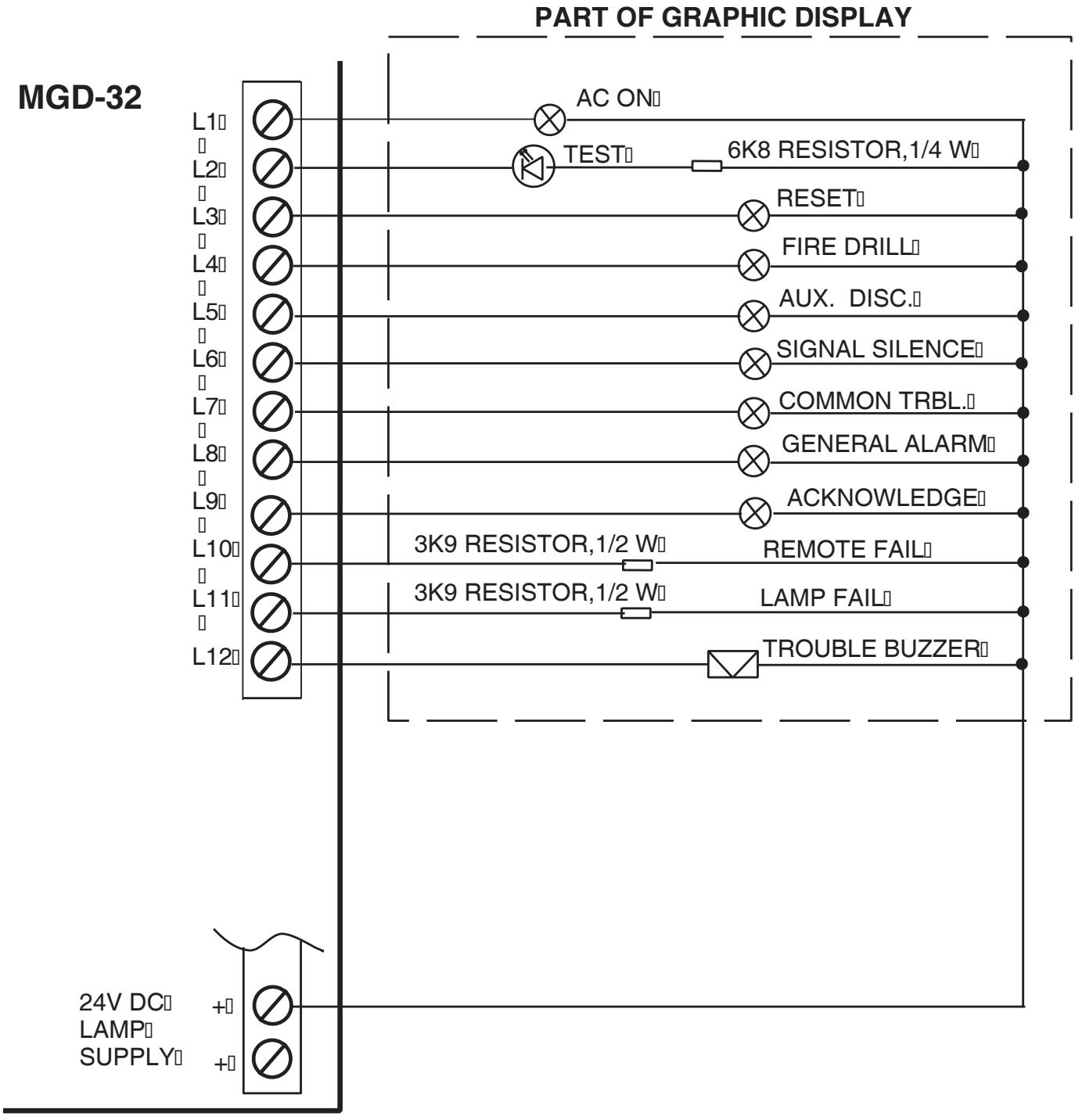


Figure 5 Common Indicator and Buzzer Wiring for the MGD-32

Notes: All unused supervised outputs must have a 3K9 resistor connected to the 24V DC lamp supply +.

Lamps rated at 24V DC 50 mA max.

When using LEDS, a 6K8, ¼ W resistor is required.

Figure 6 below, shows the wiring for indicators Zones 1 to 32 on the MGD-32, corresponding to terminals labelled L13 to L44.

