Simplex

*UL, ULC, CSFM Listed; FM Approved**

# 4010ES Fire Control Units

Addressable Fire Detection with IDNAC, Fire Alarm Control Unit and Accessories

## Features

**Compatible with Simplex ES Net and 4120 fire alarm networks**

**Basic system includes:**

- Models available with Color ES Touch Screen Display or Monochrome 2 line x 40 Character Display
- Capacity for up to 1000 addressable IDNet points, up to 127 VESDA Air Aspiration Systems interface points and up to 254 addressable notification appliances with up to 2000 points of Annunciation; and up to 20 internal and external card addresses
- CPU assembly includes dedicated compact flash memory for on-site system information storage and convenient Ethernet service port access

**Includes an Enhanced System Supply (ESS) that provides power and battery charging (6 A output):**

- Dual 3 A on-board IDNAC SLCs (signaling line circuit) provide enhanced power delivery to addressable notification appliances
- With an IDNAC SLC, a constant 29 VDC source voltage is maintained during alarm, even during battery operation, allowing strobes to operate at higher voltage with lower current and ensuring a consistent current draw and voltage drop margin under both primary power and secondary battery standby
- Efficiencies include lower strobe currents, wiring distances up to two to three times farther than with conventional notification, support for more appliances per IDNAC SLC, ability to use smaller gauge wiring, all providing installation and maintenance savings with high assurance that appliances that operate during normal system testing will operate during worst case alarm conditions
- IDNAC SLCs are compatible with both TrueAlert ES and TrueAlert addressable notification appliances, and remote 4009 IDNAC Repeaters to extend power and wiring distance even farther and extends supervisory capacity by up to 139 additional unit loads or 3 A
- Addressable initiating device control is provided by on-board IDNet 2 dual loop SLCs that provide two electrically isolated channels that support TrueAlarm analog sensors and IDNet communications monitoring and control devices with an electrically isolated output channel allowing use with either shielded or unshielded, twisted or untwisted single pair wiring; and providing dual short circuit isolating output loops
- Battery charger for up to 110 Ah batteries (UL) or up to 50 Ah batteries (ULC) (33 Ah max in control unit cabinet for 1 Bay Systems, 50Ah for 2 Bay systems)
- 2 A programmable function auxiliary output
- Remote annunciator module support via RUI communications port, Class A or B operation
- 48 LED panel mount annunciation provides 40 Red and 8 Yellow pluggable LEDs(select models, meets ULC requirements), optional LED kits are available to change individual LED color to Green or Blue to meet specific site requirements



**Figure 1: 2-Bay Cabinet with 2x40 LCD Monochrome Display**



**Figure 2: 1-Bay Cabinet with 2x40 LCD Monochrome Display and LED Annunciation**



**Figure 3: 1-Bay Cabinet with 2x40 LCD Monochrome Display**

**Optional ESS mounted modules, door mounted modules, and other options include:**

- City Connect (with or without disconnect switches)
- Alarm Relay Module
- Battery brackets for seismic area protection

**Optional block space modules include:**

- Fire Alarm Network Interface Card for ES Net or 4120
- Peer-to-Peer Network Communications supports either Class B or Class X operation
- Modem or TSP/IP Physical Bridge Network Modules, Class B or Class X operation
- Ethernet connectivity options include ES Net Network Interface Card, Building Network Interface Card (BNIC), SafeLINC Internet Interface, and BACpac Ethernet Portal
- Dual Class A IDNAC Isolator (DCAI)
- Dual RS-232 Module (for printer or third party interface)
- VESDA Air Aspiration High Level Interface
- Serial DACT
- 8-Point Zone/Relay Module
- 4-Point Auxiliary Relay Module with Feedback
- Additional IDNet and MX Loop addressable channels

**Compatible with Simplex remotely located**

- 4098-9757 QuickConnect2 and legacy 4098-9710 QuickConnect TrueAlarm smoke sensors
- 4003EC Small Voice Control Units
- 4009 IDNet NAC Extenders and IDNAC Repeaters
- 4081 Series, 110 Ah Battery Chargers
- 4100-7400 Series Graphic Annunciators

* These products have been approved by the California State Fire Marshal (CSFM) pursuant to Section 13144.1 of the California Health and Safety Code. See CSFM Listing 7125-0026:0383 for allowable values and/or conditions concerning material presented in this document. At the time of publication only UL and ULC listings are applicable to ES Net network products. Additional listings may be applicable, contact your local Simplex® product supplier for the latest status. Listings and approvals under Simplex Time Recorder Co.



