THE
ANNUNCIATOR
FIXED
MODULE

*Installation Manual for the
AFM-16ATF and AFM-32AF
Annunciator Modules*
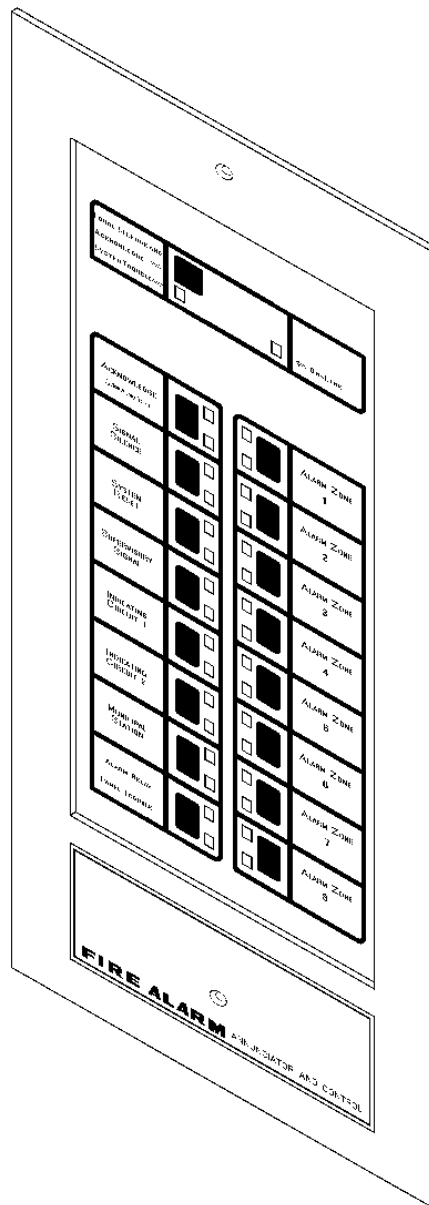
Table of Contents

Section One: The AFM

Annunciator Fixed Modules provide the control panel with discrete display and control points. These annunciators turn their LEDs ON and OFF as commanded by the system's CPU. In addition, they report selected switch activations to the CPU for action.

Limits
The AFM-16ATF is intended for use in systems that require 16 annunciation points or less. The AFM-32AF is intended for use in systems that require 32 annunciation points (alarm only) or less. Only one annunciator may be used in a system. Each annunciator's address is internally fixed at "1."

Capabilities
The **AFM-16ATF** can annunciate the following:

> Circuits: IZ-4F, IZ-8F and IZ-4AF Initiating Device Circuits (alarm and trouble)
> IC-4F and ICE-4F Notification Appliance Circuits (circuit activation and trouble)
> CR-4F and CRE-4F Control Relays (circuit activation and trouble)
> TC-2F and TC-4F circuits (circuit activation and trouble)

> CPU Controls: Acknowledge, Signal-Silence and System Reset. If desired, the Alarm Relay, Notification Appliance Circuits 1 and 2, and the Remote Station Municipal Tie may be controlled from the AFM-16ATF.

The **AFM-32AF** can annunciate the following:

> Circuits: IZ-4F and IZ-8F Initiating Device Circuits (alarm)
> Output circuits activation is indicated.
> CPU: System Alarm, Trouble and the activation of Notification Appliance Circuits 1 and 2, the Remote Station Municipal Tie and the Alarm Relay.

> Controls: Local Silence/Acknowledge and Lamp Test.

Software Required
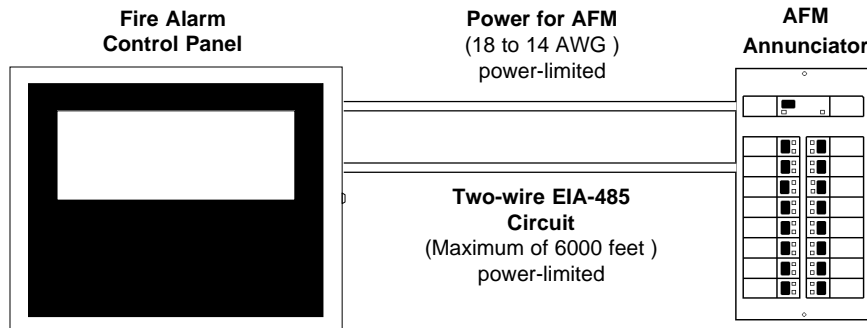The AFM is fully compatible with the Sensiscan 2000 (CPU-2000) and the Sensiscan 200 (CPU-200).

Electrical Ratings
Input Voltage: **24 volts DC** (must be power-limited)**.**
Current Draw from 24 volt DC Input: **0.040 Amps in Standby; 0.056 Amps in Alarm**
Data Communications Port: **EIA-485 operating at 20.833 Kbaud** (must be power-limited).

Wiring

Communication between the control panel and the AFM is accomplished over a two-wire EIA-485 serial interface. This communication, to include the wiring, is supervised by the control panel's CPU and must be power-limited. Loss of communication results in "System Trouble" and "Module Failure" indications at the CPU. Power for the AFM must be power-limited and is provided via a separate power loop from the control panel which is inherently supervised (loss of power also results in a communication failure at the control panel). No End-Of-Line Resistor needs to be installed because the EIA-485 circuit is internally terminated on the annunciator.

Fire Alarm Control Panel — Power for AFM (18 to 14 AWG) power-limited — AFM Annunciator — Two-wire EIA-485 Circuit (Maximum of 6000 feet) power-limited

Wiring Specifications

The EIA-485 circuit cannot be T-Tapped; it must be wired in a continuous fashion from the control panel to the AFM. The maximum wiring distance between the panel and annunciator is 6000 feet. The wiring size should be a 18 AWG to 14 AWG twisted-pair cable having a Characteristic Impedance of approximately 120 ohms. Limit the total wire resistance to 100 ohms on the EIA-485 circuit, and to 10 ohms on the power run to the annunciator. Do not run cable adjacent to, or in the same conduit as, 120 volts AC service, noisy electrical circuits that are powering mechanical bells or horns, audio circuits above 25 volts (RMS), motor control circuits, or SCR power circuits. Twisted-shielded wiring should be used for EIA-485 circuits that are not contained entirely in conduit.

