

FA-101T

Fire Alarm Control Panel



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Introduction

The FA-101T is a supervised single-zone 24V DC Fire Alarm Control Panel. The panel provides the following features:

- 1 Class B detection zone
- 1 Class B signal zone, 1.7A
- DIP switch selectable signal circuit outputs such as temporal or steady
- Alarm and trouble relay contacts
- Remote trouble and A.C. ON indication
- Zone silence/disconnect switch
- Buzzer silence switch
- LED indicators for zone alarm and trouble, A.C. On, Battery Fault, Ground Fault, Common Trouble, Signal Trouble and Signal Silenced

Mechanical Installation

The panel can be surface or flush mounted. Refer to Figure 1 on page 5 for dimensions.

Surface Mounting

1. Mark the location of the four mounting holes.
2. Install the top two screws into the wall and place the panel over the screws.
3. Install the bottom screws and tighten down all four screws.

Flush Mounting

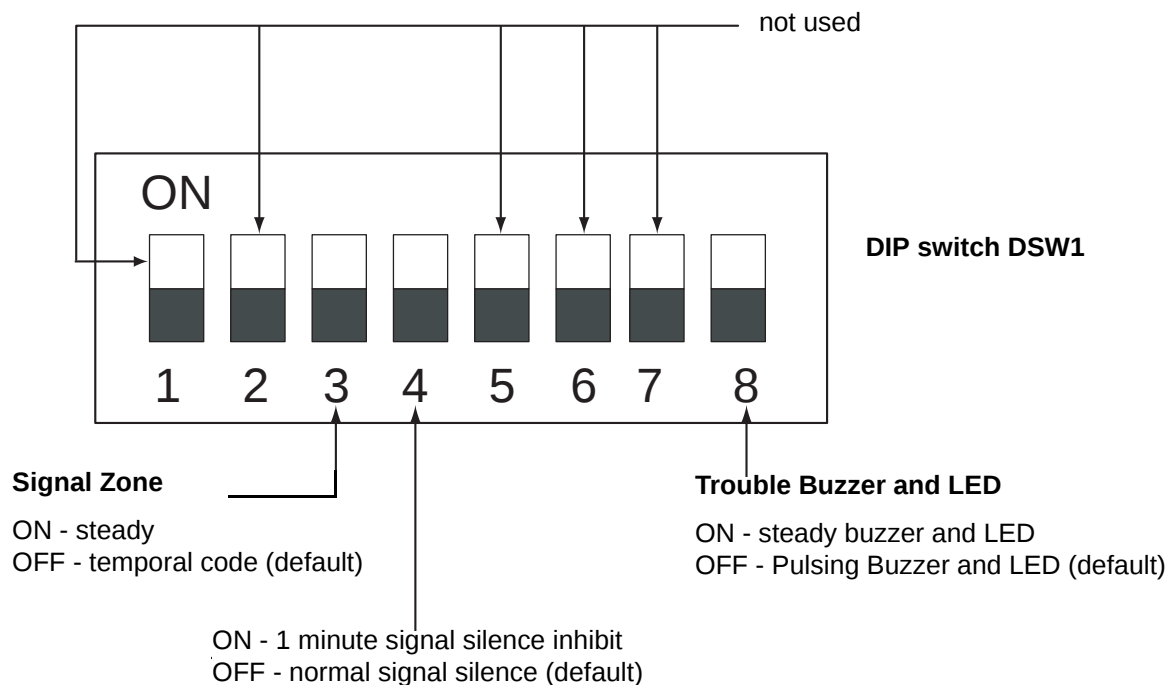
1. Make the wall cut-out according to the panel dimensions.
2. Remove the control panel door.
3. Mount the flush mounting trim (model FA-102TR) to the back box using the screws and nuts provided with the flush mounting kit.
4. Re-install the door on top of the flush trim. The cam lock may require a minor adjustment in order to compensate for the flush trim.

Function Selection

The following jumpers are available for function selection. Refer to Figure 2 on page 6 for location.

- **JW1:** Cut for resettable +24V DC supply.
- **JW2:** Cut to make auxiliary relay disconnectable.
- **JW3:** Cut for normally open trouble contacts.
- **JW4:** Cut for normally closed trouble contacts.