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- 4190 Series Fiber Modems and Physical Bridges
- 4606-9102 Remote LCD Annunciator, 4100-9400 Series Remote ES Touch Screen Displays, 4100-9400 Series Remote InfoAlarm Command Centers, and 4602 Series Status Command Units (SCU) and Remote Command Units (RCU) Annunciators
- IP communicator compatibility

## 4010ES Agency listings

- UL 864 - Control Units, System (UOJZ); Control Unit Accessories, System, Fire Alarm (UOXX); Control Units, Releasing Device Service (SYZV); Smoke Control System Equipment (UUKL)
- UL 1076 - Proprietary Alarm Units (APOU)
- UL 1730 - Smoke Detector Monitors and Accessories (UULH)
- UL 2017 - Emergency Alarm System Control Units, CO detection (FSZI); Process Equipment Management (QVAX)
- ULC-S527 - Control Units, System, Fire Alarm (UOJZC); Control Unit Accessories, System, Fire Alarm (UOXXC); Control Units, Releasing Device Service (SYZVC); Smoke Control System Equipment (UUKLC)
- ULC-S559 - Central Station Fire Alarm System Units (DAYRC)
- ULC/ORD-C1076 - Proprietary Burglar Alarm System Units (APOUC)
- ULC/ORD-C100 - Smoke Control System Equipment, UUKLC

## Introduction

**4010ES Series Fire Detection and Control Units**

4010ES Series Fire Detection and Control Units provide leading edge installation, operator, and service features for customer applications in the mid-range addressable fire alarm systems market. An onboard Ethernet port provides fast external system communications to expedite installation and service activity. Dedicated compact flash memory archiving provides secure on-site system information storage of electronic job configuration files.

**Modular design**

A variety of functional modules are available to meet specific system requirements. Selections allow control units to be configured for either Stand-Alone or Networked fire control operation.

## Mechanical Description

- Mounting box provides convenient stud markers for drywall thickness and nail-hole knockouts for quicker mounting
- Smooth box surfaces are provided for locally cutting conduit entrance holes exactly where required
- The hinged User Interface panel easily opens for internal access
- Modules are power-limited (except as noted)
- Doors include tempered glass inserts, boxes and doors are available in platinum or red
- Box and door/retainer assemblies are included with Basic Control Unit assemblies
- Cabinet assemblies are rated NEMA 1 and IP 30
- Cabinet assembly design is seismic tested and is certified to IBC and CBC standards as well as to ASCE 7 categories A through F, requires battery brackets as detailed on data sheet *S2081-0019*

## Control Unit Hardware

- The Master Controller and Enhanced System Supply (ESS) are mounted in the upper section of the 4010ES cabinet (refer to Cabinet One and Two Bay Loading Reference)
- 4010ES Block Space Option Cards mount to the left of the 4010ES ESS. In 2-bay cabinets block space option cards also mount below the 4010ES ESS.

**Other 4010ES Options:**

- The 4010ES City Connect module or the optional Alarm Relay module mount directly to the ESS. These options are mutually exclusive.
- **The battery compartment** is located in the bottom of the 4010ES cabinet. The cabinet allows for up to 33 Ah battery capacity for 1 bay systems, and 50 Ah for 2 bay systems. 50 Ah batteries also require the use of 4100-0650 battery shelf.

## Software Feature Summary

- TrueAlarm individual analog sensing with front panel information and selection access
- "Dirty" TrueAlarm sensor maintenance alerts, service and status reports including "almost dirty"
- TrueAlarm magnet test indication appears as distinct "test abnormal" message on display when in test mode
- TrueAlarm sensor peak value performance report
- "Install Mode" allows grouping of multiple troubles for uninstalled modules and devices into a single trouble condition (typical with future phased expansion); with future equipment and devices grouped into a single trouble, operators can more clearly identify events from the commissioned and occupied areas
- Module level ground fault searching assists installation and service by locating and isolating modules with grounded wiring
- "Recurring Trouble Filtering" allows the control unit to recognize, process, and log recurring intermittent troubles such as external wiring ground faults, but only sends a single outbound system trouble to avoid nuisance communications
- WALKTEST silent or audible system test performs an automatic self-resetting test cycle

## IDNet Addressable Device Control

The 4010ES with ESS provides an IDNet 2 addressable device SLC with two isolated loops that supervise wiring connections and the individual device communications status on the SLC. With 2-wire IDNet 2 SLCs, initiation, monitoring, and control devices such as manual fire alarm stations, TrueAlarm sensors, control relays, and sprinkler waterflow switches can communicate their identity and status and receive fire alarm system control. Additional addressable interface modules include circuit isolators, conventional IDC zone adapters, and interface to other system circuits such as fans, dampers, and elevator controls.

## IDNet 2 Addressable Device Operation

**Each addressable device** on the IDNet communication channel is continuously interrogated for status condition such as: normal, off-normal, alarm, supervisory, or trouble. Both Class B and Class A operation is available. Sophisticated poll and response communication techniques ensure supervision integrity and allow for "T-tapping" of the circuits for Class B operation. Devices with LEDs pulse the LED to indicate receipt of a communications poll and can be turned on steady from the control unit. With addressable devices, the location and status of the connected device is monitored, logged, and displayed on the operator interface LCD with each device having its own 40 character custom label for precise identification.

