

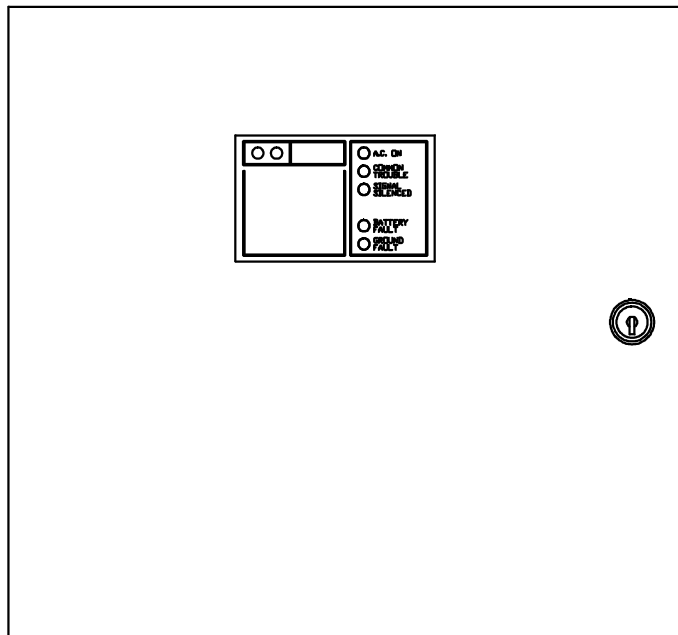


# FA-101U

*Fire Alarm Control Panel*

## INSTALLATION and OPERATION MANUAL

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### NOTICE

All information, documentation, and specifications contained in this manual are subject to change without prior notice by the manufacturer.

**MODEL FA-101U  
FIRE ALARM CONTROL PANEL  
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## 1. INTRODUCTION

The FA-101U is a supervised 1 zone 24VDC Fire Alarm Control Panel.

The panel provides the following features:

- 1 class B detection zone
- 1 class B signal zone, 1.25A
- Alarm and trouble relay contacts
- Remote trouble and A.C. ON indication
- Zone silence/disconnect switch
- Trouble silence switch
- LED indicators for zone Alarm and Trouble, A.C. On, Battery Fault, Ground Fault, Common Trouble, Signal Trouble and Signal Silenced

## 2. MECHANICAL INSTALLATION

The panel can be surface or flush mounted. Refer to Figure 1 for dimensions.

For surface mounting, mark the location of the four mounting holes. Install the top two screws into the wall and place the panel over the screws. Install the bottom screws, and tighten down all four screws.

For flush mounting, make the wall cut-out according to the panel dimensions. Remove the control panel door. Mount the flush mounting trim (MODEL FA-102TRU) to the back box using the screws and nuts provided with the flush mounting kit. Re-install the door on top of the flush trim. The cam lock may require a minor adjustment in order to compensate for the flush trim.

## 3. FUNCTION SELECTION

The following jumpers are available for function selection, refer to Figure 2 for location;

- JW1 Cut for normally open trouble contacts.
- JW2 Cut for normally closed trouble contacts.
- JW3 Cut to enable *common alarm* relay to de-energize if *signal silence* switch is activated.
- JW6 Cut if *60 second signal silence* inhibit is not required (Signals can be manually silenced any time if cut).

## 4. WIRING

### 4.1 DETECTION ZONES

The system has 1 detection zone. Refer to Figure 3 for wiring instruction and to Figure 4 for wire size.

### 4.2 SIGNAL ZONE

There is 1 signal zone available for bells and horns providing 1.25A of signal power. Refer to Figure 3 for wiring instruction and to Figure 5 for wire size.

### 4.3 ALARM AND TROUBLE RELAYS

Alarm and trouble relay contacts are provided. Refer to Figure 6 for contact location and designation.

### 4.4 REMOTE ANNUNCIATION

Annunciation outputs are provided for remote trouble indicator and buzzer. Refer to Figure 6 for wiring instruction.

### 4.5 A.C. POWER AND BATTERIES

The *A.C.* power is connected to the terminal block above the transformer. Use GEL CELL or SEALED LEAD-ACID type of batteries only. Connect the batteries after *power up*. Use 24V 4AH batteries for 24 hours standby and 5 or 30 minutes of alarm.