DIP SWITCH DSW1 is used to set the preferred signal zone 1 output, the signal silence inhibit, and the common trouble flash rate. The default output for the signal zone is temporal code.



- **Temporal Code:** 3 rounds of 0.5 second ON, 0.5 second OFF, then 1.5 second pause.
- **Steady:** Signal on continuously.



Note: Any time the DIP switches in DSW1 are positioned (ON or OFF), the panel must be reset by holding the Reset button for 5 seconds.

Wiring

Detection Zone

The system has one detection zone. Refer to Figure 3 on page 7 for wiring instruction and to Figure 4 on page 8 for wire size.

Signal Zone

There is one signal zone available for bells and horns providing 1.7A of signal power. Refer to Figure 3 on page 7 for wiring instruction and to Figure 5 page 8 on for wire size.

Alarm and Trouble Relays

Alarm and trouble relay contacts are provided. Refer to Figure 6 on page 9 for contact location and designation.

Remote Annunciation

Annunciation outputs are provided for remote trouble indicator and buzzer. Refer to Figure 6 on page 9 for wiring instructions.

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. For greater accuracy, use the battery calculations chart located in *Appendix B* on page 14.

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

Trouble Indicators and Controls

Refer to Figure 2 on page 6 for the location of indicators and controls.

Common Trouble LED

The yellow Common Trouble LED will flash and the buzzer will sound for any trouble in the panel (unless DSW1-8 is ON, then the Common Trouble LED will illuminate steadily and the buzzer will sound).

Buzzer/Buzzer Silence Switch

The buzzer will sound intermittently for any trouble. The buzzer will sound steadily for any alarm in the system. Operating the Buzzer Silence switch will silence the buzzer. Turning the Buzzer Silence switch OFF normal will sound the buzzer steadily.

Zone Trouble LED

The yellow Zone Trouble LED will illuminate steadily for an open loop in the zone.

Battery Fault LED

Battery removal, low voltage and open battery leads will turn on the yellow Battery Fault LED and the Common Trouble LED.

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.

Signal Trouble LED

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

Sequence of Operation

Refer to Figure 2 on page 6 for the location of indicators and controls.

Normal

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

Alarm

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

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.

Reset/Lamp Test

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. Holding the reset switch for five seconds will cause the panel to preform a lamp test as well as reset the panel.

System Checkout

Before turning the 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. To prevent sparking, *do not* connect batteries.
4. Check that all switches are in the normal position to the left.

Power up and Troubleshooting

1. After completing all of the system checkout procedures, power up the panel. The A.C. ON LED should illuminate. The trouble buzzer should sound intermittently, and the Common Trouble LED should flash, indicating battery fault.
2. Connect the batteries carefully, observing the correct polarity. The Common Trouble LED should extinguish. If the Common Trouble LED stays on, check the front panel for the illumination of the following LEDs:
 - **Battery LED** indicates that the battery voltage may be too low (below 20.4V).
 - **Ground Fault LED** indicates a ground on one or more of the extended wires.
 - **Zone Trouble LED** indicates an open loop or a signal silence switch is in the OFF normal position to the right.
 - **Signal Trouble LED** indicates an open loop or short in the signal zone.

