AUTOPULSE® IQ-636X INTELLIGENT ADDRESSABLE FIRE ALARM SYSTEM

Data/Specifications

GENERAL

The AUTOPULSE® IQ-636X intelligent Fire Alarm Control Panel is designed with modularity and for ease of system planning. The IQ-636X can be configured with just a few devices for small building applications, or for a large campus or high-rise application. Simply add additional peripheral equipment to suit the application.

FEATURES

- One, expandable to two, isolated intelligent Signaling Line Circuit (SLC) Style 4, 6 or 7.
- Up to 159 detectors (any mix of ion, photo, thermal, or multi-sensor) and 159 modules (N.O. manual stations, two-wire smoke, notification, or relay) per SLC. 318 devices per loop/636 total.
- Standard 80-character display or 640-character large display.
- 6.0 amp switch mode power supply with four Class A/B built-in Notification Appliance Circuits (ANSUL-NAC).
- Built-in Alarm, Trouble, and Supervisory relays.
- Up to 64 panel output circuits; circuits configurable online.
- VeriFire[™] Tools offline program option. Sort Maintenance Reports by compensation value (dirty detector), peak alarm value, or address.
- Autoprogramming and Walk Test reports.
- Optional universal 636-point DACT.
- 80-character remote annunciators (up to 32).
- EIA-485 annunciators, including custom graphics.
- Printer interface (80-column and 40-column printers).
- History file with 800-event capacity in nonvolatile memory, plus separate 200-event alarm-only file.
- Alarm Verification selection per point, with tally.
- Autoprogramming and Walk Test reports.
- Silence inhibit and Auto Silence timer options.
- March time/temporal/California two-stage coding/strobe synchronization.
- Field-programmable on panel or on PC, with VeriFire[™] Tools program check, compare, simulate.
- Full QWERTY keypad.
- Charger for up to 90 hours of standby power.
- Non-alarm points for lower priority functions.
- Remote ACK/Signal Silence/System Reset/Drill via monitor modules.
- Automatic time control functions, with holiday exceptions.
- Surface Mount Technology (SMT) electronics.
- Extensive, built-in transient protection.
- Powerful Boolean logic equations.
- IQ-636X-character display features:
 - Backlit, 640-character display.
 - Printer and CRT EIA-232 ports.
 - EIA-485 annunciator and terminal mode ports.
 - Alarm, Trouble, Supervisory, and Security relays.
- FlashScan® intelligent features:
 - Poll 318 devices in less than two seconds.
 - Activate up to 159 outputs in less than five seconds.
 - Multicolor LEDs blink device address during Walk Test.
 - Fully digital, high-precision protocol (U.S. Patent 5,539,389).
 - Manual sensitivity adjustment nine levels.



- Pre-alarm AWACS™(Advanced Warning Addressable Combustion Sensing) — nine levels.
- Day/Night automatic sensitivity adjustment.
- Sensitivity windows:
 - $\begin{array}{l} \mbox{lon}-0.5 \mbox{ to } 2.5\%/\mbox{foot obscuration.} \\ \mbox{Photo}-0.5 \mbox{ to } 2.35\%/\mbox{foot obscuration.} \\ \mbox{Laser (VIEW®)}-0.02 \mbox{ to } 2.0\%/\mbox{foot obscuration.} \\ \mbox{Acclimate}^{TM}-0.5 \mbox{ to } 2.35\%/\mbox{foot obscuration.} \\ \mbox{HARSH}^{TM}-0.5 \mbox{ to } 2.35\%/\mbox{foot obscuration.} \\ \end{array}$
- Drift compensation (U.S. Patent 5,764,142).
- Degraded mode in the unlikely event that the CPU microprocessor fails, FlashScane detectors revert to degraded operation and can activate the CPU ANSUL-NAC circuits and alarm relay. Each of the four built-in panel circuits includes a Disable/Enable switch for this feature.
- Multi-detector algorithm involves nearby detectors in alarm decision (U.S. Patent 5,627,515).
- Automatic detector sensitivity testing.
- Maintenance alert (two levels).
- Self-optimizing pre-alarm.
- VIEW® Very Intelligent Early Warning smoke detection technology:
 - Revolutionary spot laser design.
 - Advanced AWACS[™] algorithms differentiate between smoke and non-smoke signals (U.S. Patent 5,831,524).
 - Addressable operation pinpoints the fire location.
 - No moving parts to fail or filters to change.
 - Early warning performance comparable to the best aspiration systems at a fraction of the lifetime cost.