Functions

The fire alarm control panel automatically assigns annunciator points to the modules directly to the right of the CPU and outward. Therefore, when installing the system modules, Initiating Zone Modules (IZ-4F, IZ-8F) should be installed in ribbon cable positions immediately next to the CPU-2000 (and outward) to permit full annunciation of initiating circuits.

| STANDARD ANNEALED COPPER WIRE						
Wire Size A.W.G.	Diameter in Mils	Cross Section		Ohms per 1000 ft.		Pounds per 1000 ft.
		Circ. Mils	Sq. Inch	@ 77 F.	@ 149 F.	
14	64	4110	0.00323	2.58	2.97	12.4
16	51	2580	0.00203	4.09	4.73	7.82
18	40	1620	0.00128	6.51	7.51	4.92

Table 1-1: Typical Wire Resistance Chart

Section Two: Inventory

AFM-16ATF
(H = 8-3/8"   W = 4-3/8"   D = 1-3/8")
The Annunciator Fixed Module-16ATF contains 16 red alarm and 16 yellow trouble LEDs, 16 momentary touch-pad switches, a system trouble LED, an ON LINE/POWER LED, and a local piezo sounder with a silence/acknowledge switch for audible indication of alarm and trouble conditions. The AFM-16ATF can be mounted in two types of backboxes - the ABS-1F or ABF-1F.
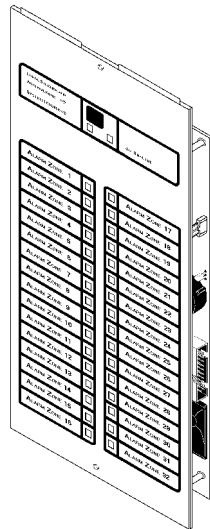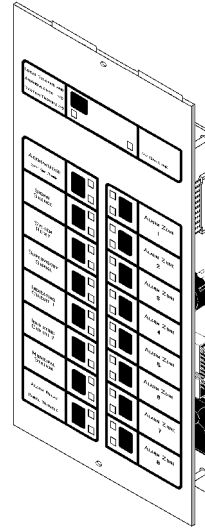
AFM-32AF
(H = 8-3/8"   W = 4-3/8" D = 1-3/8")
The Annunciator Fixed Module-32AF contains 32 red alarm LEDs, a System Trouble LED, an ON LINE/POWER LED, and a piezo sounder with a Local Silence/Acknowledge switch for audible indication of alarm and trouble conditions. The AFM-32AF can be mounted in two types of backboxes - the ABS-1F or ABF-1F.
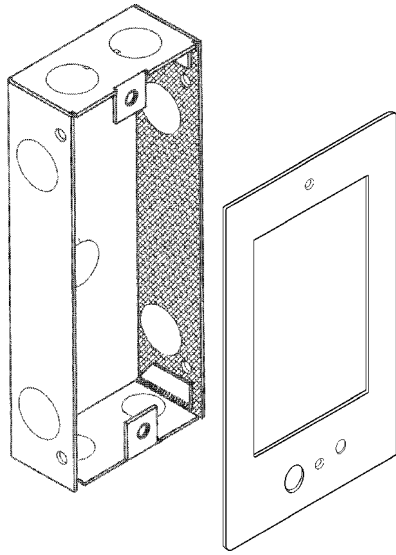
ABF-1F
(H = 9-15/16"   W = 4-5/8"   D = 2-1/2")
The Annunciator Flush Box-1 provides for the remote mounting of the AFM annunciator in a flush-mount enclosure. The ABF-1F includes a trim plate (height=11" width=6-1/4"), mounting hardware, and an adhesive-backed Annunciator Label.

Annunciator Label

ABS-1F
(H = 8-1/2"   W = 4-1/2"   D = 1-3/8")
The Annunciator Surface Box-1 provides for the remote mounting of the AFM annunciator in a surface-mount enclosure. Knockouts are provided for use with 1/2" conduit. The annunciator mounts directly to the ABS-1F without a dress plate.

Note: The ABS-1F will not support the installation of the AKS-1F.
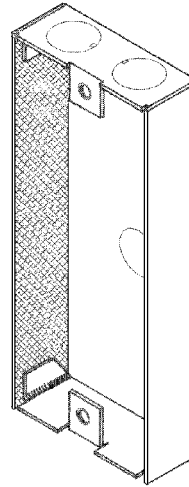
AKS-1F
The Annunciator Key Switch provides access security for the control switches on the AFM-16ATF. Includes a key, mounting hardware and an adhesive-backed Annunciator Label. *The AKS-1F can only be employed with a flush-mount type backbox.*
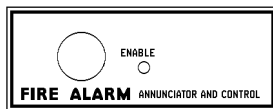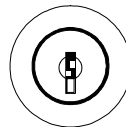
Section Three: Installation

Installation Summary

❏ Run the EIA-485 and power circuits out to the location of the annunciator.

❏ Select an appropriate knockout on the backbox and mount the backbox.

❏ Connect the backbox to a solid ground, such as a properly grounded metallic cold water pipe.

❏ Draw all annunciator and power wiring into the enclosure. Do not terminate the shield (if employed) to the backbox (see Figure 3-2).

❏ Insert the custom display labels into the annunciator (see Figure 3-3).

❏ As appropriate, cut jumper options on the annunciator as outlined in Figure 3-4.

