## (-) FIre.LITE* ALarms inc.

# THE Annunciator Fixed Module 

Installation Manual for the AFM-16ATF and AFM-32AF Annunciator Modules



## Installation Precautions

WARNING - Several different sources of power can be connected to the fire alarm control panel. Disconnect all sources of power before servicing. Control unit and associated equipment may be damaged by removing and/ or inserting cards, modules, or interconnecting cables while the unit is energized. Do not attempt to install, service or operate this unit until this manual is read and understood

CAUTION - System Reacceptance Test after Software Changes: To ensure proper system operation, this product must be tested in accordance with NFPA 72-1993 Chapter 7 after any programming operation or change in sitespecific software. Reacceptance testing is required after any change, addition or deletion of system components, or after any modification, repair or adjustment to system hardware or wiring.

All components, circuits, system operations, or software functions known to be affected by a change must be 100\% tested. In addition, to ensure that other operations are not inadvertently affected, at least $10 \%$ of initiating devices that are not directly affected by the change, up to a maximum of 50 devices, must be tested and proper system operation verified.

This system meets NFPA requirements for operation at $0-49^{\circ} \mathrm{C} / 32-120^{\circ} \mathrm{F}$ and at a relative humidity of $85 \% \mathrm{RH}$ (non-condensing) at $30^{\circ} \mathrm{C} / 86^{\circ}$ F. However, the useful life of the system's standby batteries and the electronic components may be adversely affected by extreme temperature ranges and humidity. Therefore, it is recommended that this system and its peripherals be installed in an environment with a nominal room temperature of 15 $27^{\circ} \mathrm{C} / 60-80^{\circ} \mathrm{F}$

Verify that wire sizes are adequate for all initiating and indicating device loops. Most devices cannot tolerate more than a 10\% I.R. drop from the specified device voltage.

Adherence to the following will aid in problem-free installation with long-term reliability:

Like all solid state electronic devices, this system may operate erratically or can be damaged when subjected to lightning induced transients. Although no system is completely immune from lightning transients and interferences, proper grounding will reduce susceptibility. Overhead or outside aerial wiring is not recommended, due to an increased susceptibility to nearby lightning strikes. Consult with the Technical Services Department if any problems are anticipated or encountered.

Disconnect AC power and batteries prior to removing or inserting circuit boards. Failure to do so can damage circuits.

Remove all electronic assemblies prior to any drilling, filing, reaming, or punching of the enclosure. When possible, make all cable entries from the sides or rear. Before making modifications, verify that they will not interfere with battery, transformer, and printed circuit board location.

Do not tighten screw terminals more than 9 in-lbs. Over tightening may damage threads, resulting in reduced termina contact pressure and difficulty with screw terminal removal.

This system contains static-sensitive components. Always ground yourself with a proper wrist strap before handling any circuits so that static charges are removed from the body. Use static suppressive packaging to protect electronic assemblies removed from the unit.

Follow the instructions in the installation, operating, and programming manuals. These instructions must be followed to avoid damage to the control panel and associated equipment. FACP operation and reliability depend upon proper installation.

## Fire Alarm System Limitations

An automatic fire alarm system - typically made up of smoke detectors, heat detectors, manual pull stations, audible warning devices, and a fire alarm control with remote notification capability can provide early warning of a developing fire. Such a system, however, does not assure protection against property damage or loss of life resulting from a fire.

Any fire alarm system may fail for a variety of reasons:
Smoke detectors may not sense fire where smoke cannot reach the detectors such as in chimneys, in walls, or roofs, or on the other side of closed doors. Smoke detectors also may not sense a fire on another level or floor of a building. A second floor detector, for example, may not sense a first floor or basement fire. Furthermore, all types of smoke detectors - both ionization and photoelectric types, have sensing limitations. No type of smoke detector can sense every kind of fire caused by carelessness and safety hazards like smoking in bed, violent explosions, escaping gas, improper storage of flammable materials, overloaded electrical circuits, children playing with matches, or arson.

IMPORTANT! Smoke detectors must be installed in the same room as the control panel and in rooms used by the system for the connection of alarm transmission wiring, communications, signaling, and/or power. If detectors are not so located, a developing fire may damage the alarm system, crippling its ability to report a fire.

While installing a fire alarm system may make lower insurance rates possible, it is not a substitute for fire insurance!

Audible warning devices such as bells may not alert people if these devices are located on the other side of closed or partly open doors or are located on another floor of a building.

A fire alarm system will not operate without any electrical power. If AC power fails, the system will operate from standby batteries only for a specified time.

Rate-of-Rise heat detectors may be subject to reduced sensitivity over time. For this reason, the rate-of-rise feature of each detector should be tested at least once per year by a qualified fire protection specialist.