Figure 1: Backbox and Flush Trim Mounting details

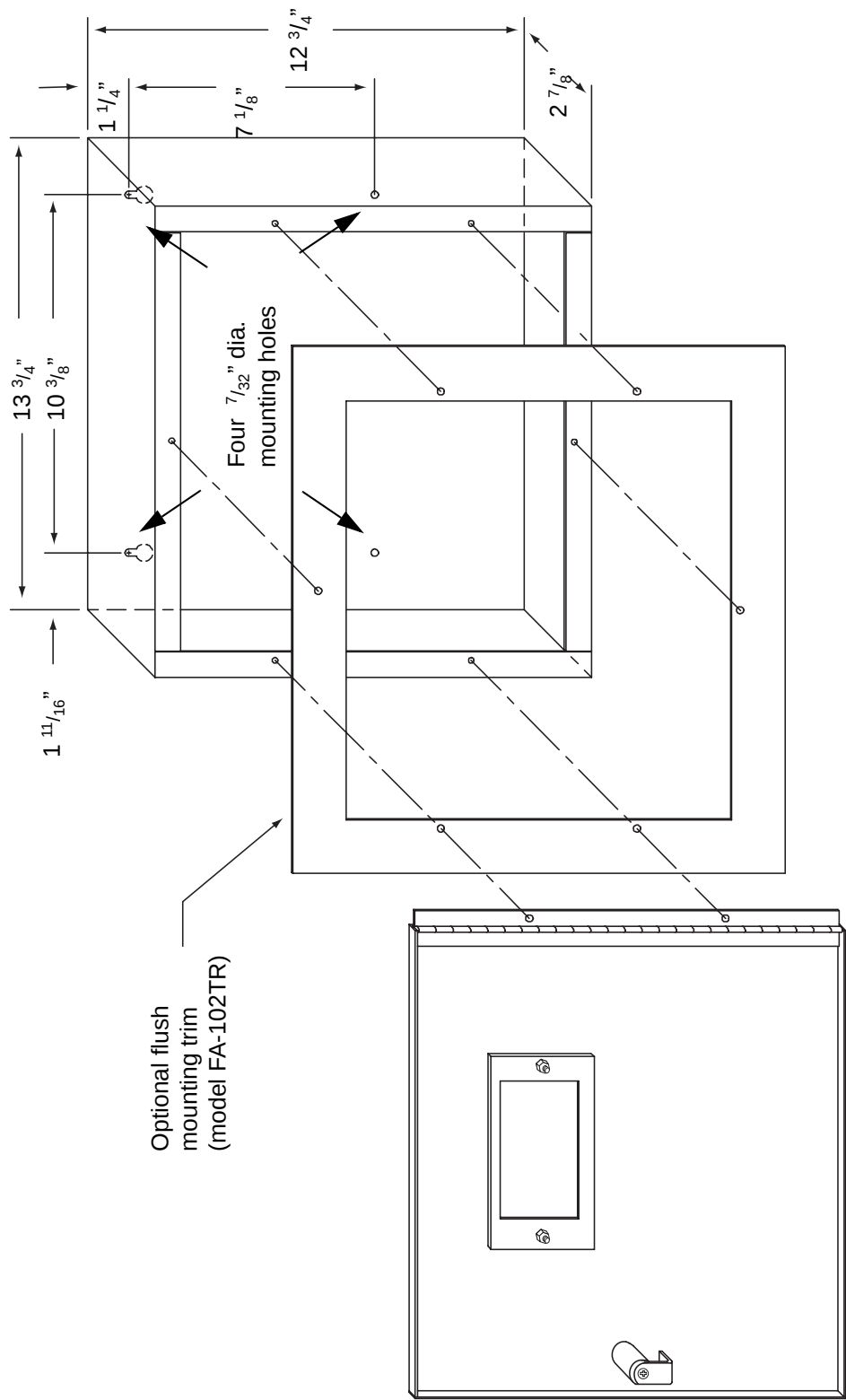


Figure 2: Circuit Board Layout