❏ *ABF-1F Only -* Turn the ABF-1F Dress Plate face down on a surface with the screw studs facing up. Position the AFM-16ATF over the screw studs and secure to the dress plate with the two nuts and lock washers provided (see Figure 3-5).

❏ *ABF-1F Only -* Remove the backing from the Annunciator Label and affix to the dress plate as illustrated in Figure 3-6.

❏ *ABF-1F Only -* If employing an Annunciator Key Switch (AKS-1F), mount the switch to the dress plate. Plug the switch leads to Connector J4 on the Annunciator (see Figure 3-7).

❏ Connect power-limited EIA-485 circuit and power-limited power wiring to the Annunciator Terminal Blocks as illustrated in Figure 3-8.

❏ Place the annunciator/dress plate assembly into the backbox and secure with two screws.

❏ Connect the EIA-485 circuit to the CPU as illustrated in Figure 3-9.

❏ Connect the power loop for the annunciator to the Main Power Supply as illustrated in Figure 3-10.

Installation of the AFM Annunciator is complete. Program the AFM into the respective CPU and fully test the system.
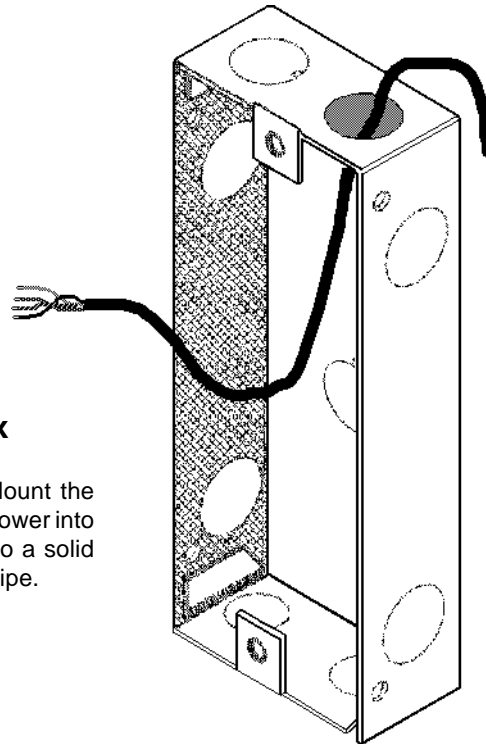
Figure 3-1: Mounting the Backbox

Select a knockout on the backbox. Mount the backbox and draw all annunciator and power into the enclosure. Connect the backbox to a solid ground such as a metallic cold water pipe.
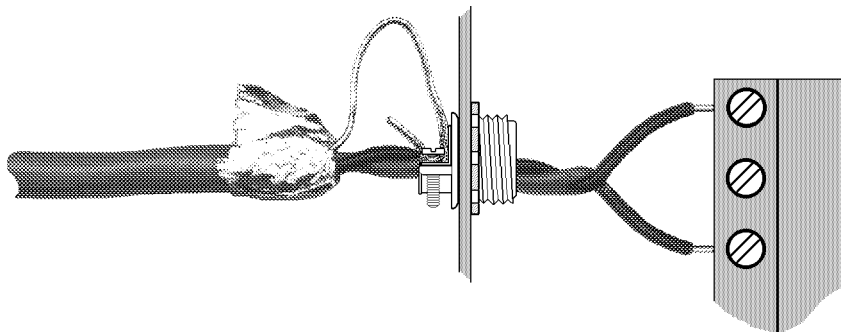
Figure 3-2: Terminating the Shield

The EIA-485 circuit should be wired using a twisted-pair cable having a Characteristic Impedance of approximately 120 ohms. Do not run cable adjacent to, or in the same conduit as, 120-volt AC service, noisy electrical circuits that are powering mechanical bells or horns, audio circuits above 25 volts (RMS), motor control circuits, or SCR power circuits. Twisted-shielded wiring should be used for EIA-485 circuits that are not contained entirely in conduit. Do not allow the shield to enter or touch the annunciator enclosure, as illustrated above. The shield should only be terminated at the fire alarm control panel. Wire-nut multiple shields together outside of the cabinet.
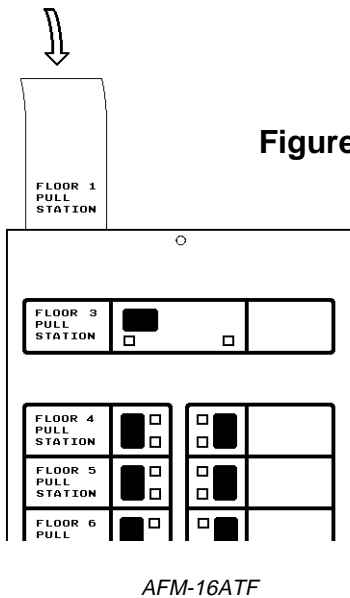
Figure 3-3: Inserting Display Labels

Remove the center pages of this manual. If using the custom user display labels, type the appropriate information on the labels. Carefully cut out the labels and insert them into the AFM by slipping them into the label slots on the back side of the annunciator face plate.

Note: To ensure the best fit, cut directly along the dotted line surrounding each label.

AFM-16ATF

Figure 3-4: Annunciator Jumper Options

AKS-1F Connector
(shown here for reference only)

Jumper JP1 (brown)
Cut this jumper to display the status of the eight CPU functions in the first eight points on the annunciator.

Jumper JP2 (red)
Cut this jumper to enable the local piezo to sound during alarm, trouble, or supervisory activity within the system.

Jumper JP3 (orange)
Cut this jumper to enable the Local Silence/Acknowledge switch and all point control switches (on the AFM-16ATF). This will allow the execution of system control functions, such as ACKNOWLEDGE and RESET, from the AFM-16ATF.

Note: Jumper JP1 must also be cut to execute these functions.