**ELECTRICAL RATING:** 120V, 60Hz, 1A / 240V, 50 Hz, 0.5A

## 5. TROUBLE INDICATORS AND CONTROL

Refer to Figure 2 for the location of indicators and control.

### 5.1 COMMON TROUBLE LED

The yellow *common trouble* LED will flash for any trouble in the panel.

### 5.2 COMMON TROUBLE BUZZER

The *common trouble* buzzer will sound intermittently for any trouble.

### 5.3 ZONE TROUBLE LED

The yellow zone trouble LED will illuminate steadily for open loop in the zone wiring.

### 5.4 TROUBLE SILENCE SWITCH

Operating this switch will silence the *common trouble* buzzer. If there is no trouble condition and the switch is in the *silence* position, the buzzer will sound continuously.

### 5.5 BATTERY FAULT LED

Battery removal, low voltage and open battery leads will turn on the yellow *battery fault* LED and the *common trouble* LED.

### 5.6 GROUND FAULT LED

Any ground fault of 10K ohms or less will turn on the yellow *ground fault* LED steadily, flashing the *common trouble* LED and sounding the *common trouble* buzzer intermittently.

### 5.7 SIGNAL TROUBLE LED

The yellow *signal trouble* LED will illuminate steadily for any open or short. (The LED is located behind the display plate.)

## 6. SEQUENCE OF OPERATION

Refer to Figure 2 for the location of indicators and controls.

### 6.1 NORMAL

All indicators are normally OFF except for the green *A.C. On* LED.

### 6.2 ALARM

A red zone *alarm* LED will illuminate steadily for incoming alarm.

### 6.3 SIGNAL SILENCE

If the *60 second signal silence* inhibit is selected, the signal cannot be silenced for 60 seconds after an alarm initiation. Once the 60 seconds have expired, pushing the *signal silence* switch to the right will silence all the bells and horns. Once the signal has been silenced, the *signal silenced* LED will illuminate. If the switch is in the *off* normal position to the right while there is no alarm condition, the panel will indicate trouble.

### 6.4 RESET

Operating the *reset* switch will restore all latched functions in the panel. The smoke detectors will reset if all products of combustion are cleared from their chambers.