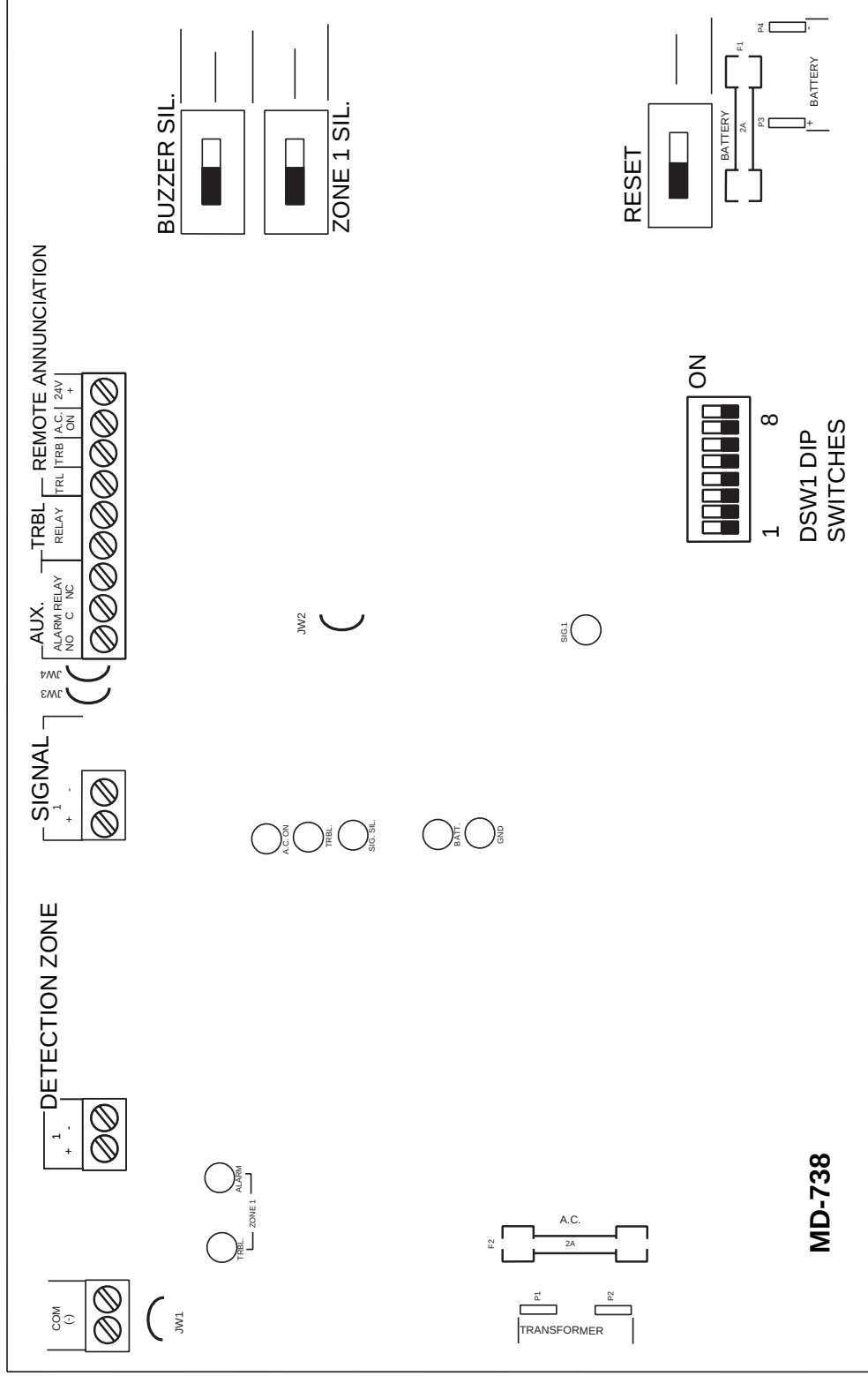
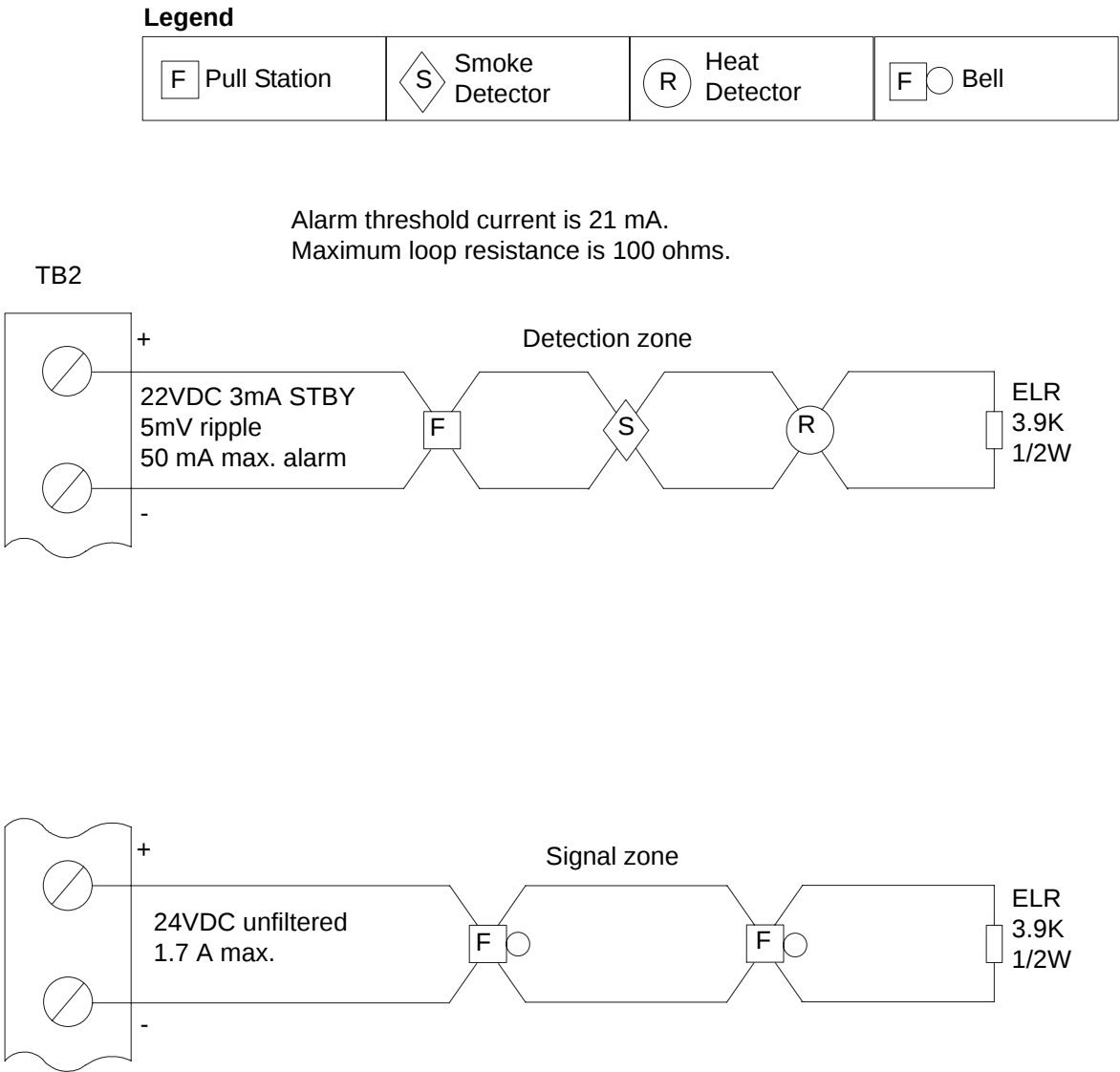