■ Acclimate[™] low-profile intelligent multi-sensor:

- Detector automatically adjusts sensitivity levels without operator intervention or programming. Sensitivity increases with heat.
- Microprocessor-based technology; combination photo and thermal technology.
- FlashScan® or classic mode compatible with NFS-640.
- Low-temperature warning signal at 40 °F \pm 5 °F (4.44 °C \pm 2.77 °C).

■ HARSH[™] Hostile-Area Smoke Head:

- Provides early warning of smoke detection in environment where traditional smoke detectors are not practical.
- The detector's filters remove particulates down to 30 microns in size.
- Intake fan draws air into photo chamber, while airborne particles and water mist are removed.
- Requires auxiliary 24 VDC from system or remote power supply.

FEATURES

Releasing features:

- Ten independent hazards.
- Sophisticated cross-zone (three options).
- Delay timer and Discharge timers (adjustable).
- Abort (four options).
- Low-pressure CO₂ listed.
- High-efficiency offline switching 3.0 amp power supply (6.0 A in alarm):
 - 120 or 220/240 VAC.
 - Displays battery current/voltage on panel (with display).

FLASHSCAN® EXCLUSIVE NEW WORLD-LEADING DETECTOR PROTOCOL

At the heart of the IQ-636X is a set of detection devices and device protocol — FlashScan® (U.S. Patent 5,539,389). FlashScan® is an all-digital protocol that gives superior precision and high noise immunity.

In addition to providing quick identification of an active input device, this new protocol can also activate many output devices in a fraction of the time required by competitive protocols. This high speed also allows the IQ-636X to have the largest device per loop capacity in the industry – 318 points – yet every input and output device is sampled in less than two seconds. The microprocessor-based FlashScan® detectors have bicolor LEDs that can be coded to provide diagnostic information, such as device address during Walk Test.

AWACSTH ADVANCED WARNING ADDRESSABLE COMBUSTION SENSING

AWACS[™] is a set of software algorithms that provide the IQ-636X with industry-leading smoke detection capability. These complex algorithms require many calculations on each reading of each detector, and are made possible by the very-high-speed microcomputer used by the IQ-636X.

Drift Compensation and Smoothing. Drift compensation allows the detector to retain its original ability to detect actual smoke, and resist false alarms, even as dirt accumulates. It reduces maintenance requirements by allowing the system to automatically perform the periodic sensitivity measurements required by NFPA 72. Smoothing filters are also provided by software to remove transient noise signals, such as those caused by electrical interference.

Maintenance Warnings. When the drift compensation performed for a detector reaches a certain level, the performance of the detector may be compromised, and special warnings are given. There are three warning levels: (1) Low Chamber value, usually indicative of a hardware problem in the detector; (2) Maintenance Alert, indicative of dust accumulation that is near but below the allowed limit; (3) Maintenance Urgent, indicative of dust accumulation above the allowed limit.

Sensitivity Adjust. Nine sensitivity levels are provided for alarm detection. These levels can be set manually, or can change automatically between day and night. Nine levels of pre-alarm sensitivity can also be selected, based on predetermined levels of alarm. Pre-alarm operation can be latching or self-restoring, and can be used to activate special control functions.