## TrueAlarm Addressable Sensor Operation

**Addressable initiating device communications** include operation of TrueAlarm smoke and temperature sensors. Smoke sensors transmit an output value based on their smoke chamber condition and the CPU maintains a current value, peak value, and an average value for each sensor. Status is determined by comparing the current sensor value to its average value. Tracking this average value as a continuously shifting reference point filters out environmental factors that cause shifts in sensitivity.



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**Table 1: TrueAlarm Addressable Sensor Reference**



**Figure 4: TrueAlarm Photo Sensor with Base**



**Figure 5: TrueAlarm Photo/ Heat Sensor in CO Base**

**Programmable sensitivity** of each sensor can be selected at the control unit for different levels of smoke obscuration (shown directly in percent) or for specific heat detection levels. To evaluate whether the sensitivity should be revised, the peak value is stored in memory and can be easily read (or downloaded as a report) and compared to the alarm threshold directly in percent.

**CO sensor bases** combine an electrolytic CO sensing module with a TrueAlarm analog sensor to provide a single multiple sensing assembly using one system address. The CO sensor can be enabled/disabled, and can be used in LED/Switch modes and custom control. Refer to data sheet *S4098-0052* for details.

**TrueAlarm heat sensors** can be selected for fixed temperature detection, with or without rate-of-rise detection. Utility temperature sensing is also available, typically to provide freeze warnings or alert to HVAC system problems. Readings can selected as either Fahrenheit or Celsius.

### TrueSense Early Fire Detection

Multi-sensor 4098-9754 provides photoelectric and heat sensor data using a single 4010ES IDNet address. The control unit evaluates smoke activity, heat activity, and their combination, to provide TrueSense early detection. For more details on this operation, refer to data sheet *S4098-0024* .

## Diagnostics and Default Device Type

### Sensor Status

TrueAlarm operation allows the control unit to automatically indicate when a sensor is almost dirty, dirty, and excessively dirty. The NFPA 72 requirement for a test of the sensitivity range of the sensors is fulfilled by the ability of TrueAlarm operation to maintain the sensitivity level of each sensor. CO Sensors track their 10 year active life status providing indicators to assist with service planning. Indicators occur at: 1 year, 6 months, and end of life.

### Modular TrueAlarm sensors

Modular TrueAlarm sensors use the same base and different sensor types smoke or heat sensor and can be easily interchanged to meet specific location requirements. This allows intentional sensor substitution during building construction when conditions are temporarily dusty. Instead of covering smoke sensors causing them to be disabled, heat sensors may be installed without reprogramming the control unit. The control unit will indicate an incorrect sensor type, but the heat sensor will operate at a default sensitivity to provide heat detection for building protection at that location.

## IDNet Device Wiring Reference

IDNet 2 SLCs support up to 250 addressable monitor and control points intermixed on the same pair of wires. The ESS IDNet 2 provides two electrically isolated SLCs, and IDNet 2+2 provides four isolated SLCs that are isolated from other system reference voltages to reduce common mode noise interaction with adjacent system wiring.

**Table 2: IDNet 2 and IDNet 2+2 SLC Wiring Specifications**

| Specification | | Rating |
|---|---|---|
| Maximum Distance from control unit per device load | 0 to 125 | 4000 ft (1219 m); 50 ohms |
| | 126-250 | 2500 ft (762 m); 35 ohms |
| Total wire length allowed with "T" taps for Class B wiring | | Up to 12,500 ft (3.8 km); 0.60 µF |

**Table 2: IDNet 2 and IDNet 2+2 SLC Wiring Specifications**

| Specification | Rating |
|---|---|
| Maximum capacitance between IDNet channels | 1 µF |
| Loading per device | 0.8 mA supv., 1 mA alarm; 2 mA per activated device LED |
| Wire type and connections | Shielded or unshielded, twisted or untwisted wire* |
| Connections | Terminal blocks for 18 to 12 AWG |

**Note:** Compatibility includes: IDNet communicating devices and TrueAlarm sensors including QuickConnect and QuickConnect2 sensors. See data sheet *S4090-0011* for additional reference.

**Note:** * Some applications may require shielded wiring. Review your system with your local Simplex product supplier.



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## IDNAC SLC Control of TrueAlert and TrueAlert ES Addressable Notification

### Addressable notification appliance communications

Addressable notification appliance communications include operation of TrueAlert and TrueAlert ES Visible only (V/O, strobe), Audible only (A/O, horn), Audible/Visible (A/V, horn/strobe), and strobes of Speaker/Visible (S/V) notification appliances. (S/V appliances require separate speaker wiring.) IDNAC SLC addressable communications allow each horn and strobe to be individually controlled using a single two-wire circuit, confirms the wiring connections to the individual notification appliance's electronic circuit, and confirms communications between each appliance and the fire alarm control unit. Addressable communications increases supervision integrity versus conventional notification systems by providing supervision beyond the circuit wiring to each individual appliance and by constantly verifying the ability of each appliance to communicate with the control unit.

### Individual Appliance Status and Settings

The fire alarm control unit monitors and records each addressable notification appliance status, type of appliance, and its configured appliance settings. A fault in any individual appliance automatically reports a trouble condition to the control unit.