Figure 3-5: Mounting the Dress Plate

Position the annunciator over the screw studs on the dress plate and secure with two nuts and lock washers provided.

AFM

**ABF-1F
Dress Plate**

FIRE ALARM ANNUNCIATOR AND CONTROL
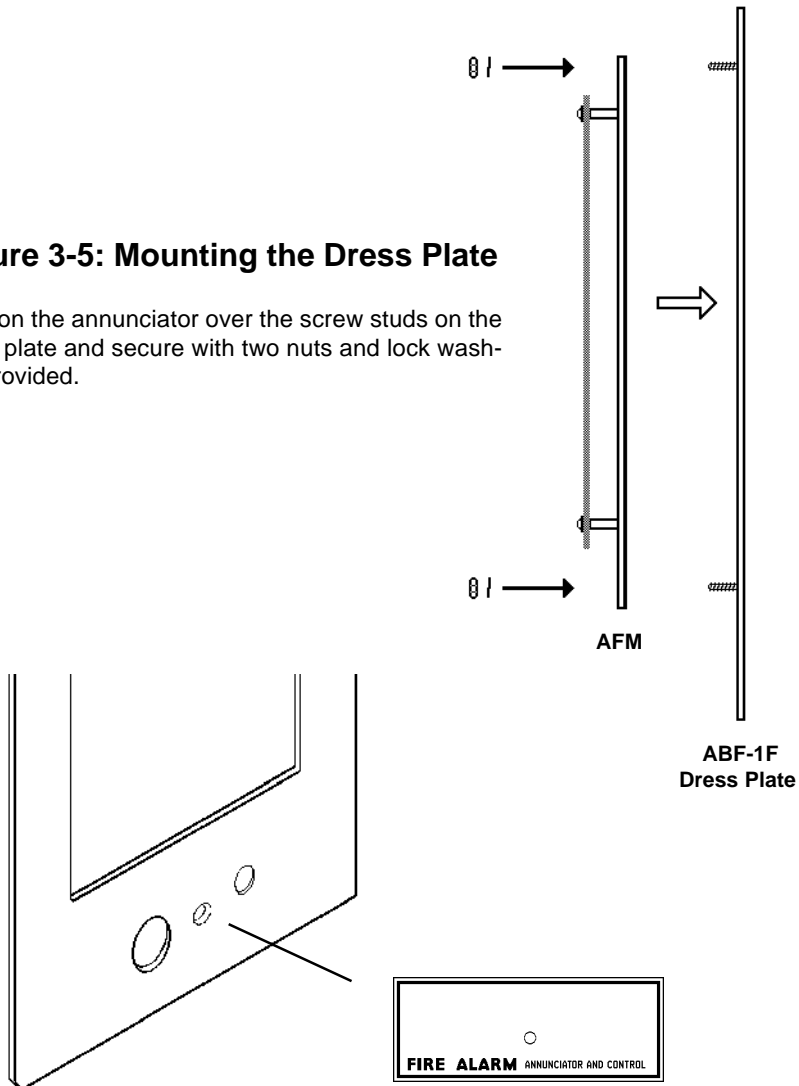
Figure 3-6: Applying the Annunciator Label

Remove backing from adhesive-backed Annunciator Label and affix the label to the bottom of the ABF-1F Dress Plate as illustrated.

Note: If an AKS-1F is to be installed, use the label supplied with the appropriate kit and discard the other label.

Slide-In Labels

Slide-in labels are contained on the following pages. Two labels are required for the AFM–16ATF - one for the left-hand side and one for the right-hand side of the faceplate. Each label has a distinctive format.

Three types of labels are offered:

Set A: Factory-printed zone labels:
These provide labels for alarm zones 1 through 16.

Set B: Factory-printed system/zone labels:
These provide labels for Acknowledge, Signal Silence, System Reset, and other CPU control functions, as well as alarm zones 1 through 8.
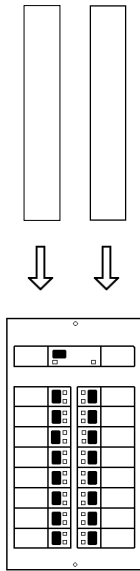
Set C: Custom User Labels:
These blank labels can be customized by the user. If information is to be typed onto these labels, they should be reproduced on a copy machine so that the entire page can be inserted into a typewriter. Two sets of custom user labels are provided so that one set may be used as a work sheet.

Effective Window Size
The size of the visible portion of an AFM-16ATF label window is 9/16" high by 1" across. Using a pitch of 10 characters per inch at six lines per inch, up to three lines of 10 characters each may be typed within this window space. If information is to be typed onto these labels, make a reproduction on a copy machine to use as a practice copy.

*⟸ **Remove center sheets
for Slide-In Labels***

Slide-In Labels

Slide-in labels are contained on the preceding pages. Two labels are required for the AFM–32AF - one for the left-hand side and one for the right-hand side of the faceplate. Each label has a distinctive format.

Three types of labels are offered:

Set D: Factory-printed zone labels:
These provide labels for alarm zones 1 through 32.

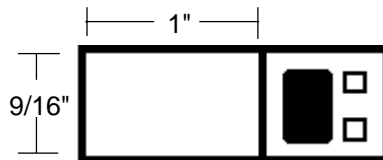**Set E: Factory-printed system/zone labels:**
These provide labels for System Alarm, Supervisory condition, and alarm zones 1 through 24.