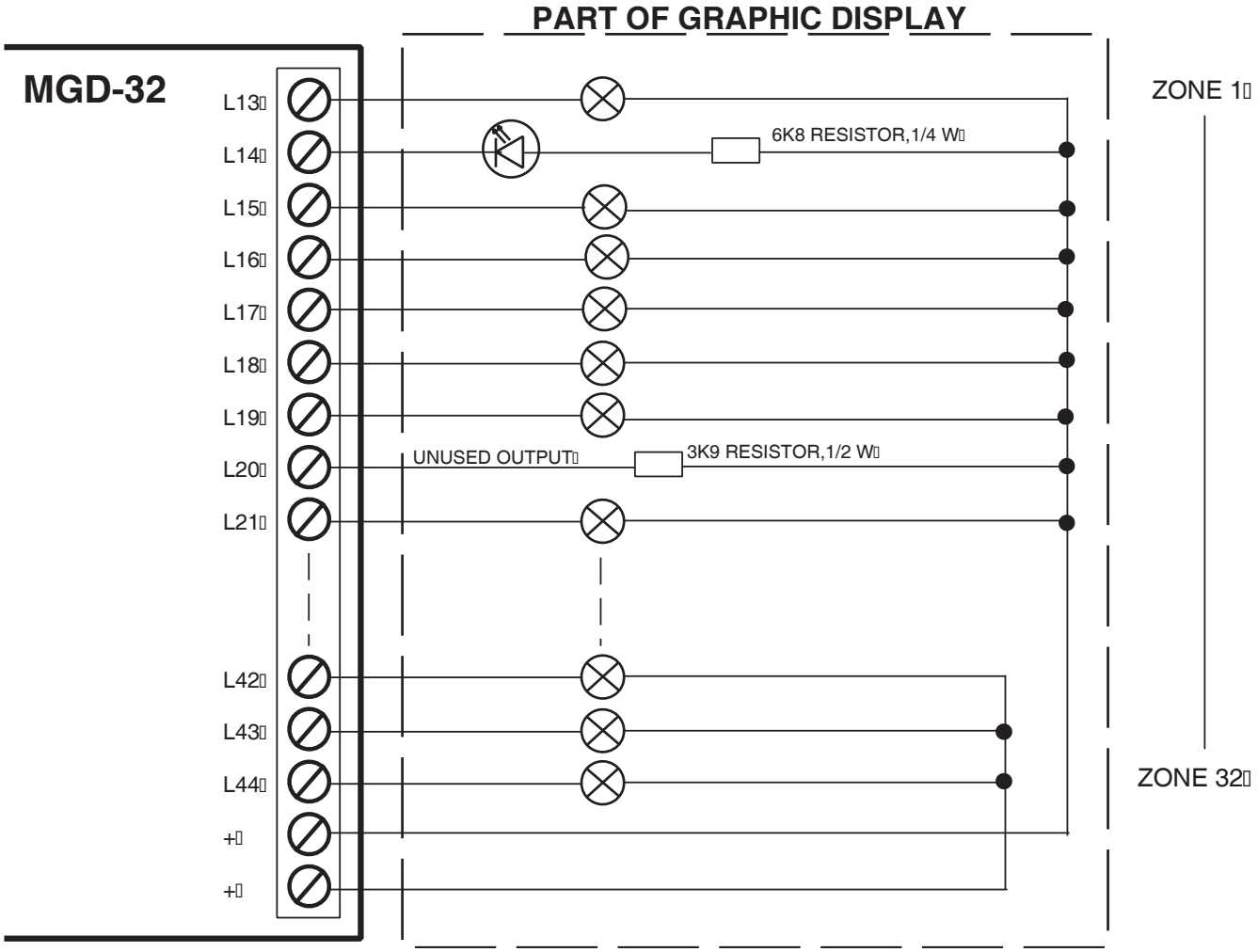


Figure 6 MGD-32 Indicator Zone Wiring

Notes: All unused supervised outputs must have a 3K9 resistor connected to the 24V DC lamp supply +.

Lamps rated at 24V DC 50 mA max.

When using LEDS, a 6K8, ¼ W resistor is required.

6.1.4 Terminals Marked “Buttons”

These connections are for the common controls switches. Any or all of these terminals must be wired to the appropriate push button switch with a return connection to the 'COM - ' terminals. Refer to Figure 7 for connection of the common control switches.