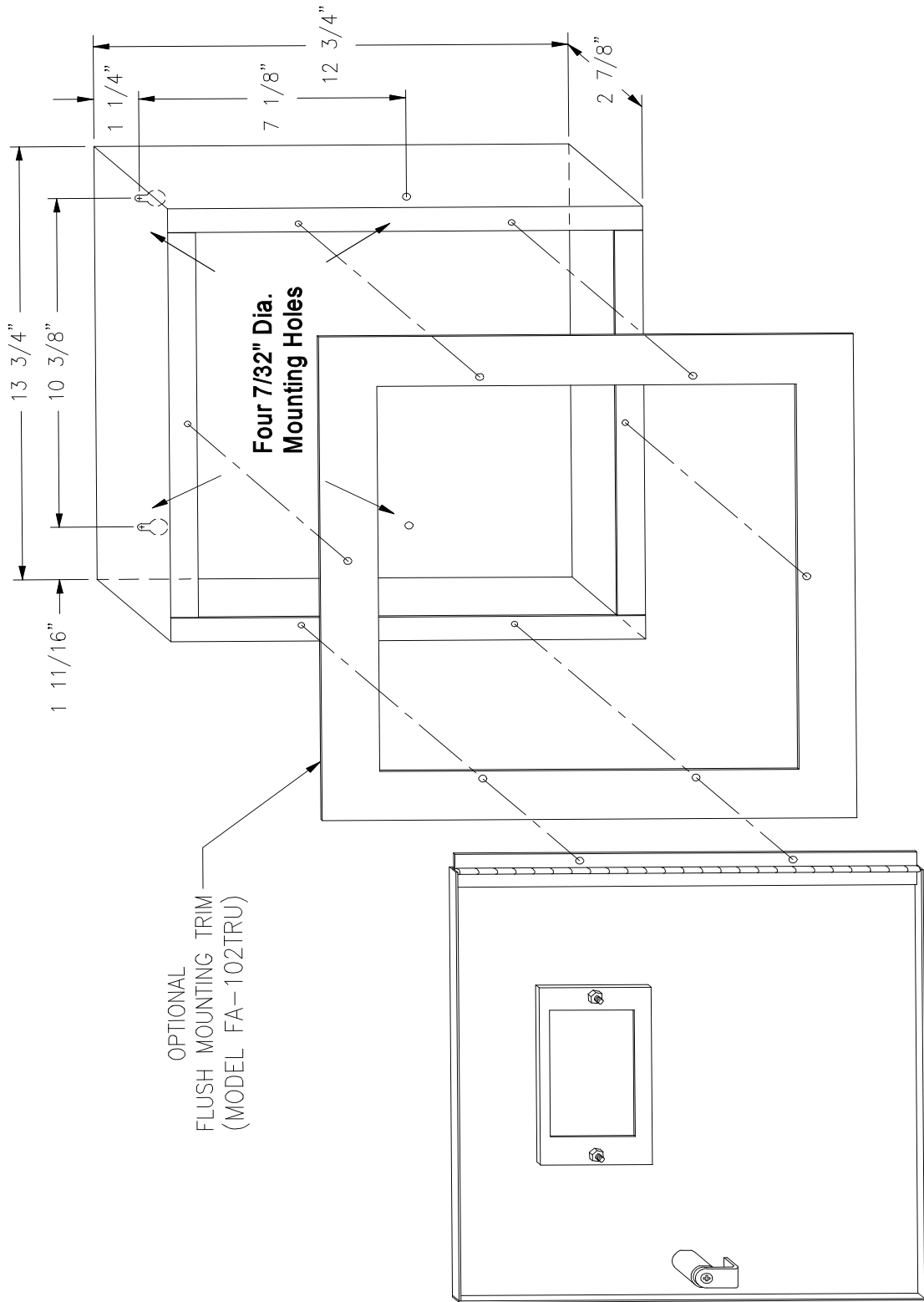
## 7. SYSTEM CHECKOUT

### *BEFORE TURNING POWER ON:*

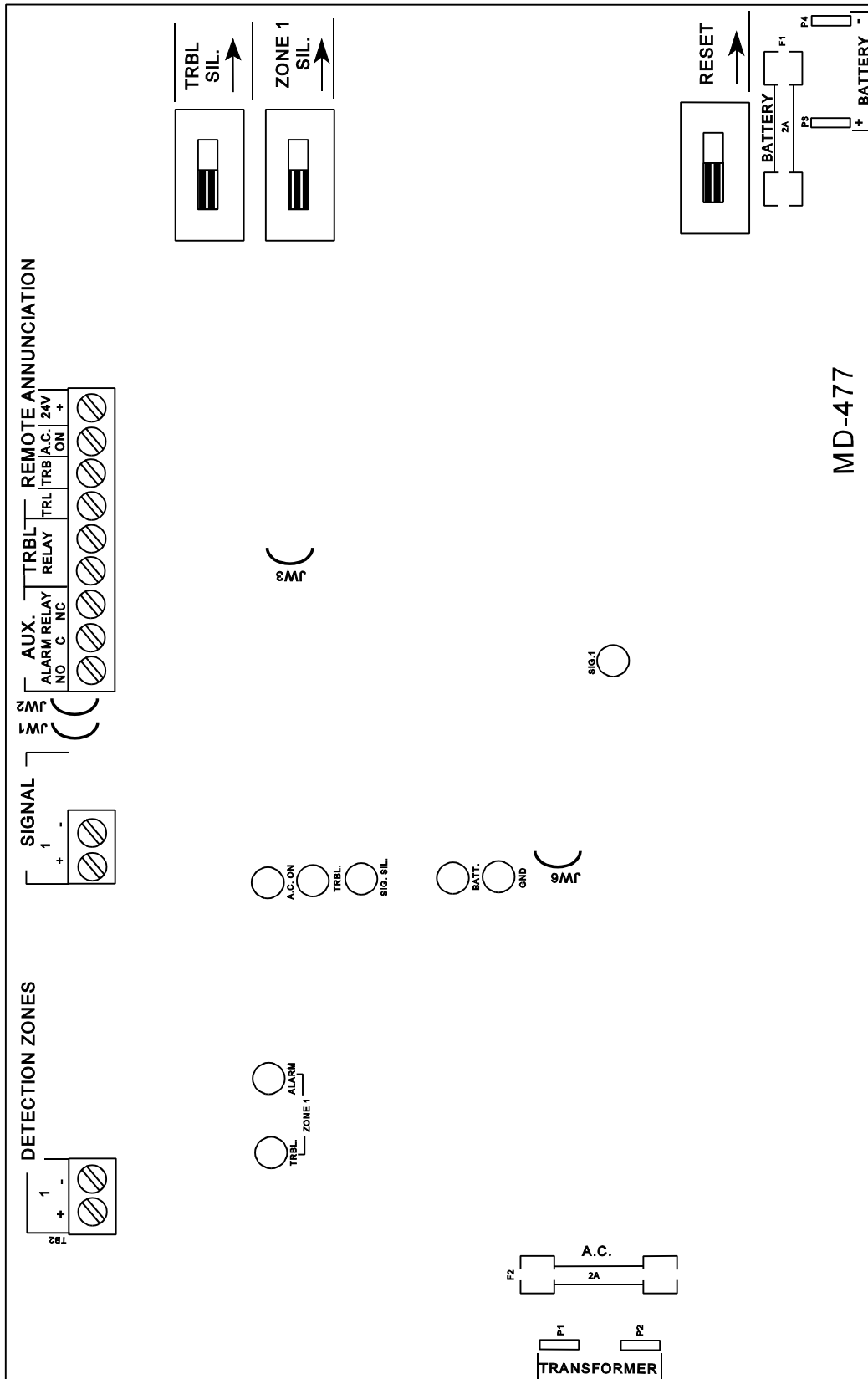
1. Check all external wiring for opens, shorts or grounds.
2. Check that transformer cables are securely connected.
3. Check the *A.C.* power wiring for proper connection. **DO NOT** connect batteries in order to prevent sparking.
4. Check that all switches are in the normal position to the left.