Self-Optimizing Pre-Alarm. Each detector may be set for "Self-Optimizing" pre-alarm. In this special mode, the detector "learns" its normal environment, measuring the peak analog readings over a long period of time, and setting the pre-alarm level just above these normal peaks.

Cooperating Multi-Detector Sensing. A patented feature of AWACS[™] is the ability of a smoke sensor to consider readings from nearby sensors in making alarm or pre-alarm decisions. Without statistical sacrifice in the ability to resist false alarms, it allows a sensor to increase its sensitivity to actual smoke by a factor of almost two to one.

FIELD PROGRAMMING OPTIONS

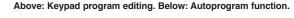
Autoprogram is a timesaving feature of the IQ-636X. It is a special software routine that allows the IQ-636X to "learn" what devices are physically connected and automatically load them in the program with default values for all parameters. Requiring less than one minute to run, this routine allows the user to have almost immediate fire protection in a new installation, even if only a portion of the detectors are installed.

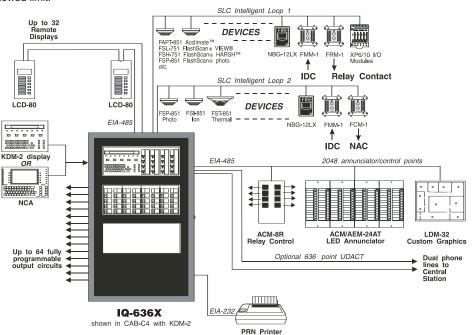
Keypad Program Edit (with KDM-2). The IQ-636X has the exclusive feature of program creation and editing capability from the front panel keypad, **while continuing to provide fire protection.** The architecture of the IQ-636X software is such that each point entry carries its own program, including control-by-event links to other points. This allows the program to be entered with independent per-point segments, while the IQ-636X simultaneously monitors other (already installed) points for alarm conditions.

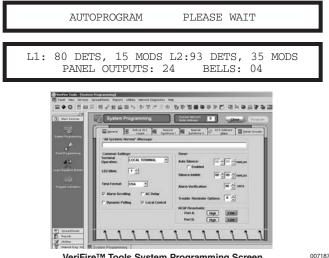
VeriFire™ Tools is an offline programming and test utility that can greatly reduce installation programming time, and increase confidence in the sitespecific software. It is Windows® based and provides technologically advanced capabilities to aid the installer. The installer may create the entire program for the IQ-636X in the comfort of the office, test it, store a backup file, then bring it to the site and download from a laptop into the panel.

ENTER PROG OR STAT PASSWORD, THEN ENTER (ESCAPE TO ABORT) *****

0=CLR 1=AUTO 2-POINT 3=PASSWD 4=MESSAGE 5=ZONES 6=SPL FUNCT 7=SYSTEM 8=CHECK PRG







VeriFire[™] Tools System Programming Screen

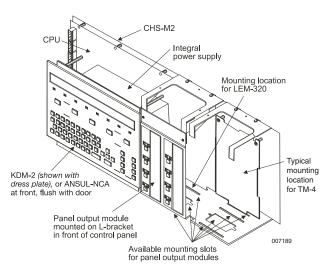


The following guidelines outline the IQ-636X's flexible system design.

Rows: The first row of equipment in the cabinet mounts in chassis CHS-M2. Mount the second, third, or fourth rows of equipment in chassis CHS-4MB (see IQ-636X Installation Manual regarding panel output modules) or CHS-4L.

Wiring: When designing the cabinet layout, consider separation of power-limited and non-power-limited wiring as discussed in the IQ-636X Installation Manual.