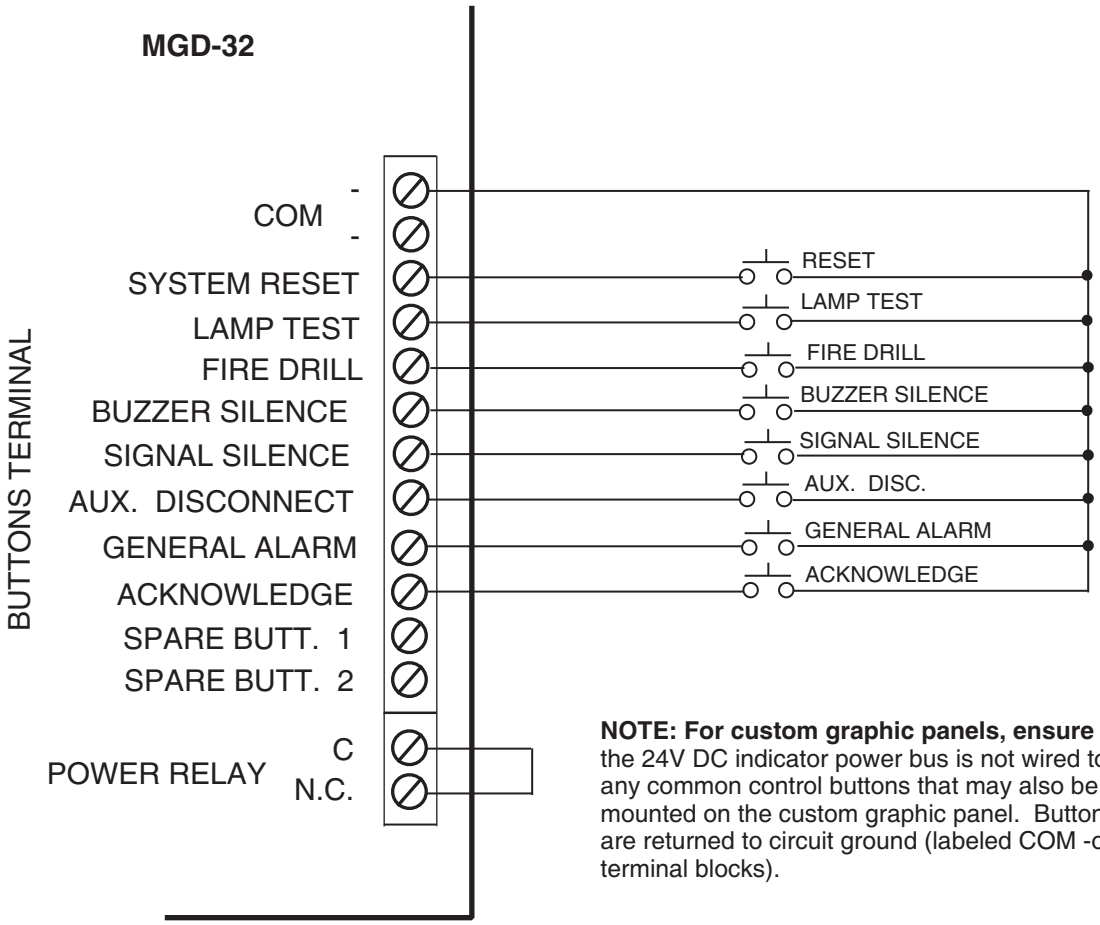


Figure 7 MGD-32 Common Control Button Wiring

6.1.5 Terminals Marked “Power Relay And Lamp Test Supply”

Install a wire jumper between terminal points POWER RELAY ‘C' AND POWER RELAY ‘NC'.

6.1.6 Terminals Marked “RS-485”

These are the standard communications connections required from the main panel and remote annunciators. Refer to Figure 2: 24V DC POWER AND RS-485 WIRING diagram and wire the MGD-32 as shown.

6.1.7 Terminals Marked “24 V DC Supply”

This is the connection from the main fire alarm panel Aux Power supply (typically 24V DC, 1.7A) to the MGD-32 Graphic Driver Annunciator unit.

