Maple Armor

FireWatcher 106
Fire Alarm Control Panel

GENERAL

The FireWatcher FW106 is an Addressable Fire Alarm Control Panel designed for small to medium-sized facilities. It is well-suited for use in new installations and retrofitting for commercial, institutional, and industrial fire detection and notification purposes. The FW106 represents a cutting-edge addressable fire control system that fully complies with the requirements of UL864 10th edition and ULC S527 standards. It can support up to 4 Addressable Signaling Line Circuits, each accommodating 252 addressable devices or points per loop. Additionally, it can handle 2 to 10 Notification Appliance Circuits and comes equipped with 4+1 form C dry relay contacts, with 4 of them allocated for Fire Department connections.

The FW106 boasts a 7-inch LCD with a resolution of 800 X 480, featuring 6 auxiliary function keys and 9 LED indicators. This user-friendly interface enhances the intuitiveness of the fire alarm system. Moreover, it can be seamlessly connected to up to 109 remote Panels or Annunciators through an external network, forming an integrated fire emergency detection and notification network system.

Chassis in red and grey colors are provided. Order the preferred color following the ordering information table.

FEATURE

- 1, expandable to 4, intelligent Signaling Line Circuit:(SLC) Class A or B, with no limit on the number of zones.
- Up to 252 detectors and devices: modules, addressable call point, or addressable horn strobe per SLC; up to 1008 detectors and devices per Fire Alarm Control Panel (FACP).
- Automatic addressing function: In Automatic mode, the panel sequentially assigns addresses from 1 to 252 to loop devices. Loop spots can be any mix of detector, module, call point, or addressable horn strobe.
- PC configuration software.
- In "walk test mode", detectors are triggered to alarm by an aerosol generator, and the linked alarm devices are triggered simultaneously.
- Loop break locating: The panel will display the loop and point address where the break has occurred.
- 7 LCD with 800 X 480 resolution.
- 4+1 form C dry relay contacts (4 relays are used for Fire Department connection, non-programmable), 1 programmable relay.
- 6 programmable auxiliary function keys
- 9 LED indicators, making it a highly intuitive fire alarm user interface.
- Standard network for up to 109 nodes (The sum of panel and annunciator is not more than 109).
- Connection with one FW151 digital communication panel with FW357A network card.
- RJ45 and RS232 interface available for output to third-party monitoring software
- Max. 5000 event log, and compatible with EPSON LX350 printer

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FEATURE	
Environmental	•Operating temperature - 32 - 120°F (0 - 49°C) •Relative humidity - Up to 93% @ 90°F (32°C) •To be installed in the normal dry indoor environment only
Primary Supply	•110 - 120 VAC 60Hz (3.86A), or •220 - 240 VAC 50Hz (1.96A) •WARNING: Set the controller's power type DIP switch to the correct position before connecting the power supply, as failure to do so may result in the equipment not functioning or the power being damaged •Configurable non-resettable/resettable auxiliary power output, 24 Vdc 1.2 Amps. Under "resettable" mode, the power is off for 10 sec once the panel tries to reset.
Backup battery	•Two 12V in-series lead-acid batteries •Charging capacity: 42AH •The maximum space dimensions for accommodating backup batteries are 400 x 160 x 170 mm. Please choose backup batteries that are as compact as possible while meeting the required electrical specifications.
Relay Outputs	•One programmable relay •4 non-programmable status relays. Statuses indicated are Alarm, Supervisory, Trouble, Monitor •All relays are Form-C contacts. •Contact Rating: 2A 30VDC
Notification Appliance Circuits (NAC)	•Up to 5 NOU cards supported (2 loop per card), total power available 8A •2 Class A or 2 Class B circuits on each NOU •Maximum Current: 2A per NAC circuit •Alarm Voltage: 24V nominal •Bell code: Temporal
Network Circuit	•Class B circuit •Up to 4 remote annunciators connection (limited by power) •Communications protocol: CAN •Max. line capacitance = 0.05 uF •Max. line resistance = 25 Ohm
Addressable Loop Circuits	•To integrate addressable detectors, modules, and manual call points into the system •Maximum Current (short): 0.4A •Class A/Class B circuit •252 addresses: the sum of detectors, modules, call point •Output voltage range: 20.2V ~ 26.2V •Maximum normal standby current: 100mA •Maximum alarm current: 220mA •Max. line capacitance = 0.1 uF •Max. line resistance = 10 Ohm