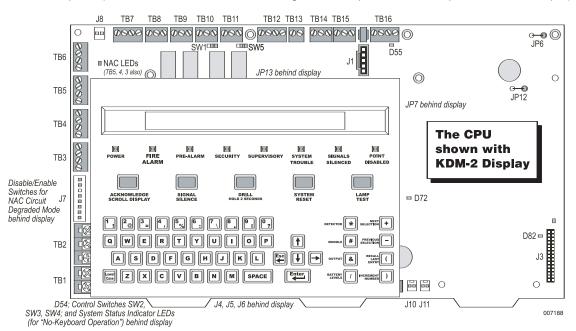
Positions: A chassis offers four basic side-by-side positions for components; the number of modules that can be mounted in each position depends on the chassis model and the size of the individual module. There are a variety of standoffs and hardware items available for different combinations and configurations of components.



Layers: The CHS-M2 accepts four layers of equipment, including the control panel. The CPU fills three positions (left to right) in the firstinstalled layer (the back of the chassis); its integral power supply occupies (the left) two positions in the next two layers; the optional display occupies (the left) two positions at the front, flush with the door. Panel output modules can be mounted in several layers with standoffs or an L-bracket as required. Some equipment, such as the ANSUL-NCA, may be door-mounted directly in front of the control panel. The ANSUL-NCA mounts onto the DP-DISP or ADP-4B. The ANSUL-NCA can be used as a primary display for the IQ-636X by directly connecting their network ports (required in Canadian stand-alone applications).

Expansion: Installing an LEM-320 Loop Expander Module adds a second SLC loop to the control panel. The LEM-320 is mounted onto the CPU, occupying the middle-right, second (back) slot on the chassis. Option boards can be mounted in front of the LEM-320 for ease of access, complete installation of those devices before mounting another laver.

TOP, LEFT to RIGHT: J8 Zone Code Input; TB7 DC Power (24 VDC power-limited, both resettable and non-resettable available); TB8 Alarm Relay; TB9 Trouble Relay; TB10 Supervisory Relay; TB11 Security Relay; SW1, SW5 Relay Switches; JP13 General Board Earth Fault Jumper; TB12 EIA-485 Terminal Mode (supervised); TB13 EIA-485 ACS Mode (supervised); TB14 EIA-232 Printer; TB15 EIA-232 PC Terminal; J1 NUP (network/service connection: power-limited, supervised); TB16 SLC #1 Connections (detectors, modules; supervised); D55 Main SLC Ground Fault LED; JP7 Charger Disable Jumper; JP12 200MA Jumper; JP6 Earth Fault Jumper (SLC #1).



LEFT SIDE, TOP to BOTTOM: TB6 NAC #1, TB5 NAC #2, TB4 NAC #3, TB3 NAC #4 (all NAC circuits power-limited and supervised, and each NAC TB has an NAC LED to the right of it); J7 Accessory Power; Disable/Enable Switches for Degraded Mode; TB2 AC Power Connection; TB1 Battery Connection (overcurrent protected). BOTTOM, LEFT to RIGHT: D54 AC On LED; System Status Indicator LEDs for "No-Keyboard Operation"; System Switches SW2 (Acknowledge), SW3 (Silence), SW4 (Reset) for "No-Keyboard Operation"; J4 KDM-2 Connector; J5, J6 Panel Circuits (Panel Output Modules, supervised); D72 General Board Ground Fault LED; J10 Security Tamper Switch; J11 Auxiliary Trouble Input; D82 AC Power LED; J3 LEM-320 Connector (SLC Loop #2).

SPECIFICATIONS

- Primary input power, CPU-IQ636X board: 120 VAC, 50/60 Hz, 3.0 amps. CPU-IQ-636X(E) board: 220/240 VAC, 50/60 Hz, 1.5 Amps.
- Total output 24 V power: 6.0 A in alarm.*
- Standard notification circuits (4): 2.5 A each.
- Four-wire detector power: 1.25 A.
- Non-resettable regulated power outputs: 1.25 A each.
- Battery charger range: 12 AH 55 AH. Use separate cabinet for batteries over 25 AH.
- Optional high-capacity (25 120 AH) battery charger: CHG120 (see CHG-120 data sheet).
- Float rate: 27.6 V.
- Temperature and humidity ranges: This system meets NFPA requirements for operation at 0 °C to 49 °C (32 °F to 120 °F); and at a relative humidity (noncondensing) of 85% at 30 °C (86 °F) per NFPA, and 93% ± 2% at 32 °C ± 2 °C (89.6 °F ± 1.1 °F) per ULC. 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 all peripherals be installed in an environment with a nominal room temperature of 15 °C to 27 °C (60 °F to 80 °F).