6.2 Connections for the AGD-048 Adder Annunciator Board

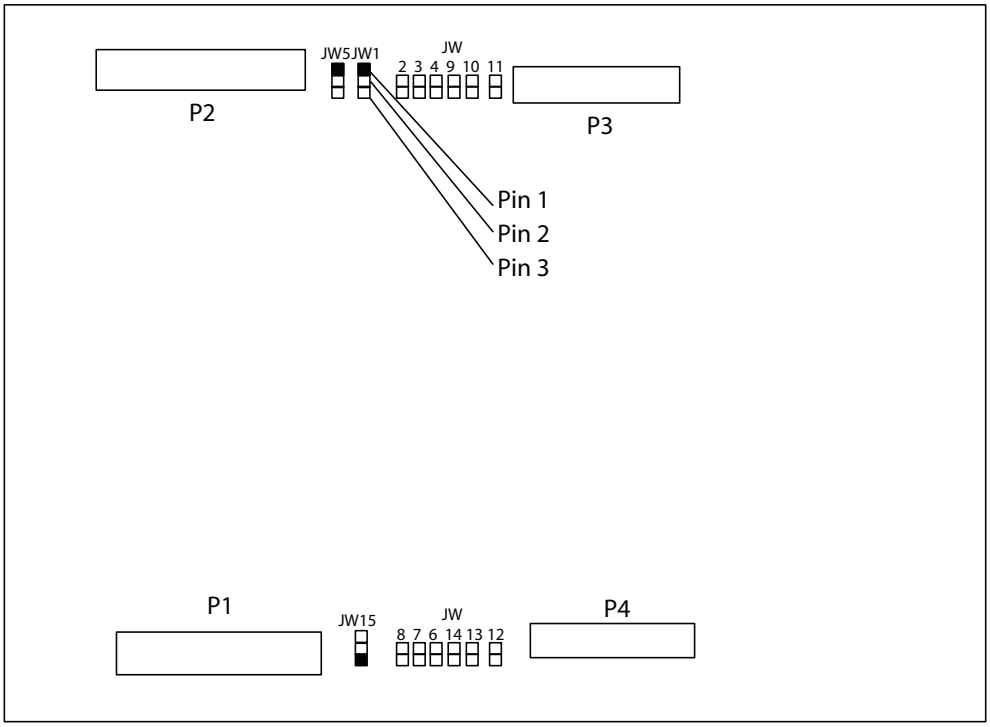


Figure 8 AGD-048 Board Layout Showing Terminals, Jumpers and Connectors

JW2 to JW6 and **JW6** to **JW14:** Used for selecting the supervision of the 48 indicator zones. They are all installed by factory default.

JW2 & **JW9** supervise **L1** to **L8**.

JW3 & **JW11** supervise **L9** to **L16**.

JW4 & **JW9** supervise **L17** to **L24**.

JW6 & **JW12** supervise **L25** to **L32**.

JW7 & **JW13** supervise **L33** to **L40**.

JW8 & **JW14** supervise **L41** to **L48**.

6.2.1 Getting the AGD-048 to Work with the MGD-032

Jumpers **JW1, JW5,** and **JW15** (pins 1 & 2) are used when the AGD-048 is connected to an MGD-032. These settings are the factory default.

1. Short pins #1 & #2 of JW15.
2. Short pins #1 & 2 of JW5 & JW1.

6.2.2 Getting the AGD-048 to Work with the FX-2000 or RAX-LCD

Jumpers **JW12**, **JW5** and **JW15** (pins 2 & 3) are used when the AGD-048 is connected to an FX-2000 or RAX-LCD.

1. Short pins #2 & #3 of JW15.
2. Short pins #2 & 3 of JW5 & JW1.

6.2.3 Terminals Marked L1 To L48

These connections are for the zone indicators, 48 zone. See the description for Figure 8 above for details.

Note: For any supervision of the first 24 zones, jumper JW1 must be installed.

For any supervision of the last 24 zones, jumper JW5 must be installed.

6.2.4 Terminals Marked “Power Relay Contacts”

These terminals marked C for common, NC for normally closed and NO for normally open are connections meant for an external power relay which is required for large graphic displays consuming more than 1.7 amps during lamp test. Please refer to section on Current Drain Calculations.

6.2.5 Terminals Marked “Lamp Test Supply”

If additional power is required for lamp test (which is determined by calculation in section on Current Drain Calculations), then the power supply is connected here to + and - IN and the OUT + and _ to the next adder module IN + and -.

6.2.6 Terminals Marked “24V DC Lamp Supply”

These terminals provided the positive power for all the external LAMPS or LEDs that are connected to terminals L1 to L48. Typically these terminals will wire to a ‘power bus' as part of the graphic display.

6.2.7 Terminals Marked “24V DC Supply”

The IN + and - terminals are connected from the MGD-32 Main Driver Annunciator board 24V DC output + and - terminals. The OUT + and - terminals are connected to the next AGD-048 Adder module.