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CONFIGURATION GUIDELINES

MAIN SYSTEM COMPONENTS

Within the chassis, the FW106 panel is equipped with AMI, PTU, and PCU as a standard configuration. Additionally, to enable the system to have detection and alarm capabilities, it often requires one ALU and one NOU to be configured. Including ROU and XNU depends on the actual needs of the site. Each FW106 device has eight positions for installing functional units, which ALU, NOU, ROU, and XNU can share. The total number of the four cards can not exceed 8. The following two tables express the quantity limitations of the fixed and optional configurations, which are based on both the device parameters and the limitations of certification. In actual application configuration, refer to these quantities for configuration.

Table-1. FW106 system fixed components

Module Type	Qty	Fixed/Configurable	Notes
Advanced Machine Interface (AMI)	1	Fixed	Includes CPU board, graphic VGA LCD, Keypad, LED, buzzer, etc.
Power-supply Transformer Unit (PTU)	1	Fixed	Supports both 110/120VAC nominal and 220/240VAC nominal line voltage
Power Supply& Charge Unit (PCU)	1	Fixed	42AH charging capacity

Table-2. FW106 system optional functional units

Module Type	Qty Min -Max	Fixed/Configurable	Notes
Addressable Loop Unit (ALU)	0- 4	Optional, 1 in standard config.	One ALU supports one addressable loop circuit and 252 devices of any type. Class A or Class B is configurable.
Notification Output Unit (NOU)	0 - 5	Optional, 2 in standard config.	One NOU supports two NACs. Class A or Class B configurable
Relay Output Unit (ROU)	0-1	Optional, 1 in standard config.	5 contacts Form-C
External Network Unit (XNU)	0-1	Optional, 0 in standard config.	For panel networking or connecting to LCD /LED annunciators.

OPTIONAL FUNCTIONAL UNITS

ALU – Addressable Loop Unit: An ALU can support one addressable loop circuit, which can support up to 252 points of addressable devices. It is capable of initializing and operating all devices on the loop and communicates all relevant device and event information, such as alarms and troubles, to the Central Processing Unit (CPU). There is no limitation on the types of devices that can be connected .

NOU – Notification Output Unit: The NOU supports two independent notification appliance circuits with synchronization. It supports Class A or B wiring, with a maximum current of 2A per NAC. It also offers multiple notification code types .

XNU – External Network Unit (FW357A): This unit provides both Class X and Class B wiring for communication with panels and annunciators in a network, forming a fire network system. It meets UL864 10th Edition and ULC-S527 3rd Edition standards and can support up to 109 panels or remote annunciators .

ROU – Relay Output Unit: The ROU card supports five dry contact relays: Alarm Relay, Supervisory Relay, Trouble Relay, Other Signal Relay, and Programmable Relay. These relay contacts are in the C Form Style, and a rotary switch sets the address on the board. It meets the UL864 10th Edition Listed standard and ULC-S527 3rd Edition Listed standard .

ANNUNCIATORS

LED annunciator: The FW129 is connected to the control panel via the external network to form an emergency detection and notification network system.

LCD annunciator: The FW123 is connected to the FW106/FW106S series panels via the external CAN network, and it is powered by an external 24 VDC power source from the panel. Up to 109 FW123 remote annunciators can be connected.

Weatherproof enclosure: The MA1100 surface wall box is designed to be used with the FW123 and FW129 annunciators. The wall box is resistant to temperatures ranging from -40 to 49° C.

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DETECTORS

FireWatcher 511 (Smoke Detector): Responds quickly to various fire types, has a slim design for visual appeal and reliability, is installed with a FW500 base that is in the exact size of the detector, or FW501 base with the trim ring, which makes it look larger than the detector, and the FW511 features drift compensation for automatic sensitivity adjustment.