### Virtual NACs provide control convenience

For control convenience, IDNAC notification appliances can be grouped into Virtual NACS (VNACs) for group control, grouping that can be made across SLCs, not defined by their wiring connection.

### Panel Control Convenience

Applicable operation settings for each appliance can be programmed without having to replace appliances or remove them from the wall or ceiling. An appliance's VNAC notification zone can be easily changed through programming without having to add additional circuits, conduit, and wiring. Audible and visible appliances for non-fire emergency communications notification can be programmed to operate separately on the same pair of wires as the fire alarm notification appliances. The result is lower installation, retrofit, and overall life-cycle cost of ownership compared with traditional conventional notification systems

### Installation, Retrofit, and Life-Cycle Cost Benefits

With each addressable appliance capable of being controlled separately on the same two-wire IDNAC SLC, installation time and expense for both retrofit and new construction can be significantly reduced. When Class B wiring is used, wiring can be "T-tapped" allowing more savings in distance, wire, conduit (size and utilization), and overall installation efficiency.

### Location Information, Diagnostics and Troubleshooting

Each addressable notification appliance has its own 40 character custom label to identify the location of the appliance and to aid in troubleshooting fault conditions. In conventional notification systems, conventional appliances are not capable of communicating with the control unit. Fault reporting on a conventional system is limited to the circuit wiring and the entire area (zone) covered by appliances on the notification appliance circuit (NAC) making it much more difficult and costly to locate and correct the source of a problem. Using the TrueAlert magnet test allows each appliance to individually identify its candela setting and address and to briefly operate if desired, and using the TrueAlert ES Appliance Self-Test feature provides detailed performance verification per appliance.

## TrueAlert ES Appliance Self-Test Operation

### On-Board Test Sensors

TrueAlert ES appliances are equipped with on-board sensors to detect strobe and/or horn output allowing efficient and unobtrusive Self-Testing. When Automatic Self-Test is initiated from the control unit, each appliance within the selected VNAC group will briefly operate and then report its Self-Test status to the control unit, all within several seconds. Silent Self-Test can be selected to test only visible appliance if desired. The control unit is in a trouble condition during testing and in the event of an alarm, Self-Test is automatically terminated. Additionally, Automatic Self-Test can be scheduled to occur at a convenient time on a regular basis.

**Automatic Self-Test results** are communicated to the control unit with a time and date stamp and are stored in memory. Results are viewable at the front panel display and printed reports can be generated from the control unit service port.

**Individual Self-Test** is selected from the control unit when individual appliances need to be observed to operate. Each appliance in the selected VNAC group will turn on its LED until individually activated by applying a magnet. After performing the individual test, the appliance LED turns off to indicate completion. Results are recorded the same as during the automatic test.

## IDNAC SLC Hardware Reference

The Enhanced System Supply provides two, 3 A IDNAC SLCs for control and power to TrueAlert ES and TrueAlert addressable notification appliances. Both power supplies incorporate an efficient switching design that provides a regulated output of 29 VDC, even during battery operation. With 29 VDC minimum output at the control unit, addressable notification SLCs can support wiring distances 2 to 3 times farther than available with conventional notification, or support more appliances per SLC, or work with smaller gauge wiring, or combinations of these benefits. The result is installation and maintenance savings with high assurance that appliances that operate during normal system testing will operate during worst case alarm conditions.

## IDNAC SLC Appliance Wiring Reference

**IDNAC SLC Capacity**: Up to 127 addresses and up to 139 unit loads (appliances are typically one unit load, devices such as Isolators may require more than one load, refer to individual device data sheet for specific information)

**Table 3: IDNAC SLC Appliance Wiring Reference**

| Recommended Wire Type | UTP, unshielded twisted pair |
|---|---|
| Maximum wire length allowed with “T-Taps” for Class B wiring, per SLC | 10,000 ft (3048 m) |
| Maximum wire length per SLC to any appliance | 4000 ft (1219 m) |
| Appliance Supervisory Current | 1 unit load = 0.8 mA per appliance |
| Wiring Connections | Terminals for 20 to 12 AWG (0.52 mm² to 3.31 mm²) |



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## Color ES Touch Screen Display

The Color ES Touch Screen Display interface offers intuitive operation similar to a tablet or smart phone. With a larger area format versus an individual text line display, more information is available at a glance, and minimal key presses are needed to access detailed information.