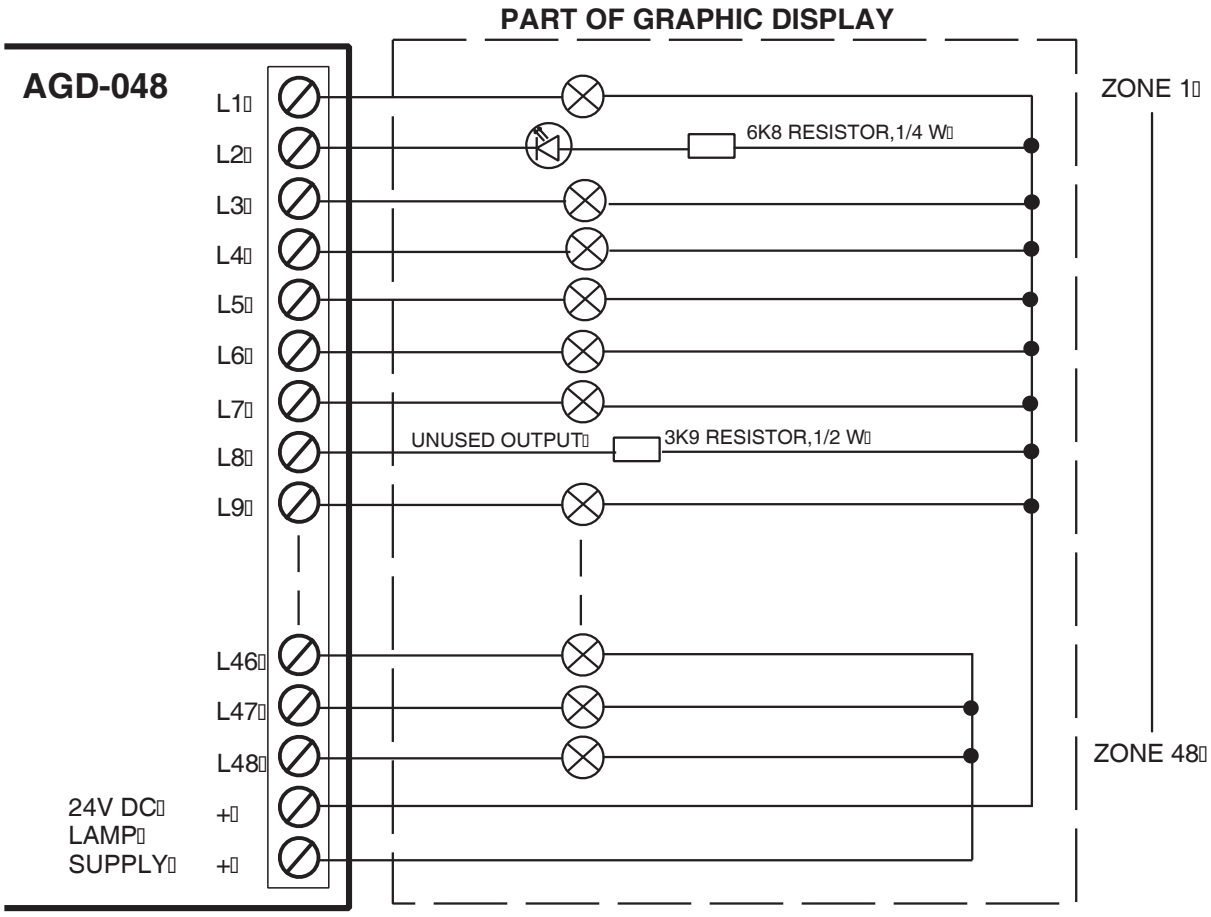


Figure 9 Indicator Zone Wiring for the AGD-048 Adder Board

Notes: All unused supervised outputs must have a 3K9 resistor connected to the 24V DC lamp supply +.

Lamps rated at 24V DC 50 mA max.

When using LEDS, a 6K8, ¼ W resistor is required.

7.0 Current Drain Calculations

The maximum current drain will occur during Lamp Test when all LAMPS/LEDs are illuminated at one time. The power provided by the fire alarm panel is 24V DC, 1.7A. Therefore the total current draw for all the LAMPS and LEDs must not be greater than 1.7A. The total current must be calculated in order to determine if the fire alarm power supply is sufficient. If not, then an additional transformer and relay is required.

To calculate total current draw, fill the current charts below.

Lamp Test Loading Calculations

MGD-32	_____ number of boards	X 35 mA	=	_____
AGD-048	_____ number of boards	X 35 mA	=	_____(a)

Lamp/LED Current

_____ total number of lamps	X _____ lamp current	=	_____
_____ total number of LEDs	X 4 mA	=	_____(b)

7.1 Total Current Draw

Total board current (a) + Total lamp/LED current (b) = _____(c)

If the total current draw [value (c)] is less than or equal to 1.7A, then no external power supply or relay is required, but a short wire must be connected between the N.C. and C POWER RELAY terminals of the power relay on all main and adder boards. Split the total number of LAMPS/LEDS/BUZZER evenly between the two positive (+) LAMP TEST SUPPLY terminals. For example, if you are using 30 output LEDS/LAMPS, hook up 15 to the one positive terminal of LAMP TEST SUPPLY and the other 15 to the other positive terminal of LAMP TEST SUPPLY.

If the total current draw [value (c)] is greater than 1.7A, then an external power supply and relay is required.

8.0 Appendix A

8.1 Pin Layout for Connectors on MGD-32 and AGD-048

Table 5 Pin Layout for the P1 Connector on the MGD-32 Driver Board

P1 24-Pin Header	Pushbuttons/Indicators/ Buzzer
1	Reset (Pushbutton)
2	Lamp Test (Pushbutton)
3	Fire Drill (Pushbutton)
4	Buzzer Silence (Pushbutton)
5	Signal Silence (Pushbutton)
6	Auxiliary Disconnect (Pushbutton)
7	General Alarm (Pushbutton)
8	Acknowledge (Pushbutton)
9	NOT USED
10	NOT USED
11	NOT USED
12	NOT USED
13	AC ON (Indicator)
14	Test (Indicator)
15	Reset (Indicator)
16	Fire Drill (Indicator)
17	Auxiliary Disconnect (Indicator)
18	Signal Silence (Indicator)
19	Common Trouble (Indicator)
20	General Alarm (Indicator)
21	Acknowledge (Indicator)
22	Remote Fail (Indicator)
23	Lamp Fail (Indicator)
24	Buzzer Connection