Figure 3: Detection and Signal Wiring



Wiring Tables and Information

Figure 4: Wiring Table for Detection Zone

Wire Gauge (AWG)	Maximum Wiring Run to Last Device (ELR)	
	ft.	m
22	2990	910
20	4760	1450
18	7560	2300
16	12000	3600
14	19000	5800
12	30400	9200



Note: Maximum loop resistance should not exceed 100 ohms.

Figure 5: Wiring Table for Bells and Horns

Signal circuit is rated for 1.7 amperes.

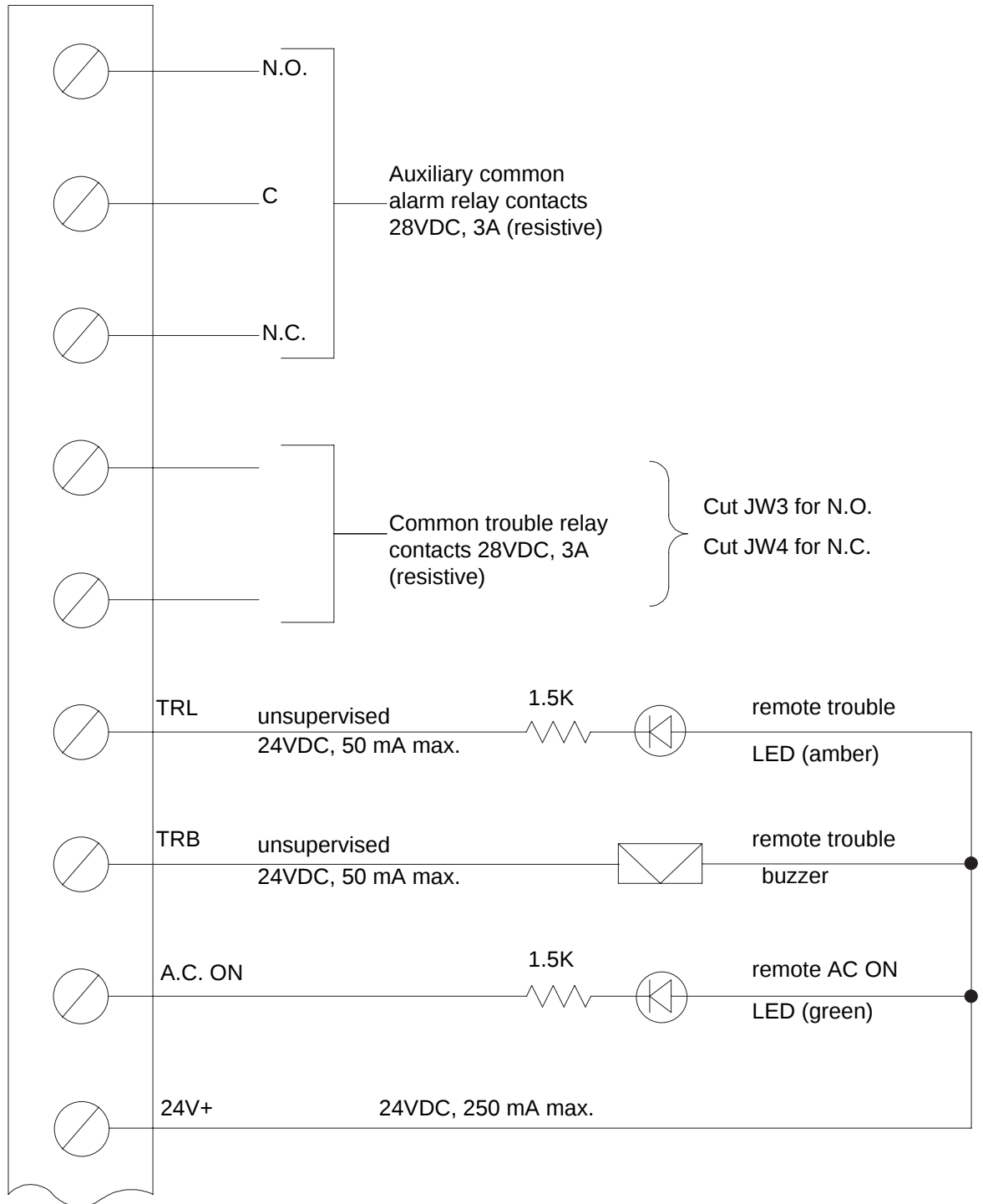
Total Signal Load	Maximum Wiring Run to Last Device (ELR)								Max Loop Resistance
	18AWG		16AWG		14AWG		12AWG		
Amperes	ft.	m	ft.	m	ft.	m	ft.	m	Ohms
0.06	2350	716	3750	1143	6000	1829	8500	2591	30
0.12	1180	360	1850	567	3000	915	4250	1296	15
0.30	470	143	750	229	1200	366	1900	579	6
0.60	235	71	375	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
1.7	78	24	125	38	200	61	285	87	1.0



Note: Maximum voltage drop should not exceed 1.8 volts.

Figure 6: Alarm and Trouble Relay Contacts and Remote Annunciation Wiring Instructions

TS2



Appendix A: Compatible Devices

Underwriter's Laboratories Canada (ULC) Canadian 2-Wire Smoke Detector Control Panel


Notes:

- Reset time, hold for five seconds minimum.
- 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.