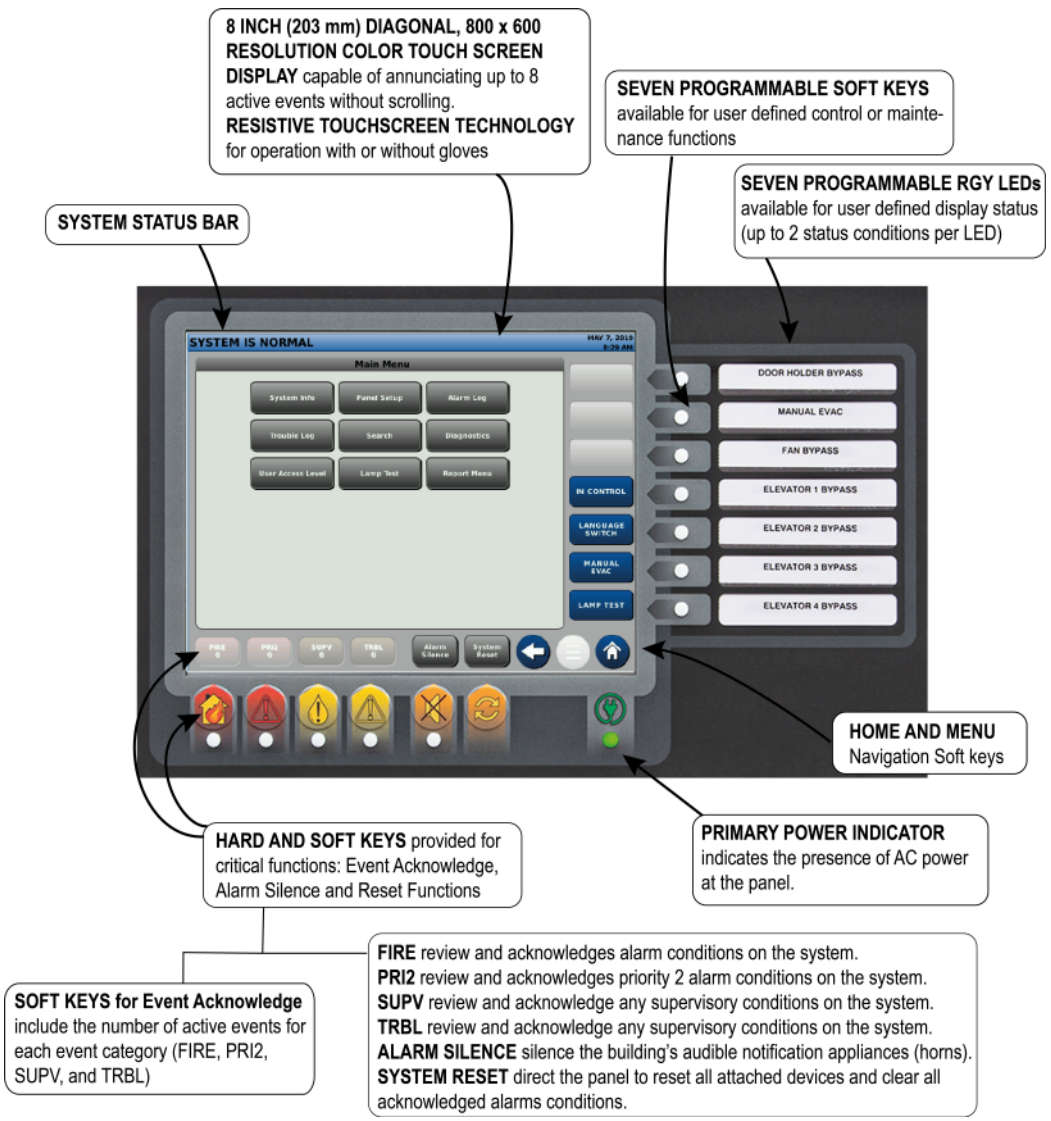



**Figure 6: ES Touch Screen Display Operator Interface**

## Features

**ES Touch Screen Displays provide customized operating experience**

- Event activity display choices include: First 8 Events; or First 7 Events with emphasis on Most Recent; or First 6 Events with emphasis on First and Most Recent (individually selectable for each event type)
- System reports are easily viewable; logs can be read with minimal scrolling
- Up to two languages are available per system, easily selected by programmable key press
- Information sent to Remote ES Touch Screen Displays can be vectored by point or zone
- Both Hard and Soft keys available for critical functions: Event Acknowledge, Alarm Silence, and Reset Functions
- Resistive touchscreen technology allows operation with or without gloves
- Seven programmable RGY LEDs available for user-defined display status (up to 2 status conditions per LED)
- Seven programmable Soft keys available for user-defined control or maintenance functions
- PRI2 Soft key label can be changed to CO to annunciate Carbon Monoxide detection status
- ES Touch Screen Display can be programmed to report individual points or groups of points as a single zone
- Supports ability to display a custom watermark background file of a company logo or other desired display content



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**Display properties**

- 8 inch (203 mm) diagonal, 800 x 600 resolution color touch screen display capable of annunciating up to 8 active events without scrolling
- Bright white LED backlighting provides efficient and long lasting illumination; backlight is dim in quiescent state, automatically switches to full power on touch or on event activity in system.