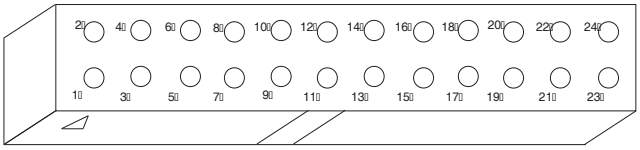


Table 6 Pin Layout for the P3 Connector on the MGD-32 Driver Board

P3 10-Pin Header	Indicator Zone
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	NO CONNECTION
10	NO CONNECTION

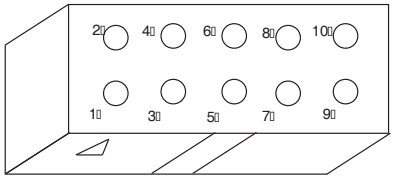


Table 7 Pin Layout for the P4 Connector on the MGD-32 Driver Board

P4 26-Pin Header	Indicator Zone
1	9
2	10
3	11
4	12
5	13
6	14
7	15
8	16
9	17
10	18
11	19
12	20
13	21
14	22
15	23
16	24
17	25
18	26
19	27
20	28
21	29
22	30
23	31
24	32
25	NO CONNECTION
26	NO CONNECTION

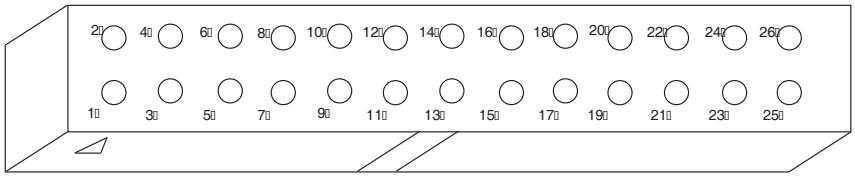


Table 8 Pin Layout for the P3 Connector on the AGD-048 Driver Board

P4 26-Pin Header	Indicator Zone
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15
16	16
17	17
18	18
19	19
20	20
21	21
22	22
23	23
24	24
25	NOT USED
26	NOT USED

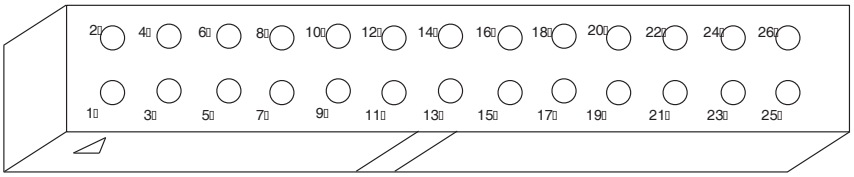
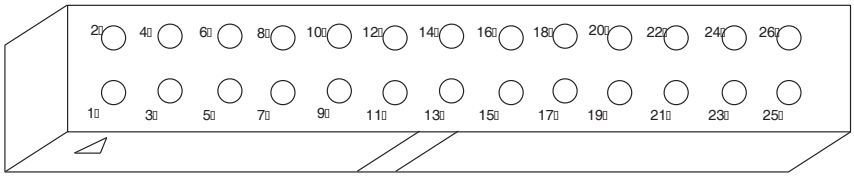


Table 9 Pin Layout for the P4 Connector on the AGD-048 Driver Board

P4 26-Pin Header	Indicator Zone
1	25
2	26
3	27
4	28
5	29
6	30
7	31
8	32
9	33
10	34
11	35
12	36
13	37
14	38
15	39
16	40
17	41
18	42
19	43
20	44
21	45
22	46
23	47
24	48
25	NOT USED
26	NOT USED



9.0 Warranty and Warning Information

9.1 Warning Please Read Carefully

Note to End Users This equipment is subject to terms and conditions of sale as follows:

9.2 Note to Installers

This warning contains vital information. As the only individual in contact with system users, it is your responsibility to bring each item in this warning to the attention of the users of this system. Failure to properly inform system end-users of the circumstances in which the system might fail may result in over-reliance upon the system. As a result, it is imperative that you properly inform each customer for whom you install the system of the possible forms of failure.

9.3 System Failures

This system has been carefully designed to be as effective as possible. There are circumstances, such as fire or other types of emergencies where it may not provide protection. Alarm systems of any type may be compromised deliberately or may fail to operate as expected for a variety of reasons. Some reasons for system failure include:

9.3.1 Inadequate Installation

A Fire Alarm system must be installed in accordance with all the applicable codes and standards in order to provide adequate protection. An inspection and approval of the initial installation, or, after any changes to the system, must be conducted by the Local Authority Having Jurisdiction. Such inspections ensure installation has been carried out properly.