FireWatcher 521 (Heat Detector): An intelligent heat detector for indoor use with fixed-temperature and rate-of-rise alarm characteristics, slim design, and a Microcontroller Unit (MCU) for self-diagnostic tests and result analysis. It is installed with a FW500 base that is in the exact size of the detector or a FW501 base with the trim ring, which makes it look larger than the detector.

FireWatcher 562 (Addressable Duct Detector): Equipped with a photoelectric smoke detector, indicates the presence of combustion products in ventilation systems, compatible with FireWatcher control panels FW106 and FW106S, and offers variable size tubes.

MODULES

FireWatcher FW434 (Module Box): Contains two mounting plates on hinges, accommodates up to 16 regular or 64 mini-modules, and features an integrated flange for semi-flush installation.
FireWatcher 435 (Module Box): Similar to the FW434 it accommodates up to 8 regular or 32 mini modules.
FireWatcher 811 (Input Module): Monitors a single dry contact, UL/ULC listed, and monitors field circuit for open line faults and ground faults.
FireWatcher 811M (Mini-Input Module): A smaller version of the 811, with similar features.
FireWatcher 812 (Dual Input Module): Has an internal electronic address, is compatible with EOLR 10K Ohms, supports two Class B input circuits, and includes 4 types of input contact.
FireWatcher 821 (I/O Module): An Input-Output module, UL/ULC listed, providing one 24VDC output and monitoring for one feedback input contact.
FireWatcher 831 (Relay Module): UL/ULC listed, provides two control relay outputs activated simultaneously.
FireWatcher 841 (Conv. Zone Module): Supports 2-wire CLASS A/B conventional detectors, counts for 35 unit loads, with a status LED indicator.
FireWatcher 851 (Isolator Module): Isolates short points on the signaling line circuit and triggers an internal relay to cut down line power where short trouble is detected.
FireWatcher 859 (In-Suite Isolator Module): Offers up to two Class A/B outputs, supervised and isolated outputs, with 200ma per output.
FireWatcher 951 (Sync Module): Designed with FW961/FW971/FW981 Horn and/or Strobe, it synchronizes the flash and sound of the horn strobe in a fire alarm system. For its Audible Silence feature, refer to its user manual DOC-FW951-UM-R1.4.

MANUAL CALL POINTS

FireWatcher 722 (Addressable Pull Station): This is an ADA (American Disabilities Act) -compliant addressable manual station, UL/ULC listed according to UL38 and ULC-S528 for indoor use. It features easy-to-use push-plate activation. The FW722 is made from durable materials for long-lasting performance, and its design is sleek and modern. It includes an LED indicator when activated, a reset key, and wall mountin.

FireWatcher 752 (Conventional Pull Station): It adheres to ADA standards and features simple push plate activation. The dual-action device includes a red surface mounting back box (FW700) as an option and an easy-to-use reset key in the package. It includes dry contact (30VDC, 2A). The FW752 and FW752C are non-addressable manual stations, UL listed according to UL 38 and ULC-S528 for indoor use. They are normal-open initiating devices made from durable materials and solid parts for long-lasting performance. The unit generates an alarm signal by lifting the cover and pushing the button, with a visible red LED indicator when the fire alarm signal is activated. It can be wall-mounted

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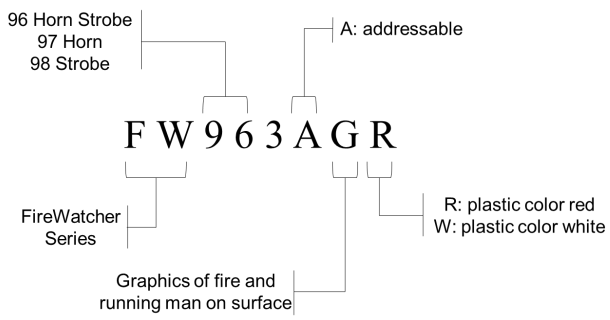
HORN STROBE

FW963 (Addressable Multi-Candela Horn/Strobe): This device is intelligent enough to report its location and status to the FireWatcher series fire alarm control panels. It offers six light output levels and is listed according to UL 1971, UL 1638, UL 464, ULC-S525, and ULC-S526. The horn portion generates a temporal tone as per ANSI and NFPA72 standards for emergency evacuation signaling. It features a white LED light source with low power consumption and a long operating life. The strobe flashes at one flash per second and can synchronize multiple horns and/or strobes in a fire alarm system .