*Note: The power supply has a total of 6.0 Amps of available power. This is shared by all internal modules.

SYSTEM CAPACITY

- Intelligent Signaling Line Circuits . . . 1 expandable to 2
- Addressable monitor/control modules 159 per loop
- Programmable internal hardware and 68 output circuits (4 standard)

- ACS annunciators per CPU. . . . 32 address x 64 points

KDM-2 CONTROLS AND INDICATORS

Program Keypad: QWERTY type (keyboard layout).

8 LED indicators: Power; Fire Alarm; Pre-Alarm; Security; Supervisory; System Trouble; Signals Silenced; Points Disabled.

Membrane Switch Controls: Acknowledge/Scroll Display; Signal Silence; Drill; System Reset; Lamp Test.

LCD Display: 80 characters (2 x 40) with long-life LED backlight.

CONFIGURATION GUIDELINES

Display options are the KDM-2 or the ANSUL-NCA. Other options listed as follows:

KDM-2: 80-character backlit LCD display with QWERTY programming and control keypad. Required unless the ANSUL-NCA is used.

ANSUL-NCA: Network Control Annunciator, 640 characters. The NCA may be used as the primary display instead of the KDM-2. The NCA provides a 640 character display and mounts in the DP-DISP. **CPU-IQ636X:** Central processing unit with integral 3.0 amp (6.0 A in alarm) power supply for an IQ-636X system.

Includes CPU; one Signaling Line Circuit expandable to two; installation, programming and operating manuals. Order one per system or as necessary (up to 103 network nodes) on a network system.

CPU-IQ636X(E): Same as CPU-IQ636X but requires 220 VAC, 1.5 amp, (3.0 A in alarm).

CHS-M2: Mounting chassis for CPU. One required for each CPU.

DP-DISP: Dress panel for top row in cabinet with CPU installed.

BMP-1: Blank module for unused module positions.

SYSTEM MODELS

The IQ-636X includes the ability to communicate with up to eight conventional modules each with up to eight circuits. Any mix of notification or relay may be used. Choose any combination of up to eight output modules: ICM/ICE, CRM/CRE, DCM-4 or VCM/VCE. Panel modules mount on either: the two far-right positions of the DP-DISP (next to the primary display); or on any of the four positions on the CHS-4N chassis (CHS-4MN kit required). **Notes:** 1) These modules/expanders are NOT to be used for releasing applications. 2) For additional information on these panel output modules and expanders.

CHS-4MB: Expansion Chassis. Mounts up to four modules. Includes CHS-4N, MP-1B (Module Dress Panel), and Expander Ribbon Cable.

ICM-4RK: Notification Appliance Circuit Module, provides four Style Y (Class B) or Style Z (Class A) alarm Notification Appliance Circuits. Maximum signaling current is 3.0 amps per circuit or 6.0 amps per module, subject to power supply limitations (includes auxiliary power harness, ELRs and slide-in labels).Includes ON/OFF controls and ON/OFF LEDs.



ICE-4: (at right) Notification Appliance Circuit Expander, expands ICM-4 to provide a total of eight Style Y or Style Z alarm Notification Appliance Circuits. Circuit ratings are same as ICM-4. Note: maximum of one per ICM-4RK. May also be used to add four Notification Appliance Circuits to VCM4.



CRM-4RK: (at left) Control Relay Module, four Form-C relay contacts, rated at 5.0 A, 120 VAC or 28 VDC (resistive) per circuit. Includes manual ON/OFF controls and LEDs.