9.3.2 Power Failure

Control units, smoke detectors and many other connected devices require an adequate power supply for proper operation. If the system or any device connected to the system operates from batteries, it is possible for the batteries to fail. Even if the batteries have not failed, they must be fully charged, in good condition and installed correctly. If a device operates only by AC power, any interruption, however brief, will render that device inoperative while it does not have power. Power interruptions of any length are often accompanied by voltage fluctuations which may damage electronic equipment such as a fire alarm system. After a power interruption has occurred, immediately conduct a complete system test to ensure that the system operates as intended.

9.3.3 Failure of Replaceable Batteries

Systems with wireless transmitters have been designed to provide several years of battery life under normal conditions. The expected battery life is a function of the device environment, usage and type. Ambient conditions such as high humidity, high or low temperatures, or large temperature fluctuations may reduce the expected battery life. While each transmitting device has a low battery monitor which identifies when the batteries need to be replaced, this monitor

may fail to operate as expected. Regular testing and maintenance will keep the system in good operating condition.

9.3.4 Compromise of Radio Frequency (Wireless) Devices

Signals may not reach the receiver under all circumstances which could include metal objects placed on or near the radio path or deliberate jamming or other inadvertent radio signal interference.

9.3.5 System Users

A user may not be able to operate a panic or emergency switch possibly due to permanent or temporary physical disability, inability to reach the device in time, or unfamiliarity with the correct operation. It is important that all system users be trained in the correct operation of the alarm system and that they know how to respond when the system indicates an alarm.

9.3.6 Automatic Alarm Initiating Devices

Smoke detectors, heat detectors and other alarm initiating devices that are a part of this system may not properly detect a fire condition or signal the control panel to alert occupants of a fire condition for a number of reasons, such as: the smoke detectors or heat detector may have been improperly installed or positioned; smoke or heat may not be able to reach the alarm initiating device, such as when the fire is in a chimney, walls or roofs, or on the other side of closed doors; and, smoke and heat detectors may not detect smoke or heat from fires on another level of the residence or building.

9.3.7 Software

Most Mircom products contain software. With respect to those products, Mircom does not warranty that the operation of the software will be uninterrupted or error-free or that the software will meet any other standard of performance, or that the functions or performance of the software will meet the user's requirements. Mircom shall not be liable for any delays, breakdowns, interruptions, loss, destruction, alteration or other problems in the use of a product arising our of, or caused by, the software.

Every fire is different in the amount and rate at which smoke and heat are generated. Smoke detectors cannot sense all types of fires equally well. Smoke detectors may not provide timely warning of fires caused by carelessness or safety hazards such as smoking in bed, violent explosions, escaping gas, improper storage of flammable materials, overloaded electrical circuits, children playing with matches or arson.

Even if the smoke detector or heat detector operates as intended, there may be circumstances when there is insufficient warning to allow all occupants to escape in time to avoid injury or death.

9.3.8 Alarm Notification Appliances

Alarm Notification Appliances such as sirens, bells, horns, or strobes may not warn people or waken someone sleeping if there is an intervening wall or door. If notification appliances are located on a different level of the residence or premise, then it is less likely that the occupants will be alerted or awakened. Audible notification appliances may be interfered with by other noise sources such as stereos, radios, televisions, air conditioners or other appliances, or passing traffic. Audible notification appliances, however loud, may not be heard by a hearing-impaired person.

9.3.9 Telephone Lines

If telephone lines are used to transmit alarms, they may be out of service or busy for certain periods of time. Also the telephone lines may be compromised by such things as criminal tampering, local construction, storms or earthquakes.

9.3.10 Insufficient Time

There may be circumstances when the system will operate as intended, yet the occupants will not be protected from the emergency due to their inability to respond to the warnings in a timely manner. If the system is monitored, the response may not occur in time enough to protect the occupants or their belongings.

9.3.11 Component Failure

Although every effort has been made to make this system as reliable as possible, the system may fail to function as intended due to the failure of a component.

9.3.12 Inadequate Testing

Most problems that would prevent an alarm system from operating as intended can be discovered by regular testing and maintenance. The complete system should be tested as required by national standards and the Local Authority Having Jurisdiction and immediately after a fire, storm, earthquake, accident, or any kind of construction activity inside or outside the premises. The testing should include all sensing devices, keypads, consoles, alarm indicating devices and any other operational devices that are part of the system.

9.3.13 Security and Insurance

Regardless of its capabilities, an alarm system is not a substitute for property or life insurance. An alarm system also is not a substitute for property owners, renters, or other occupants to act prudently to prevent or minimize the harmful effects of an emergency situation.

IMPORTANT NOTE: End-users of the system must take care to ensure that the system, batteries, telephone lines, etc. are tested and examined on a regular basis to ensure the minimization of system failure.