## 8. POWER UP AND TROUBLESHOOTING

1. After completing all of the system checkout procedures, power up the panel. The *A.C. On* LED should illuminate.
2. The *trouble* buzzer should sound intermittently, the *common trouble* LED flash, indicating battery fault.
3. Connect the batteries carefully, observing the correct polarity.
4. The *common trouble* LED should extinguish. If the *common trouble* LED stays *on*, check the front panel for the illumination of the following LEDs;
  - a) BATTERY LED - battery voltage may be too low, below 20.4V.
  - b) GROUND FAULT LED - indicates a ground on one or more of the extended wires.
  - c) ZONE TROUBLE LED - indicates an open loop or a *signal silence* switch is in the *off* normal position to the right.
  - d) SIGNAL TROUBLE LED - indicates an open loop or short in the signal zone.



**FIGURE 1: BACKBOX & FLUSH TRIM MOUNTING DETAILS**

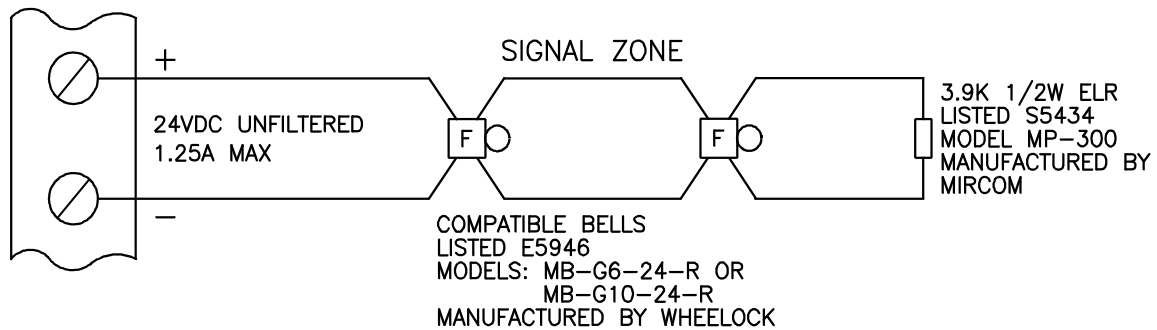
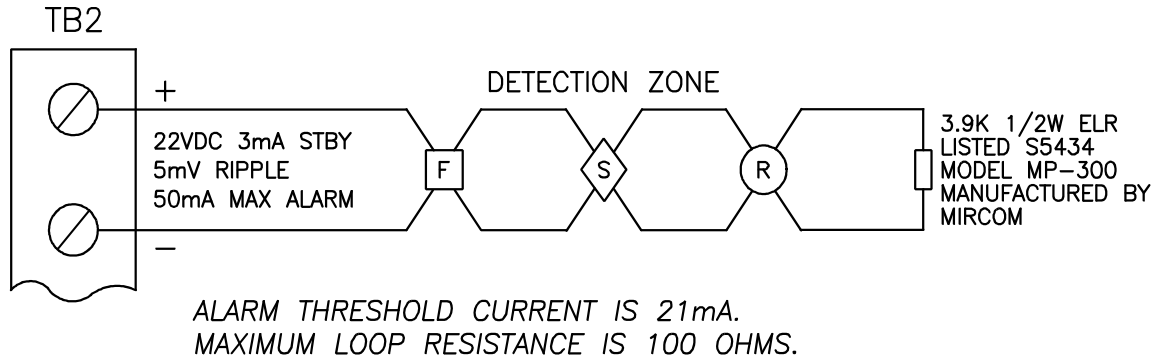