Make Model / Base	Make Model / Base	Make Model / Base
Mircom	Cerebrus Pyrotronics	Fenwal
MIR-525	D1-2	PSD-7131/70-201000-001
MIR-525T	D1-3/DB-3S	PSD-7131/70-201000-002
System Sensor		PSD-7131/70-201000-003
1400-A		PSD-7131/70-201000-005
2400-A	Mirtone	PSD-7130/70-201000-001
1451-A/B401B	73471	PSD-7130/70-201000-002
1451-A/B406B	73494	PSD-7130/70-201000-003
2451-A/B401B	73575	PSD-7130/70-201000-005
2451-A/B406B	73495/73486	PSD-7128/70-201000-001
1451DH/DH400A	73495/73487	PSD-7126/70-201000-002
2451-A/DH400A	73595/73486	PSD-7126/70-201000-003
C2W-BA	73595/73497	PSD-7126/70-201000-005
C2WT-BA	73594/73400	PSD-7129/70-201000-000
Edwards	73405/73400	PSD-7125/70-201000-001
6249C	73594/73401	PSD-7126/70-201000-002
6250C	73405/73401	PSD-7125/70-201000-003
6264C		PSD-7125/70-201000-005
6266C	Simplex	CPD-7021/70-201000-001
6269C	2098-9110	CPD-7021/70-201000-002
6270C		CPD-7021/70-201000-003
6269C-003		CPD-7021/70-201000-005
6270C-003		

Underwriter's Labs Inc. (ULI) United States 2-Wire Smoke Detector Control Panel Compatibility



Notes:

- Reset time, hold for five seconds minimum.
- 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.
- 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
System Sensor			Sentrol - ESL		
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

Smoke Detector Make Model / Base	Compatibility Identifier Head / Base	Rated Standby Current	Smoke Detector Make Model / Base	Compatibility Identifier Head / Base	Rated Standby Current
System Sensor (cont'd)			Sentrol ESL (cont'd)		
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	Detection Systems Inc.		
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	Mircom		
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			

(Continued from previous page)

Underwriter's Labs Inc. (ULI) United States Signaling Device Control Panel Compatibility

System Sensor - SpecrAlert				
P2415	P2415W	P241575	P241575W	P2475
P2475W	P24110	P24110W	S2415	S2415W
S241575	S241575W	S2475	S2475W	S24110
S24110W	H12/24	H12/24W	MDL	MDLW
Wheelock				
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				
Gentex				
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			
Mircom				
FH-240R	FH-240W	FHS-240R	FHS-240R/110	FHS-240W
FHS-240W/110	FS-240R	FS-240R/110	FS-240W	FS-240W/110
SDM-240				

Appendix B: Battery Calculations (Selection Guide)

Use the form below to determine the required batteries.

IMPORTANT NOTICE							
The main AC branch circuit connection for the 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.							
Power Requirements (All currents are in amperes)							
Model Number	Description	Qty		Standby	Total Standby	Alarm	Total Alarm
FA-101T	Fire Alarm, 1 Det, 1 Sig		X	0.066	=	0.125	=
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	(A)		(B)

Total Current Requirement

ALARM (B) _____ Amps.

Battery Capacity Requirement

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

Battery Selection

Multiply (C) by 1.20 to derate battery.



Note: 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-525/U** 2-wire smoke detector. See Appendix "A", for other available smoke detectors .

Warranty

Mircom Technologies Ltd., manufactured equipment is guaranteed to be free of defects in material and workmanship for a period of one (1) year from the date of original shipment. Mircom will repair or replace, at its option, any equipment which it determines to contain defective material or workmanship. Said equipment must be shipped to Mircom prepaid. Return freight will be prepaid by Mircom. We shall not be responsible to repair or replace equipment which has been repaired by others, abused, improperly installed, altered or otherwise misused or damaged in any way. Unless previously contracted by Mircom, Mircom will assume no responsibility for determining the defective or operative status at the point of installation, and will accept no liability beyond the repair or replacement of the product at our factory authorized service depot.

Head Office

25 Interchange Way
Vaughan, ON Canada
L4K 5W3

U.S.A. Distribution Centre

60 Industrial Parkway
Cheektowaga, NY USA
14227

Toll-Free Phone: 1-888-660-4655

Toll-Free Fax: 1-888-660-4113

www.mircom.com