FW973 (Addressable Fire Notification Horn): This addressable horn can report its location and status to the FireWatcher series fire alarm control panels. It is listed according to UL 464 and ULC-S525 for indoor use. The horn generates a temporal tone for standard emergency evacuation signaling as per ANSI and NFPA72. It can synchronize multiple horns in a fire alarm system .

FW983 (Addressable Multi-Candela Strobe Device): This strobe device produces a flash rate of one flash per second and is part of a family of addressable multi-candela visual and audible signal appliances with light sources generated from a white LED. It is listed according to UL 1971, UL 1638, UL 464, ULC-S525, and ULC-S526 for indoor use. Each strobe can report its location and status to the FireWatcher series fire alarm control panels. The device offers six light output levels, and the LED light source provides superior performance, including low power consumption and a long operating life. It also can synchronize multiple horns and/or strobes in a fire alarm system .

Definition of digits in the ordering SKUs (FW963AGR as an example)



The NAC booster: The FW131 adds 8 Class A or B signaling circuits with a max of 3A per NAC circuit. It features a striking compact design narrow enough to feet in between standard 16″ studs.

In-Suite Mini Horn - FW972M: The FW972M Mini Horn is a conventional audible signal appliance that operates on Maple Armors NAC, listed according to UL 464 and ULC-S525 for indoor use.

CONVENTIONAL SOLUTION

The FW752 is a normally-open initiating device made from durable materials and solid parts for long-lasting performance.

The FW962 Horn/Strobe is a multi-candela visual and/or audible signal device with light sources generated from white Light Emitting Diodes (LEDs), listed according to UL 1971, UL 1638, UL 464, ULC-S525, and ULC-S526 for indoor use.

The FW982 Fire Alarm Strobe is part of a family of multi-candela visual and/or audible signal appliances with light sources generated from white Light Emitting Diodes (LEDs), listed according to UL 1971, UL 1638, UL 464, ULC-S525, and ULC-S526 for indoor use.

The FW971 Horn is an audible signal appliance for indoor use.

The FW972M is a mini horn, small but mighty. Its low power consumption and the different settings available allow this sound device to fit a wide variety of applications.

The FW951 supports one notification circuit and allows Maple Armor devices to be easily used in retrofit applications. It allows FW962 / FW971 / FW972M / FW982 to be synchronized when connected to the OEM notification circuit. There are up to 64 Notification Appliance Circuits (NAC), networked, stand-alone, or interfacing with the FW951.

FW2921 series offers 6-inch, 8-inch, and 10-inch vibrating alarm bells, detailed information refers to its datasheet DOC#:DS3111-1.

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SYSTEM ACCESSORIES

The portable programmable device FW412 unit allows the user to read the addresses of the existing devices and can program the addresses of new devices.
The FW561-RI (without test switch) and FW561-RI-L (with test switch) Remote LED indicators for the FW811M mini-module, provide a visual indication of the device status connected.
The FW422, EOL Resistor Plate effortlessly supports the Class B supervision of its connected devices. With an elegant finish, it features displayed identification pictograms. The RFL has a 10K Ohm resistor, which is compatible with all Maple Armor monitoring and notification circuits.

ORDERING INFORMATION

Check ordering information from datasheets for each model, which can be easily located and downloaded from https://maplearmor.com/en/products/

TERMINOLOGY

The terminology list primarily explains concepts that may be unfamiliar to the general reader as they appear in this document. The glossary does not include concepts generally considered to be well-known by the readers.

-Class A, B, and X definitions refer to standard UL864 10th edition 56.1.

-DIP switch: A DIP switch, short for Dual In-line Package switch, is a manual electric switch in a standard dual in-line format.

-Lead-acid battery: A lead-acid battery is a type of rechargeable battery that is widely used in various applications, most notably in automobiles for starting, lighting, and ignition systems.