**FIGURE 2: CIRCUIT BOARD LAYOUT**



LEGEND:  PULL STATION       SMOKE DETECTOR       HEAT DETECTOR       BELL

NOTE: ALL CIRCUITS ARE POWER LIMITED AND MUST USE TYPE FPL, FPLR OR FPLP POWER LIMITED CABLE.



**FIGURE 3: DETECTION AND SIGNAL WIRING INSTRUCTION**

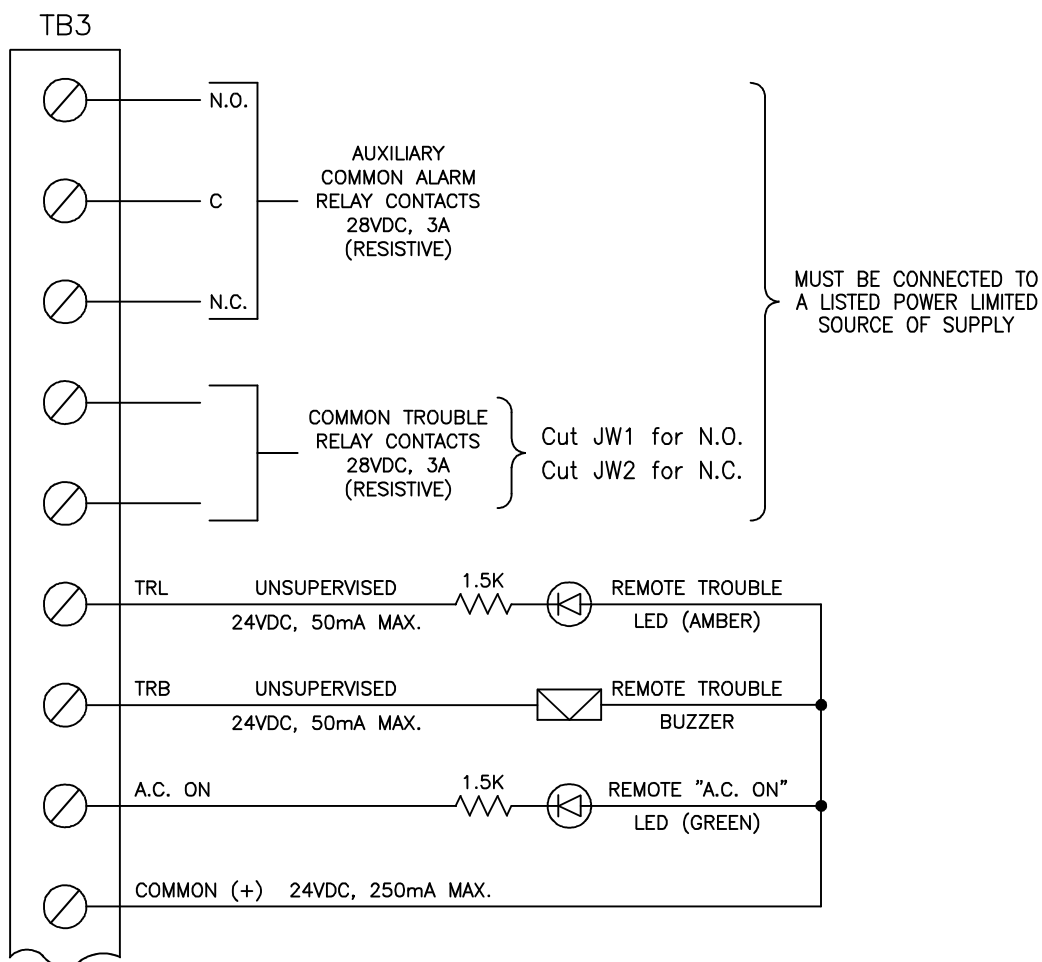
WIRE GAUGE (AWG)	MAXIMUM WIRING DISTANCE TO THE LAST DEVICE	
	FEET	METRES
22	2990	910
20	4760	1450
18	7560	2300
16	12000	3600
14	19000	5800
12	30400	9200