Set F: Custom User Labels:
These blank labels can be customized by the user. If information is to be typed onto these labels, they should be reproduced on a copy machine so that the entire page can be inserted into a typewriter.
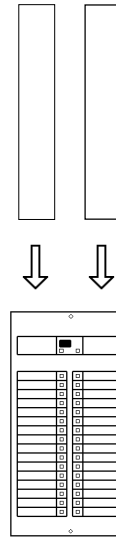
Effective Window Size
The size of the visible portion of an AFM-32AF label window is 1/2" high by 1-3/8" across. If information is to be typed onto these labels, make a reproduction on a copy machine to use as a practice copy.
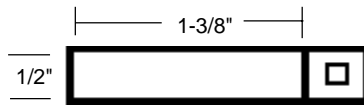
**Figure 3-7:
Installing AFM
Options**
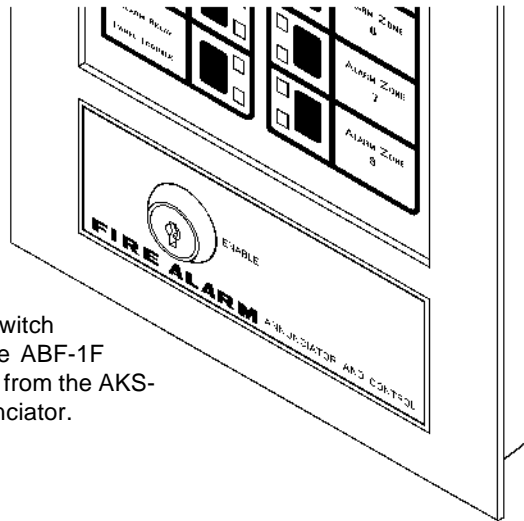
If employing an Annunciator Key Switch (AKS-1F), mount the switch to the ABF-1F Dress Plate. Plug the switch leads from the AKS-1F into Connector J4 on the annunciator.
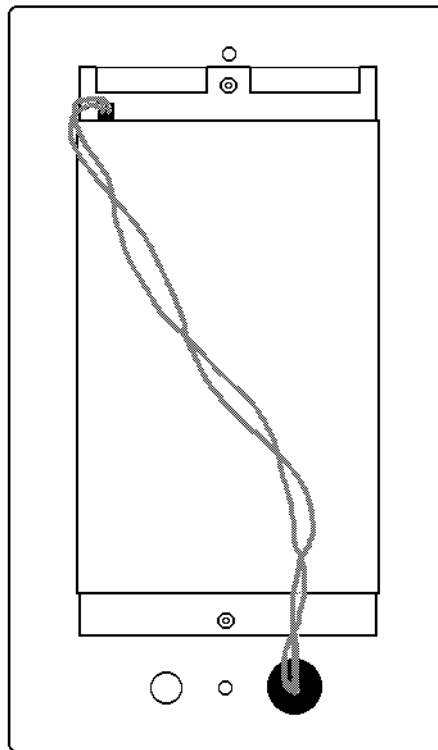
Figure 3-8: AFM Field Connections

Connect the EIA-485 and power wiring to the terminal blocks on the back of the AFM as illustrated below.

TB2 *EIA-485 and power must be power-limited*

EIA-485 (-) TB2-2
EIA-485 (+) TB2-1

TB1

24 VDC (-) TB1-2
24 VDC (+) TB1-1
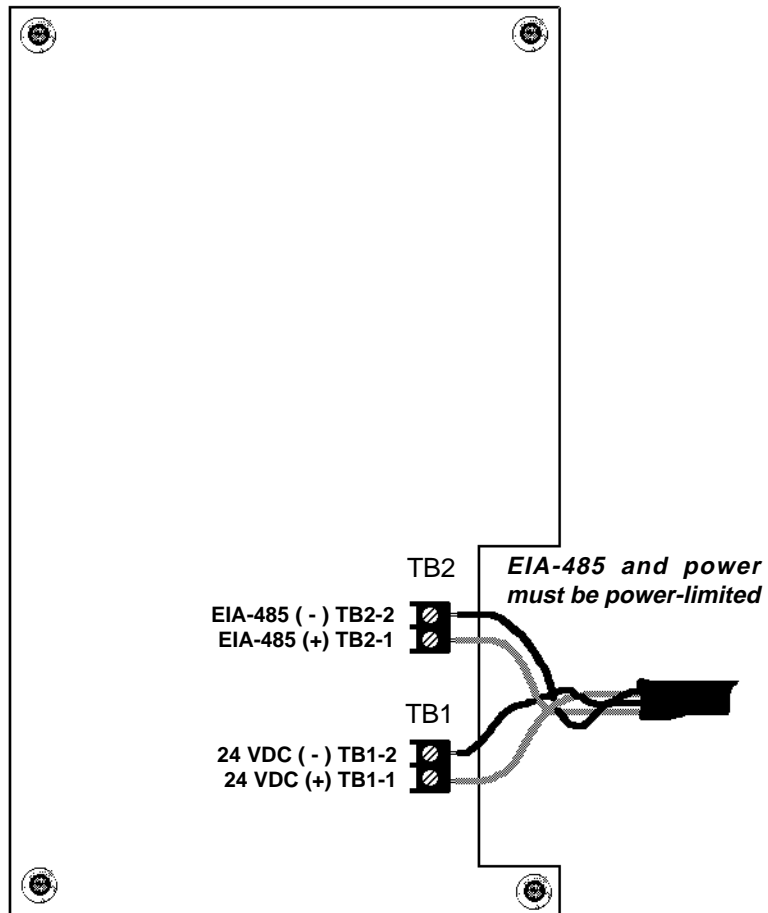
Caution! Failure to observe proper polarity on these connections may result in damage to the annunciator.

Installation Requirements

The EIA-485 circuit that drives the AFM must be connected to the CPU as illustrated below. Connect the EIA-485 (+) and (-) lines to the CPU terminals.