## Description

ES Touch Screen Displays for 4100ES fire alarm systems provide a large display with extended information content, dual language support including UTF-8 character languages, and an intuitive control key interface per the following:

- Up to 10 ES Touch Screen Displays are supported per 4100ES control panel; able to allow one ES Touch Screen Display to take-control and to designate access levels for interfaces not in-control; programmable LEDs can be assigned to in-control status indications
- Menu-driven format conveniently prompts operators for the next action required
- Direct point callup displays individual points alphabetically and then homes in on the logical choice as more point information is entered
- Event categories are color coded for quick visual representation; Red for Alarm and Priority 2 Events; Yellow for Supervisory and Trouble events
- Date formats are either MM/DD/YY or DD/MM/YY
- Time formats are either 24 hour or 12 hour with AM/PM
- System Normal screen supports a color background (watermark) for company name, company logo, or other desired display content



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## Example Display Screens

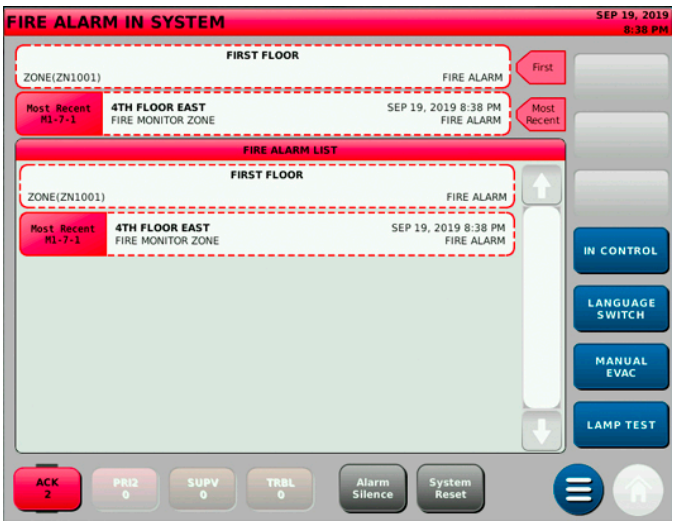



Figure 7: First and Most Recent Alarm Display

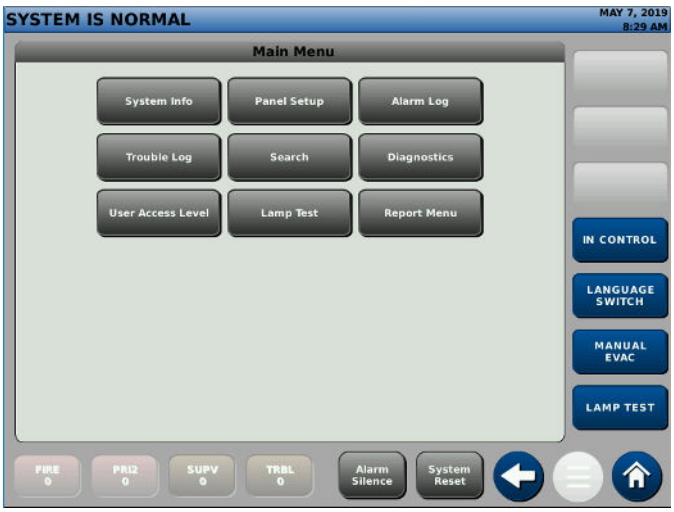



Figure 8: Main Menu




Figure 9: First Eight Active Trouble Events List