**FIGURE 4: WIRING TABLE FOR DETECTION ZONE**

TOTAL SIGNAL LOAD	MAXIMUM 18AWG		16AWG		14AWG		12AWG		MAX. LOOP RESISTANCE
	ft	m	ft	m	ft	m	ft	m	
Amperes									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
1.25	118	36	185	56	300	91	425	129	1.5

**FIGURE 5: WIRING TABLE FOR BELLS AND HORNS**

NOTE: ALL CIRCUITS ARE POWER LIMITED AND MUST USE TYPE FPL, FPLR OR FPLP POWER LIMITED CABLE.



**FIGURE 6: ALARM AND TROUBLE RELAY CONTACTS AND REMOTE ANNUNCIATION WIRING INSTRUCTIONS**

## APPENDIX "A" - COMPATIBLE DEVICES

### UNDERWRITER'S LABS CANADA (ULC) CANADIAN 2-WIRE SMOKE DETECTOR CONTROL PANEL COMPATIBILITY

**NOTES:**

1.\* Reset time, hold for five seconds minimum.

2. Whether mixing different models of compatible smoke detectors, or using the same model on the same Circuit, total standby current of all detectors must not exceed 3 mA.

<b>SMOKE DETECTOR</b>		
<b>MAKE MODEL / BASE</b>	<b>MAKE MODEL / BASE</b>	<b>MAKE MODEL / BASE</b>
<b><u>MIRCOM</u></b>	<b><u>CERBERUS PYROTRONICS</u></b>	<b><u>FENWAL</u></b>
MIR-525	D1-2	PSD-7131 / 70-201000-001
MIR-525T	D1-3 / DB-3S	PSD-7131 / 70-201000-002
		PSD-7131 / 70-201000-003
		PSD-7131 / 70-201000-005
<b><u>SYSTEM SENSOR</u></b>		
1400-A	<b><u>MIRTONE</u></b>	PSD-7130 / 70-201000-001
2400-A	73471	PSD-7130 / 70-201000-002
1451-A / B401B	73494	PSD-7130 / 70-201000-003
1451-A / B406B	73575	PSD-7130 / 70-201000-005
2451-A / B401B	73495 / 73486	PSD-7128 / 70-201000-001
2451-A / B406B	73495 / 73487	PSD-7126 / 70-201000-002
1451DH / DH400A	73595 / 73486	PSD-7126 / 70-201000-003
2451-A / DH400A	73595 / 73497	PSD-7126 / 70-201000-005
<b><u>EDWARDS</u></b>	73594 / 73400	PSD-7129 / 70-211002-000
6249C	73405 / 73400	PSD-7125 / 70-201000-001
6250C	73594 / 73401	PSD-7126 / 70-201000-002
6264C	73405 / 73401	PSD-7125 / 70-201000-003
6266C		PSD-7125 / 70-201000-005
6269C		CPD-7021 / 70-201000-001
6270C	<b><u>SIMPLEX</u></b>	CPD-7021 / 70-201000-002
6269C-003	2098-9110	CPD-7021 / 70-201000-003
6270C-003		CPD-7021 / 70-201000-005

**UNDERWRITER'S LABS INC. (ULI)**  
**UNITED STATES 2-WIRE SMOKE DETECTOR CONTROL PANEL COMPATIBILITY**

**NOTES:**

1. Reset time, hold for five seconds minimum.
2. Whether mixing different models of compatible smoke detectors, or using the same model on the same Circuit, total standby current of all detectors must not exceed 3 mA.
3. The below listed Smoke Detectors are compatible with Initiating Circuits having Compatibility Identifier "A".