Supervised and Power-limited

EIA-485 (-) ——————— **(+) EIA-485**

CPU-2000
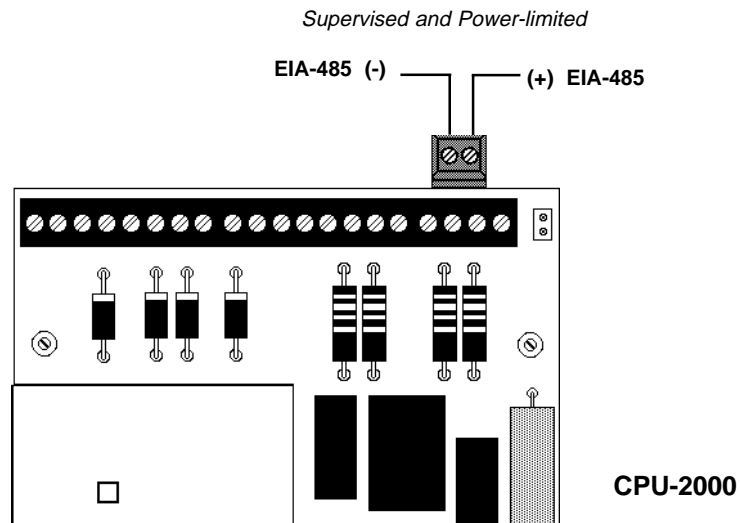
Figure 3-9: Connecting the EIA-485 Loop

Figure 3-10: Main Power Supply Connections

The AFM annunciator can be powered by an MPS-24AF or an MPS-24BF. This power run *to the annunciator* need not contain a Power Supervision Relay since loss of power is inherently supervised through communication loss.

MPS-24AF Main Power Supply:

Connect the power run for the AFM to MPS-24AF TB3-1 (+) and TB3-2 (-) (1 amp max) or TB3-3 (+) and TB3-4 (-) (3 amps max). The total amount of current drawn from these terminals cannot exceed the above ratings in standby or alarm.

(+) 24 VDC Power to TB1-1 on AFM   **(-) Common** to TB1-2 on AFM

MPS-24AF
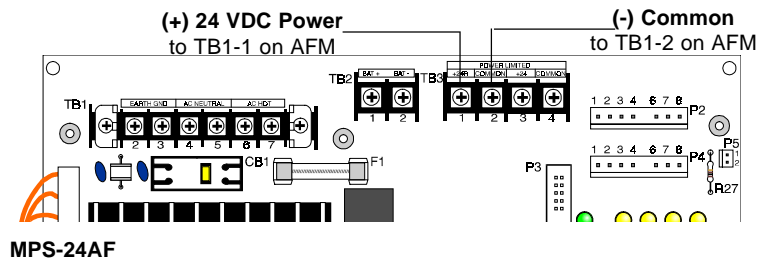
MPS-24BF Main Power Supply:

Connect the power run for the AFM to MPS-24BF TB2 Terminals 1 (+) and 2 (-). No more than 200 mA current can be drawn from these terminals in standby or alarm.

24 VDC Power (+) to AFM TB1-1   **(-) Common** to AFM TB1-2

MPS-24BF
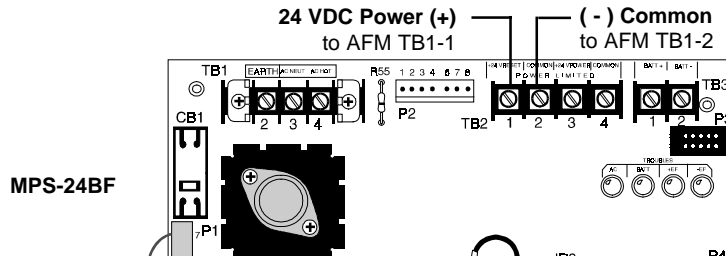
Section Four:
Operating the AFM

Figure 4-1: AFM-16ATF Operation

This switch serves two purposes:

1) When pressed, it lights all the LEDs on the AFM (except the On Line LED) and sounds the piezo for as long as the switch is held down.

2) It acknowledges all status changes for the AFM. Flashing LEDs will latch on solid and the piezo will be silenced.

Acknowledge Switch

On Line LED
This green indicator flashes during communication with the control panel.

System Trouble LED
This yellow indicator lights for all trouble conditions in the system (not just for those points or zones mapped to the annunciator).

Control Switch
Functions as a local Lamp Test for the two LEDs dedicated to this point.

The control switches can also be used to execute the system functions of AC-KNOWLEDGE, SIGNAL SILENCE, and SYSTEM RESET, and if not inhibited, control Notification Appliance Circuits 1 and 2, the Remote Station Municipal Tie, and Alarm Relay.

Red LED

Yellow LED

16 Annunciator Points

***If the Annunciator loses communication with the
control panel, all the yellow LEDs will flash.***

Figure 4-2: AFM-32AF Operation

Local Silence/Acknowledge Switch

This switch serves two purposes:

1) When pressed, it lights all the LEDs on the AFM (except the On Line LED) and sounds the piezo for as long as the switch is held down.

2) It acknowledges all status changes for the AFM. Flashing LEDs will latch on solid and the piezo will be silenced. *Note: Jumper JP3 (orange) must be cut.*

On Line LED
This green indicator flashes during communication with the control panel.

System Trouble LED
This yellow indicator lights for all trouble conditions in the system (not just for those points or zones mapped to the annunciator).

Red Alarm LED

32 Annunciator Points

If the Annunciator loses communication with the control panel, the yellow System Trouble LED will flash.

Annunciator Operation

Annunciator points "track" or follow those control panel points they are programmed to annunciate; they do not latch. The table below outlines the annunciation of various circuits and functions. Note: Control Switches marked "not used" will still function as local LAMP TEST or local ACKNOWLEDGE switches for their respective points.