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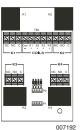


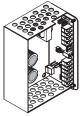
OTHER OPTION MODULES

CRE-4: (at right) Control Relay Expander, expands CRM-4 to provide a total of eight Form-C relay contacts. **Note:** maximum of one per CRM4RK. May also be connected to add four relays to ICM-4, TCM2, TCM-4, or VCM-4.



ARM-4: Auxiliary Relay Module, four Form-C relays controlled by a relay module (CRM-4 or CRE-4). N.O. contacts rated 20 amps; N.C. contacts rated 10 amps at 125 VAC and 30 VDC. **Note:** maximum of one for each CRM-4 or CRE4.





APS-6R: (at left) Auxiliary Power Supply (expander). Provides up to 6.0 amperes (4.0A continuous) of regulated power for compatible Notification appliance circuits. Includes battery input and transfer relay, and overcurrent protection. Mounts on one of four positions on a CHS-4L or CHS-4 chassis.

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ACPS-2406: 6.0 amp (5A continuous) addressable charger power supply.

FCPS-24S6/-24S8: Remote six amp and eight-amp power supplies with battery charger.

UZC-256: Programmable Universal Zone Coder provides positive non-interfering successive zone coding. Microprocessor-controlled, field-programmable from IBM®-compatible PCs (requires optional programming kit).

ACS: Annunciator Control Modules ACM-16AT, AEM16AT, ACM-32A, and AEM-32A.

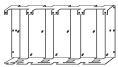
AFM: Annunciator Fixed Modules AFM-16A, AFM16AT, and AFM-32A. See AFM data sheet.

LDM: Lamp Driver Modules LDM-32, LDM-E32, and

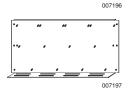
ACM-8R: Remote Relay Module with eight Form-C contacts. Can be located up to 6,000 ft. (1828.8 m) from panel on four wires.

RPT-485: Repeats EIA-485 over twisted pair or converts to fiber-optic medium.

CHS-4: (at right) Chassis for mounting up to four APS-6Rs.



CHS-4L: (at right) Low-profile four-position Chassis. Mounts two AA30 amplifiers or one AMGE and one AA30.



DP-1B: (at right) Blank Dress panel. Provides dead-front panel for unused tiers or to cover AA30, AA-120, or AMGE.



CAB-4 Series: The CAB-4 Series cabinets are fabricated from 16-gauge steel with unique full-front LEXAN®, reversesilk-screened for durability.

The cabinet assembly consists of two basic parts: a Backbox (SBB-_4), and a Locking Door (DR-_4) that may hinge right or left. Cabinets are available in four sizes, "A" through "D," with one to four tiers (two-tiered "B" shown at right). A trim ring option is available for semiflush mounting.



COMPATIBLE DEVICES, EIA-485 PORTS

ACS Series: Remote serial annunciator/control systems.

FDU-80: Remote LCD display, 80 characters, with LEDs.

ANSUL-LCD-80: Remote LCD display, 80 characters.

LCD-80TM: Remote LCD display, 80 characters, terminal mode.

LDM Series: Remote custom graphic driver modules.

ACM-8R: Remote relay module. 8 Form-C relays.

RPT-485 Series: Repeater, isolator and/or fiber-optic modem.

UDACT: Universal Digital Alarm Communicator Transmitter, 636 channel.

UZC-256: Zone Coder. Up to 256 programmable codes.

COMPATIBLE INTELLIGENT DEVICES

FSI-851: Low-profile FlashScan® ionization detector.

FSP-851: Low-profile FlashScan® photoelectric detector.

FSP-851T: Low-profile FlashScan® photoelectric detector with 135 $^\circ\text{F}$ (57 $^\circ\text{C})$ thermal.

FST-851: FlashScan® thermal detector 135 °F (57 °C).