SMOKE DETECTOR MAKE MODEL / BASE	COMPATIBILITY IDENTIFIER HEAD / BASE	RATED STANDBY CURRENT	SMOKE DETECTOR MAKE MODEL / BASE	COMPATIBILITY IDENTIFIER HEAD / BASE	RATED STANDBY CURRENT
<b>SYSTEM SENSOR</b>			<b>SENTROL - ESL</b>		
1100	A - N/A	0.12 mA	429C	S10A - N/A	0.10 mA
1151 / B110LP	A - A	0.12 mA	429CT	S10A - N/A	0.10 mA
1151 / B116LP	A - A	0.12 mA	429CST	S11A - N/A	0.10 mA
1400	A - N/A	0.10 mA	429CRT	S11A - N/A	0.10 mA
1451 / B401	A - A	0.12 mA	711U / 701E, 701U, 702E, 702U	S10A - S00	0.10 mA
1451 / B401B	A - A	0.12 mA	712U / 701E, 701U, 702E, 702U	S10A - S00	0.10 mA
1451 / B406B	A - A	0.12 mA	713-5U / 701E, 701U, 702E, 702U	S10A - S00	0.10 mA
1451DH / DH400	A - A	0.12 mA	713-6U / 701E, 701U, 702E, 702U	S10A - S00	0.10 mA
2100	A - N/A	0.12 mA	721U / 702E, 702U	S10A - S00	0.10 mA
2100T	A - N/A	0.12 mA	721UT / 702E, 702U	S10A - S00	0.10 mA
2151 / B110LP	A - A	0.12 mA	722U / 702E, 702U	S10A - S00	0.10 mA
2151 / B116LP	A - A	0.12 mA	731U / 702E, 702U, 702RE, 702RU	S11A - S00	0.10 mA
2400	A - N/A	0.12 mA	732U / 702E, 702U, 702RE, 702RU	S11A - S00	0.10 mA
2400TH	A - N/A	0.12 mA			
2400AT	A - N/A	0.12 mA	<b>DETECTION SYSTEMS INC.</b>		
2400AIT	A - N/A	0.12 mA	DS250	B - N/A	0.10 mA
2451 / B401B	A - A	0.12 mA	DS250TH	B - N/A	0.10 mA
2451 / B406B	A - A	0.12 mA	DS282	B - N/A	0.10 mA
2451 / DH400	A - N/A	0.12 mA	DS282TH	B - N/A	0.10 mA
2451TH / B401B	A - A	0.12 mA			
2451TH / B406B	A - A	0.12 mA			
2451 / B401	A - A	0.12 mA			
2451TH / B401	A - A	0.12 mA			
4451HT / B401B	A - A	0.12 mA			
4451HT / B406B	A - A	0.12 mA	<b>MIRCOM</b>		
4451HT / B401	A - A	0.12 mA	MIR-525U	FDT-1	0.10 mA
5451 / B401B	A - A	0.12 mA	MIR-525TU	FDT-1	0.10 mA
5451 / B401	A - A	0.12 mA			
5451 / B406B	A - A	0.12 mA			