Table 4-1: System 2000 Annunciator Point Functions			
Circuit Type	⟸ **AFM-16ATF** ⟹		
	⟸ **AFM-32AF** ⟹ **Only**		
	Red LED	**Yellow LED**	**Control Switch**[2]
ANNUNCIATOR POINT # 1	Indicates System Alarm	Indicates System Trouble	Functions as an ACKNOWLEDGE
ANNUNCIATOR POINT # 2	not used	Indicates that signals have been silenced	Functions as a SIGNAL SILENCE
ANNUNCIATOR POINT # 3	not used	not used	Functions as a SYSTEM RESET
ANNUNCIATOR POINT # 4	not used	Indicates Supervisory condition	not used
ANNUNCIATOR POINT # 5	Indicates that Notification Circuit 1 has been activated	Indicates trouble status of circuit	Controls Notification Circuit 1
ANNUNCIATOR POINT # 6	Indicates that Notification Circuit 2 has been activated	Indicates trouble status of circuit	Controls Notification Circuit 2
ANNUNCIATOR POINT # 7	Indicates that the Remote Signalling Municipal Tie has been activated	Indicates trouble status of circuit	Controls Remote Signalling Municipal Tie
ANNUNCIATOR POINT # 8	Indicates that the Alarm Relay has been activated	Indicates Module Trouble, Power Failure or Disabled Circuit(s)	Controls Alarm Relay
IZ-4F, IZ-8F, IZ-4AF	Indicates alarm status of circuit [5]	Indicates trouble status of circuit	not used
IC-4F, ICE-4F	Indicates Activation [3]	Indicates trouble status of circuit	Control Notification Circuit [4]
CR-4F, CRE-4F	Indicates Activation [3]	Indicates trouble status of relay	Controls Relay [4]
TC-2F, TC-4F	Indicates Activation [3]	Indicates trouble status of relay	Remote Switch Functions [4]

(Left side of table: **C P U** [1] spans ANNUNCIATOR POINTS #1–#7; **M O D U L E S** spans ANNUNCIATOR POINT #8 through TC-2F, TC-4F)

[1]If Jumper JP1 has not been cut, the eight CPU functions will be not be active on the first eight points of the annunciator.

[2]These control switches will function only if Jumper JP3 has been cut.

[3]These Status LEDs are active only when the CPU has been programmed for "Output Status."

[4]These control switches require that the CPU be programmed for "Output Control."

[5]If an IZ-4F, IZ-8F or IZ-4AF circuit has been programmed as a supervisory point, *both* the red and yellow LEDs will be illuminated for a supervisory condition. Illumination of the yellow LED alone indicates a trouble condition (open circuit) on a supervisory zone.
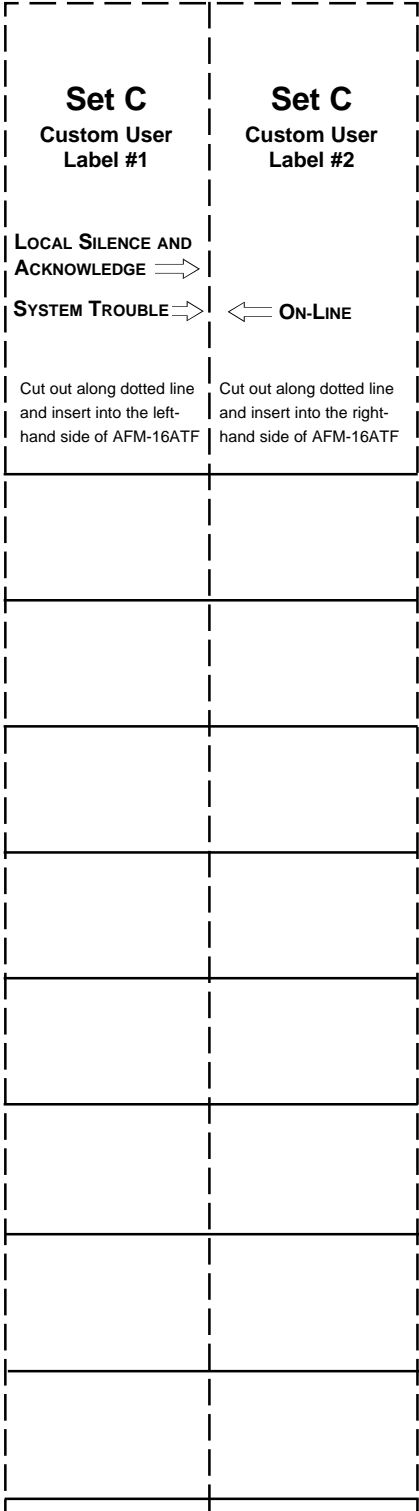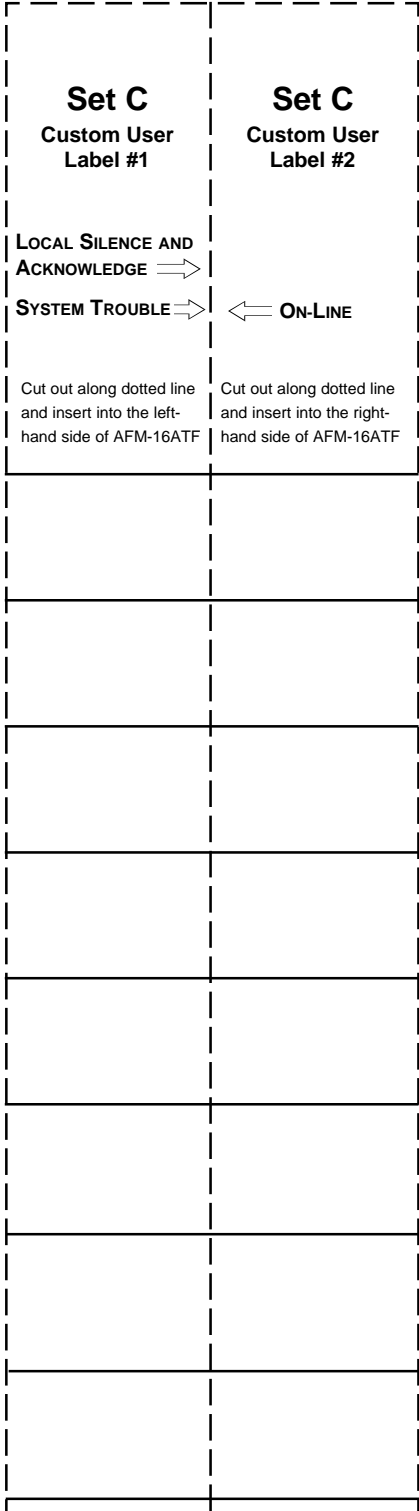
NOTES