FST-851R: FlashScan® thermal detector 135 °F (57 °C) with rate-of-rise.

FST-851H: FlashScan® 190 $^\circ\text{F}$ (88 $^\circ\text{C}) high-temperature thermal detector.$

FSD-751PL: Low-flow FlashScan® photo duct detector with housing.

 $\ensuremath{\mathsf{FSD-751RPL:}}\xspace$ Low-flow FlashScan® photo duct detector with relay and housing.

FAPT-851: FlashScan® Acclimate Plus™ low-profile multi-sensor detector.

FSH-751: FlashScan® HARSH[™] Hostile Area Smoke Head.

FSL-751: FlashScan® VIEW® laser photo detector.

B224RB: Low-profile relay base.

B224BI: Isolator base for low-profile detectors.

B710LP: Low-profile base. Standard U.S. style.

B501: European-style, 4" (10.16 cm) base.

FMM-1: FlashScan® monitor module.

FDM-1: FlashScan® dual monitor module.

FZM-1: FlashScan® two-wire detector monitor module.

FMM-101: FlashScan® miniature monitor module.

FCM-1: FlashScan® NAC control module.

FRM-1: FlashScan® relay module.

NBG-12LX: Manual fire alarm station, addressable.

ISO-X: Isolator module.

XP Series: Transponder.

XP6-C: FlashScan® six-circuit supervised control module.

XP6-MA: FlashScan® six-zone interface module; connects intelligent alarm system to two-wire conventional detection zone.

XP6-R: FlashScan® six-relay (Form-C) control module.

XP10-M: FlashScan® ten-input monitor module.

OTHER OPTIONS

LEM-320: Loop Expander Module. Expands each IQ-636X to two Signaling Line Circuits.

TM-4: Transmitter Module. Includes three reverse-polarity circuits and one municipal box circuit. Mounts in panel module position (single-address-style) or in CHS-M2 position.

ANSUL-TCD: ANSUL Tools CD-ROM. Contains programming software for the NFS-640, ANSUL-NCA, and XPIQ. Includes local panel connection cable. Programming PC requires a serial port connection.

ACM-24AT: ACS annunciator – up to 96 points of annunciation with Alarm or Active LED, Trouble LED, and switch per circuit. Active/Alarm LEDs can be programmed (by powered-up switch selection) by point to be red, green, or yellow; the Trouble LED is always yellow.

AEM-24AT: Same LED and switch capabilities as ACM-24AT, expands the ACM-24AT to 48, 72, or 96 points.

ACM-48A: ACS annunciator – up to 96 points of annunciation with Alarm or Active LED per circuit. Active/Alarm LEDs can be programmed (by powered-up switch selection) in groups of 24 to be red, green, or yellow. Expandable to 96 points with one AEM-48A.

AEM-48A: Same LED capabilities as ACM-48A, expands the ACM-48A to 96 points.

BAT Series: Batteries. IQ-636X utilizes two 12 volt, 12 to 55 AH batteries.

NFS-LBB: Battery Box (required for batteries over 25 AH).

AGENCY LISTINGS AND APPROVALS

These listings and approvals apply to the basic IQ-636X control panel. In some cases, certain modules may not be listed by certain approval agencies, or listing may be in process. Consult factory for latest listing status.

The IQ-636X complies with UL Standards 864 (Fire). It is designed to meet NFPA 72 Local, Auxiliary, Remote Station, and Proprietary (not applicable for FM) Fire System Requirements.

UL Listed
U.S. Coast Guard
ULC
MEA
FM Approved
California State Fire Marshall

ORDERING INFORMATION			
Part No.	Description	Shipping Wt.	
432785	120VAC IQ-636X Analog Addressable Alarm/Release Control Panel	47 lb. (21.3 kg)	
432792	240VAC IQ-636X(E) Analog Addressable Alarm/Release Control Panel	47 lb. (21.3 kg)	

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