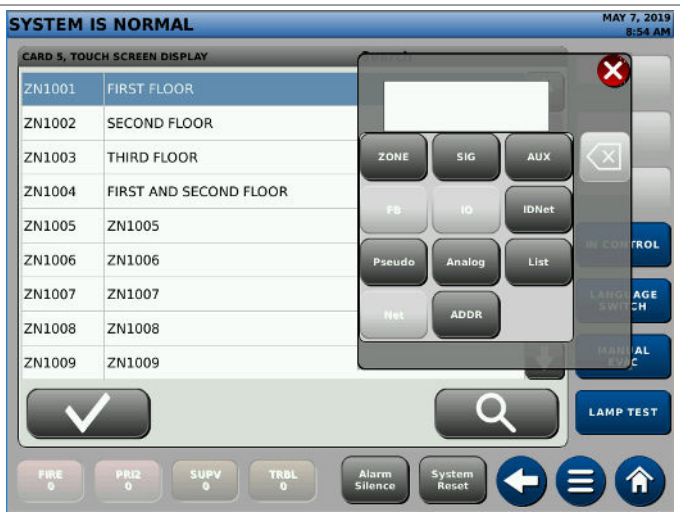



Figure 10: Direct Point Callup

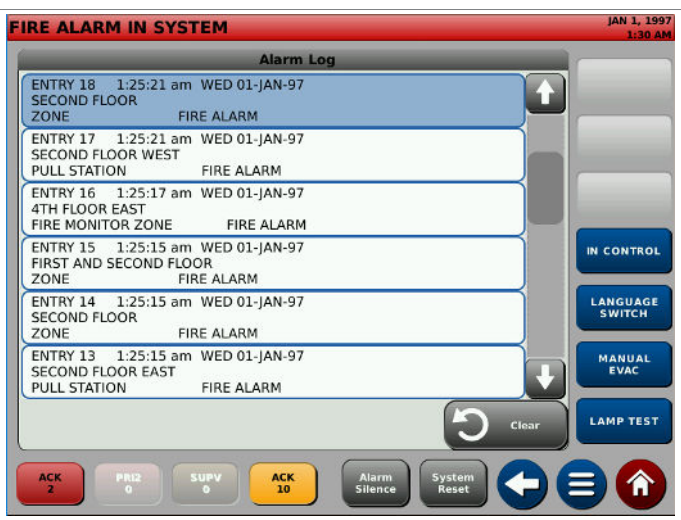



Figure 11: Alarm History Log

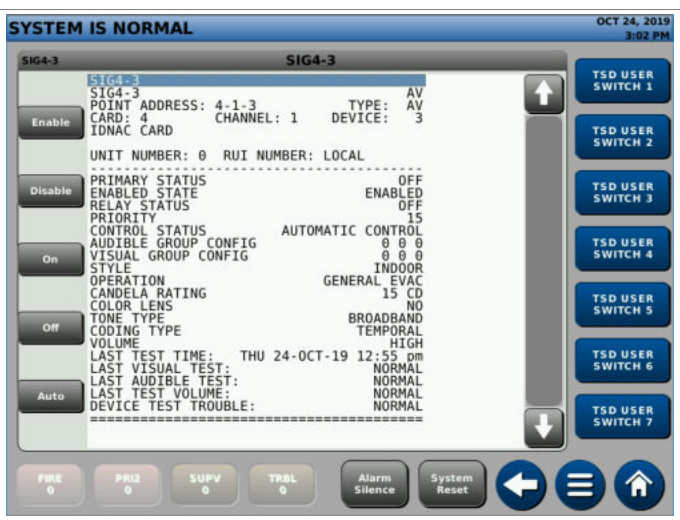



Figure 12: Detailed Point Status Screen for TrueAlert ES Appliance



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## Specifications

**Table 4: General ES Touch Screen Display Specifications**

| Specification | Rating |
|---|---|
| Resolution | 800 x 600 Pixels (RGB) |
| Size / Type | 8 inch (203 mm) Diagonal / Color Touch Screen |
| Touch Screen Technology | Resistive |
| Event Display | Up to 8 Events without scrolling |
| Normal Screen Custom Watermark File Format | 680 x 484 Pixels: BMP, JPG, TIFF, GIF or PNG file format |
| Environmental | Operating Temperature: 32°F to 120°F (0°C to 49°C) |
| | Operating Humidity: Up to 93% RH, non-condensing @ 90°F (32°C) maximum |

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## Operator Interface with Monochrome 2x40 Display Features

- Convenient and extensive operator information is provided using a logical, menu-driven display:
- Multiple automatic and manual diagnostics for maintenance reduction
- Convenient PC programmer label editing
- Password access control
- Alarm and Trouble History Logs (up to 2000 total events) are available for viewing on the LCD screen, printing on a connected printer, or downloading to a service computer