NOTES

Set A Zone Label #1	Set A Zone Label #2	Set B System/Zone Label #1	Set B System/Zone Label #2
Local Silence and Acknowledge ⟹ System Trouble ⟹	⟸ On-Line	Local Silence and Acknowledge ⟹ System Trouble ⟹	⟸ On-Line
Cut out along dotted line and insert into the left-hand side of AFM-16ATF	Cut out along dotted line and insert into the right-hand side of AFM-16ATF	Cut out along dotted line and insert into the left-hand side of AFM-16ATF	Cut out along dotted line and insert into the right-hand side of AFM-16ATF
ALARM ZONE 1	ALARM ZONE 9	ACKNOWLEDGE System Alarm/Trouble	ALARM ZONE 1
ALARM ZONE 2	ALARM ZONE 10	SIGNAL SILENCE	ALARM ZONE 2
ALARM ZONE 3	ALARM ZONE 11	SYSTEM RESET	ALARM ZONE 3
ALARM ZONE 4	ALARM ZONE 12	SUPERVISORY SIGNAL	ALARM ZONE 4
ALARM ZONE 5	ALARM ZONE 13	INDICATING CIRCUIT 1	ALARM ZONE 5
ALARM ZONE 6	ALARM ZONE 14	INDICATING CIRCUIT 2	ALARM ZONE 6
ALARM ZONE 7	ALARM ZONE 15	MUNICIPAL STATION	ALARM ZONE 7
ALARM ZONE 8	ALARM ZONE 16	ALARM RELAY PANEL TROUBLE	ALARM ZONE 8

Set D Zone Label #1	**Set D** Zone Label #2	**Set E** Custom User Label #1
LOCAL SILENCE AND ACKNOWLEDGE ⇒ SYSTEM TROUBLE ⇒	⇐ ON-LINE	LOCAL SILENCE AND ACKNOWLEDGE ⇒ SYSTEM TROUBLE ⇒
Cut out along dotted line and insert into the left-hand side of AFM-32AF	Cut out along dotted line and insert into the right-hand side of AFM-32AF	Cut out along dotted line and insert into the left-hand side of AFM-32AF
ALARM ZONE 1	ALARM ZONE 17	
ALARM ZONE 2	ALARM ZONE 18	
ALARM ZONE 3	ALARM ZONE 19	
ALARM ZONE 4	ALARM ZONE 20	
ALARM ZONE 5	ALARM ZONE 21	
ALARM ZONE 6	ALARM ZONE 22	
ALARM ZONE 7	ALARM ZONE 23	
ALARM ZONE 8	ALARM ZONE 24	
ALARM ZONE 9	ALARM ZONE 25	
ALARM ZONE 10	ALARM ZONE 26	
ALARM ZONE 11	ALARM ZONE 27	
ALARM ZONE 12	ALARM ZONE 28	
ALARM ZONE 13	ALARM ZONE 29	
ALARM ZONE 14	ALARM ZONE 30	
ALARM ZONE 15	ALARM ZONE 31	
ALARM ZONE 16	ALARM ZONE 32	

Set C
Custom User
Label #1

Set C
Custom User
Label #2

LOCAL SILENCE AND
ACKNOWLEDGE ⟹

SYSTEM TROUBLE⟹   ⟸ ON-LINE

Cut out along dotted line
and insert into the left-
hand side of AFM-16ATF

Cut out along dotted line
and insert into the right-
hand side of AFM-16ATF

Set C
Custom User
Label #1

Set C
Custom User
Label #2

LOCAL SILENCE AND
ACKNOWLEDGE ⟹

SYSTEM TROUBLE⟹   ⟸ ON-LINE

Cut out along dotted line
and insert into the left-
hand side of AFM-16ATF

Cut out along dotted line
and insert into the right-
hand side of AFM-16ATF

Set E System/Zone Label #1	Set E System/Zone Label #2	Set F Custom User Label #2
LOCAL SILENCE AND ACKNOWLEDGE ⟹ SYSTEM TROUBLE ⟹ Cut out along dotted line and insert into the left-hand side of AFM-32AF	⟸ ON-LINE Cut out along dotted line and insert into the right-hand side of AFM-32AF	⟸ ON-LINE Cut out along dotted line and insert into the right-hand side of AFM-32AF
SYSTEM ALARM	ALARM ZONE 9	
	ALARM ZONE 10	
	ALARM ZONE 11	
	ALARM ZONE 12	
IND. CIRCUIT 1	ALARM ZONE 13	
IND. CIRCUIT 2	ALARM ZONE 14	
MUNICIPAL TIE	ALARM ZONE 15	
ALARM RELAY	ALARM ZONE 16	
ALARM ZONE 1	ALARM ZONE 17	
ALARM ZONE 2	ALARM ZONE 18	
ALARM ZONE 3	ALARM ZONE 19	
ALARM ZONE 4	ALARM ZONE 20	
ALARM ZONE 5	ALARM ZONE 21	
ALARM ZONE 6	ALARM ZONE 22	
ALARM ZONE 7	ALARM ZONE 23	
ALARM ZONE 8	ALARM ZONE 24	