Equipment used in the system may not be technically compatible with the control. It is essential to use only equipment listed for service with your control panel.

Telephone lines needed to transmit alarm signals from a premise to a central monitoring station may be out of service or temporarily disabled.

The most common cause of fire alarm malfunctions, however, is inadequate maintenance. All devices and system wiring should be tested and maintained by professional fire alarm installers following written procedures supplied with each device. System inspection and testing should be scheduled monthly or as required by National and/or local fire codes. Adequate written records of all inspections should be kept.

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## 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 $\mathbf{2 0 . 8 3 3}$ Kbaud (must be powerlimited).

## Wiring

Communication between the control panel and the AFM is accomplished over a twowire 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.


## 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 EIA485 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 . |  | $\begin{aligned} & \text { Pounds per } \\ & 1000 \mathrm{ft} \text {. } \end{aligned}$ |
|  |  | 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

( $\mathrm{H}=8-3 / 8^{\prime \prime} \quad \mathrm{W}=4-3 / 8^{\prime \prime} \quad \mathrm{D}=1-3 / 8^{\prime \prime}$ ) 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 ONLINE/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.

## 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 $1 / 2^{\prime \prime}$ 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 adhesivebacked Annunciator Label. The AKS1F can only be employed with a flush-
 mount type backbox.


## Section Three: Installation

## Installation Summary

$\square$ Run the EIA-485 and power circuits out to the location of the annunciator.
$\square$ Select an appropriate knockout on the backbox and mount the backbox.
$\square$ Connect the backbox to a solid ground, such as a properly grounded metallic cold water pipe.
$\square$ Draw all annunciator and power wiring into the enclosure. Do not terminate the shield (if employed) to the backbox (see Figure 3-2).
$\square$ Insert the custom display labels into the annunciator (see Figure 3-3).
$\square$ As appropriate, cut jumper options on the annunciator as outlined in Figure 3-4.
$\square$ 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).
$\square$ ABF-1F Only - Remove the backing from the Annunciator Label and affix to the dress plate as illustrated in Figure 3-6.
$\square$ 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).
$\square$ Connect power-limited EIA-485 circuit and power-limited power wiring to the Annunciator Terminal Blocks as illustrated in Figure 3-8.
$\square$ Place the annunciator/dress plate assembly into the backbox and secure with two screws.
$\square$ Connect the EIA-485 circuit to the CPU as illustrated in Figure 3-9.
$\square$ 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.

Figure 3-4: Annunciator Jumper Options

## AKS-1F Connector

(shown here for reference


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.

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.

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& \text { ate }
\end{aligned}
$$



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.

## Remove center sheets for Slide-In Labels

## Slide-In Labels



Slide-in labels are contained on the following pages. Two labels are required for the AFM-16ATF - one for the lefthand 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 $1 / 2^{\prime \prime}$ high by $1-3 / 8^{\prime \prime}$ 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 AKS1F 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.


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


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 annunciatorneed 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.


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.


## Section Four: Operating the AFM

Figure 4-1: AFM-16ATF Operation

This switch serves two purposes:


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


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

${ }^{1}$ 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

## Limited Warranty

Fire-Lite ${ }^{\circledR}$ warrants its products to be free from defects in materials and workmanship for eighteen (18) months from the date of manufacture, under normal use and service. Products are date stamped at time of manufacture. The sole and exclusive obligation of Fire-Lite ${ }^{\circledR}$ is to repair or replace, at its option, free of charge for parts and labor, any part which is defective in materials or workmanship under normal use and service. For products not under Fire-Lite ${ }^{\circledR}$ manufacturing date-stamp control, the warranty is eighteen (18) months from date of original purchase by Fire-Lite ${ }^{\text {®'s }}$ distributor unless the installation instructions or catalog sets forth a shorter period, in which case the shorter period shall apply. This warranty is void if the product is altered, repaired or serviced by anyone other than Fire-Lite ${ }^{\circledR}$ or its authorized distributors or if there is a failure to maintain the products and systems in which they operate in a proper and workable manner. In case of defect, secure a Return Material Authorization form from our customer service department. Return product, transportation prepaid, to Fire-Lite ${ }^{\oplus}$, 12 Clintonville Road, Northford, Connecticut 06472-1653.

This writing constitutes the only warranty made by Fire-Lite ${ }^{\circledR}$ with respect to its products. Fire-Lite ${ }^{\circledR}$ does not represent that its products will prevent any loss by fire or otherwise, or that its products will in all cases provide the protection for which they are installed or intended. Buyer acknowledges that Fire-Lite ${ }^{\circledR}$ is not an insurer and assumes no risk for loss or damages or the cost of any inconvenience, transportation, damage, misuse, abuse, accident or similar incident.

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