**UNDERWRITER'S LABS INC. (ULI)**  
**UNITED STATES SIGNALING DEVICE CONTROL PANEL COMPATIBILITY**

<b><u>System Sensor - SpecrAlert</u></b>				
P2415	P2415W	P241575	P241575W	P2475
P2475W	P24110	P24110W	S2415	S2415W
S241575	S241575W	S2475	S2475W	S24110
S24110W	H12/24	H12/24W	MDL	MDLW
<b><u>Wheelock</u></b>				
AS-2415W-24-FR	AS-241575W-FR	AS-2430W-FR	AS-2475W-FR	AS-24110W-FR
AS-2415C-FW	AS-2430C-FW	AS-2475C-FW	AS-24100C-FW	AH-24-R
AH-24-WP-R	NS-2415W-FR	NS-241575W-FR	NS-2430W-FR	NS-2475W-FR
NS-24110W-FR	NS4-2415W-FR	NS4-241575W-FR	NS4-2430W-FR	NS4-2475W-FR
NS4-24110W-FR	RS-2415W-FR	RSS-241575W-FR	RSS-2415W-FR	RSS-241575W-FR
RSS-2430W-FR	RSS-2475W-FR	RSS-24110W-FR	RSS-2415C-FW	RSS-2430C-FW
RSS-2475C-FW	RSS-24100C-FW	MT-12/24-ULC	MT-24-LS-VFR-ULC	MT-24-WS-VFR-ULC
AMT-12/24-R-ULC	AMT-24-LS-VFR-ULC	MB-G6-24-R	MB-G10-24-R	SM-12/24-R
DSM-12/24-R				
<b><u>Gentex</u></b>				
AVP-4-15-1	AVP-4-15/75	AVP-4-30/75	AVP-4-110-1	GXS-4-15-1
GXS-4-15/75-W	GXS-4-30/75-W	GXS-4-15/75-C	GXS-4-110-1	GX90S-4-15-1
GX90S-4-15/75-W	GX90S-4-30/75W	GX90S-4-15/75-C	GX90S-4-110-1	SHG24-15-1
SHG15/75-W	SHG24-30/75-W	SHG24-15/75-C	SHG24-110-1	GOT24
GOS24-15-1	GOS24-15/75	GOS24-15/75	GOS24-30/75	GOS24-110-1
GMH-24	GMS-24-15-1	GMS-24-15/75-W	GMS-24-30/75-W	GMS-24-15/75-C
GMS-24-110-1	WGMS-4/75			

**APPENDIX "B" - BATTERY CALCULATIONS (SELECTION GUIDE)**

Use the form below to determine the required batteries.

<b>IMPORTANT NOTICE</b>							
The main AC branch circuit connection for Fire Alarm Control Unit must provide a dedicated continuous power without provision of any disconnect devices. Use #12 AWG wire with 600-volt insulation and proper over-current circuit protection that complies with the local codes.							
<b>POWER REQUIREMENTS (ALL CURRENTS ARE IN AMPERES)</b>							
Model Number	Description	Qty		STANDBY	TOTAL STANDBY	ALARM	TOTAL ALARM
FA-101U	Fire Alarm , 1 Det, 1 Sig		X	0.066	=	0.125	=
FA-102U	Fire Alarm, 2 Det, 1 Sig		X	0.076	=	0.135	=
FA-1025U	Fire Alarm, 5 Det, 2 Sig		X	0.114	=	0.200	=
RTI-1	Remote Trouble Indicator		X	0.035	=	0.035	=
2-Wire Smoke Detectors			X	⊛ 0.0001	=	* 0.090	= 0.090
4-Wire Smoke Detectors			X		=		=
Signal Load (bells, horns, strobes, and etc.)							=
Total currents (Add above currents)				STANDBY	<b>(A)</b>		<b>(B)</b>

**Total Current Requirement:**

ALARM (B) \_\_\_\_\_ Amps.

**Battery Capacity Requirement:**

$$([\text{STANDBY (A) } \_\_\_\_\_\_] \times [(24 \text{ or } 60 \text{ Hours) } \_\_\_\_\_\_]) + ([\text{ALARM (B) } \_\_\_\_\_\_] \times [\text{⊛Alarm in Hr.} \_\_\_\_\_\_]) = (\text{C}) \_\_\_\_\_\_ \text{AH}$$

**Battery Selection:**

Multiply (C) by 1.20 to derate battery.

Batteries **BA-104** (4.0AH) and **BA-1065**(6.5AH) fit into the backboxes ; all larger batteries such as **BA-110**(10AH) and the **BA-117**(17AH) require an external battery box.

\* Assuming three Initiating Circuits in alarm.

⊛ Use **0.084** for five minutes of alarm or **0.5** for thirty minutes of alarm as a multiplier figure.

⊛ Using the **MIR-425/U** 2-wire smoke detector. See Appendix "A", for other available smoke detectors .





## Notes

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