-Form-C contact: A Form-C relay is an electromechanical relay used in various electrical and electronic applications. It is distinguished by its contact configuration, which offers three contact forms: normally closed (NC), normally open (NO), and common (COM).

-CAN bus: A CAN bus (Controller Area Network bus) is a robust bus standard designed to allow microcontrollers and devices to communicate with each other in applications without a host.

-Annunciator: An annunciator for a Fire Alarm Control Panel (FACP) is a device or system component that provides visual and/or audible indications of the status of the fire alarm system. Annunciators are typically used in large or complex buildings where it's crucial to quickly and accurately identify the location and nature of an alarm or fault in the fire alarm system.

-Drift Compensation: Drift compensation in a smoke detector is a feature that adjusts the detector's sensitivity to maintain its original level of responsiveness over time despite gradual changes or "drift" in its environment. Dust accumulation, humidity, temperature changes, or aging of the components can cause this drift.

-Rate-of-rise: The rate-of-rise feature in a heat fire detector is a specific function designed to trigger an alarm when the temperature in an area increases rapidly, indicating a fast-growing fire.

-EOLR: End-of-line Resistor

-Audible Silence: Audible Silence is a feature that FW106 has to silence the horn by operating on the panel. Note that the silence feature could be disabled by specific ways of wiring when using the FW951 synchronization module, details refer to FW951 manual DOC-FW951-UM-R1.4.

-Dual-action: A dual-action manual call point in a Fire Alarm Control Panel (FACP) system is a type of manual fire alarm activation device that requires two separate actions to initiate an alarm signal.

-ADA: The Americans with Disabilities Act (ADA) is a comprehensive civil rights law in the United States. It was enacted in 1990, to protect individuals with disabilities against discrimination and ensure their full participation in society.

-NFPA72: NFPA 72, known as the National Fire Alarm and Signaling Code, is a widely adopted standard for the installation, testing, and maintenance of fire detection, fire alarm, and emergency communication systems. It was developed and published by the National Fire Protection Association (NFPA), an international nonprofit organization devoted to eliminating death, injury, property, and economic loss due to fire, electrical, and related hazards.

-UL1971: UL 1971 is a safety standard related explicitly to signaling devices for the hearing impaired, developed by Underwriters Laboratories (UL). This standard focuses on visible/audible alerting devices used as part of fire alarm systems to provide emergency notifications to individuals who are deaf or hard of hearing.

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-LED (Light Emitting Diode) and Xenon light sources: LED strobes offer advantages in energy efficiency, lifespan, and durability, while Xenon strobes are often recognized for their intense brightness and distinct flash characteristics. However, with the advancement of modern LED technology, the light intensity of LED light sources can now be equivalent to or surpass that of Xenon light sources. Users should focus on the light intensity specifications of the product rather than the specific type of light source used.

TIPS TO READERS

Stay Updated: Maple Armor continuously updates content to reflect changes in our products. To ensure you have the most current information, always request the latest version of this document from your sales representative or download it directly from our official website.

Informational Purpose: Please note that this document is intended to provide information and share our best knowledge about our products. It is not a part of any legal documentation and should not be treated as such.

Focus on System Architecture: This document primarily outlines the architecture of the fire alarm system. It does not encompass all details. For comprehensive information, we encourage you to visit the Maple Armor website to download the datasheets or user manuals for each specific model.

Not a Substitute for Professional Advice: This document is not intended to replace professional advice. Always consult with a qualified fire safety professional or engineer for specific needs and compliance with local fire safety regulations.

Usage Guidance: Follow the guidelines and instructions provided in this document for the optimal use and maintenance of the fire alarm system. Misuse or deviation from recommended practices may result in reduced effectiveness or compliance issues.

Safety First: Remember that the primary purpose of a fire alarm system is safety. Regular maintenance and testing are crucial to ensure the system functions correctly and provides the necessary protection.

Training and Resources: For those new to Maple Armor systems, or looking to deepen their understanding, we offer training sessions and additional resources. Contact us for more information on these educational opportunities.

Feedback and Queries: If you have any feedback or questions regarding the content of this document or our products, please feel free to contact Maple Armor customer support at information@maplearmor.cn. Your input is valuable to us and aids in continuous improvement

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