9.4 Limited Warranty

Mircom Technologies Ltd. together with its subsidiaries and affiliates (collectively, the “Mircom Group of Companies”) warrants the original purchaser that for a period of three years from the date of shipment, the product shall be free of defects in materials and workmanship under normal use. During the warranty period, Mircom shall, at its option, repair or replace any defective product upon return of the product to its factory, at no charge for labor and materials. Any replacement and/or repaired parts are warranted for the remainder of the original warranty or ninety (90) days, whichever is longer. The original owner must promptly notify Mircom in writing that there is defect in material or workmanship, such written notice to be received in all events prior to expiration of the warranty period.

9.4.1 International Warranty

The warranty for international customers is the same as for any customer within Canada and the United States, with the exception that Mircom shall not be responsible for any customs fees, taxes, or VAT that may be due.

9.4.2 Conditions to Void Warranty

This warranty applies only to defects in parts and workmanship relating to normal use. It does not cover:

- damage incurred in shipping or handling;
- damage caused by disaster such as fire, flood, wind, earthquake or lightning;
- damage due to causes beyond the control of Mircom such as excessive voltage, mechanical shock or water damage;
- damage caused by unauthorized attachment, alterations, modifications or foreign objects;
- damage caused by peripherals (unless such peripherals were supplied by Mircom);
- defects caused by failure to provide a suitable installation environment for the products;
- damage caused by use of the products for purposes other than those for which it was designed;
- damage from improper maintenance;
- damage arising out of any other abuse, mishandling or improper application of the products.

9.5 Warranty Procedure

To obtain service under this warranty, please return the item(s) in question to the point of purchase. All authorized distributors and dealers have a warranty program. Anyone returning goods to Mircom must first obtain an authorization number. Mircom will not accept any shipment whatsoever for which prior authorization has not been obtained. NOTE: Unless specific pre-authorization in writing is obtained from Mircom management, no credits will be issued for custom fabricated products or parts or for complete fire alarm system. Mircom will at its sole option, repair or replace parts under warranty. Advance replacements for such items must be purchased.

Note: Mircom's liability for failure to repair the product under this warranty after a reasonable number of attempts will be limited to a replacement of the product, as the exclusive remedy for breach of warranty.

9.6 Disclaimer of Warranties

This warranty contains the entire warranty and shall be in lieu of any and all other warranties, whether expressed or implied (including all implied warranties of merchantability or fitness for a particular purpose) And of all other obligations or liabilities on the part of Mircom neither assumes nor authorizes any other person purporting to act on its behalf to modify or to change this warranty, nor to assume for it any other warranty or liability concerning this product.

This disclaimer of warranties and limited warranty are governed by the laws of the province of Ontario, Canada.

9.7 Out of Warranty Repairs

Mircom will at its option repair or replace out-of-warranty products which are returned to its factory according to the following conditions. Anyone returning goods to Mircom must first

obtain an authorization number. Mircom will not accept any shipment whatsoever for which prior authorization has not been obtained.

Products which Mircom determines to be repairable will be repaired and returned. A set fee which Mircom has predetermined and which may be revised from time to time, will be charged for each unit repaired.

Products which Mircom determines not to be repairable will be replaced by the nearest equivalent product available at that time. The current market price of the replacement product will be charged for each replacement unit.

The preceding information is accurate as of the date of publishing and is subject to change or revision without prior notice at the sole discretion of the Company.

WARNING: Mircom recommends that the entire system be completely tested on a regular basis. However, despite frequent testing, and due to, but not limited to, criminal tampering or electrical disruption, it is possible for this product to fail to perform as expected.

NOTE: Under no circumstances shall Mircom be liable for any special, incidental, or consequential damages based upon breach of warranty, breach of contract, negligence, strict liability, or any other legal theory. Such damages include, but are not limited to, loss of profits, loss of the product or any associated equipment, cost of capital, cost of substitute or replacement equipment, facilities or services, down time, purchaser's time, the claims of third parties, including customers, and injury to property.

MIRCOM MAKES NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO ITS GOODS DELIVERED, NOR IS THERE ANY OTHER WARRANTY, EXPRESSED OR IMPLIED, EXCEPT FOR THE WARRANTY CONTAINED HEREIN.

CANADA - Main Office
25 Interchange Way
Vaughan, ON L4K 5W3
Tel: (888) 660-4655
(905) 660-4655
Fax: (905) 660-4113

U.S.A
4575 Witmer Industrial Estates
Niagara Falls, NY 14305
Tel: (888) 660-4655
(905) 660-4655
Fax: (905) 660-4113

TECHNICAL SUPPORT
North America
Tel: (888) Mircom5
(888) 647-2665
International
Tel: (905) 647-2665

Printed in Canada
Subject to change without prior notice

www.mircom.com