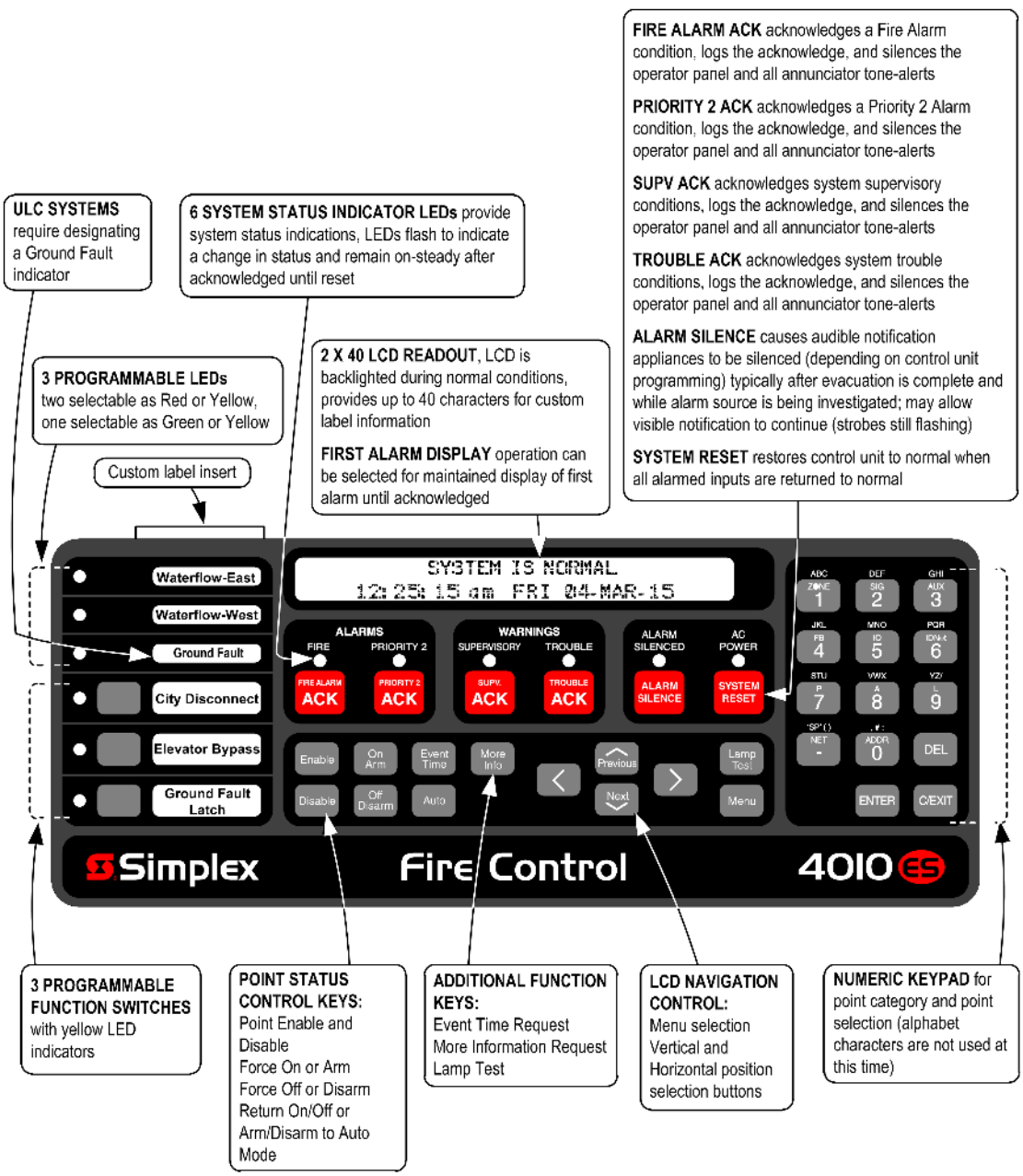



**Figure 13: Operator Interface Features**

## Master Controller (CPU)

- The 4010ES Master Controller includes dedicated compact flash Mass Storage memory for on-site system information storage and convenient Ethernet service port access
- Convenient front panel accessed Ethernet port for quick and easy download of site-specific programming and firmware enhancements. Firmware enhancements are made via software downloads to the on-board flash memory
- Every downloaded job is automatically stored to Compact flash without overwriting earlier versions providing a means for recovering previous configurations



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- Downtime is reduced because the system stays running during download
- Modifications can be uploaded as well as downloaded for greater service flexibility
- Mass Storage allows job specific files to be stored in the control unit such as test and inspection reports, record drawings, specifications, and more
- RUI (Remote Unit Interface) communications port supports either Class B or Class A operation for remote annunciation equipment

## Basic Control Unit Description

**4010ES Control Units with ESS include:**

- An Operator Interface, Master Controller with Compact Flash, IDNet 2 addressable device SLCs configurable with short circuit isolating loop outputs for Class B or Class A operation, and 6 A Enhanced System Supply (ESS)
- RUI Class B or Class A communications port for remote annunciation devices
- Support for up to 20 internal and external card addresses
- Other standard features may be provided depending on model (see model selection below for additional details on specific models)
- Cabinet and door

**6 A Enhanced System Supply details:**

- Two, 3 A Class B IDNAC SLCs for up to 254 addressable notification appliances; Class A operation is available using the 4010-9930 Dual Class A IDNAC Isolator (DCAI) module
- Up to 2 A of auxiliary power
- 110 Ah (UL)/50 Ah (ULC) battery charger (33 Ah max in 1 bay cabinet, 50 Ah max with 4100-0650 battery shelf in two bay control cabinet)
- Low Battery Voltage Cutout is selectable when required (required for ULC listing applications)
- 2 A Auxiliary Output (AUX/SNAC) can be selected either as s resettable auxiliary power of 2 A @ 24 VDC, or selected to be a simple NAC (SNAC) for non synchronous 24 VDC reverse polarity NAC operation

**8-Point Zone/Relay Module Details**

- **Select as IDC or Relay**; configure up to eight Class B IDCs, or up to four Class A IDCs; or up to eight Relay outputs rated 2 A resistive @ 30 VDC (N.O. or N.C.); or combinations of IDCs and Relays; each zone is separately configurable as an IDC or Relay output
- **IDC Support**: each IDC supports up to 30, two-wire devices. Zone relay modules may be powered directly from the control unit power supply or through the optional 25 VDC regulator module where required for 2- wire detector compatibility (refer to 2-Wire Detector Compatibility document 579-832 for additional details).
- **IDC EOL resistor values are selectable as**: 3.3 kΩ, 2 kΩ, 2.2 kΩ, 3.4 kΩ, 3.9 kΩ, 4.7 kΩ, 5.1 kΩ, 5.6 kΩ, 6.34/6.8 kΩ, and 3.6 kΩ + 1.1 kΩ; see instructions for more details

## Basic Control Unit Model Selection – 1 Bay Control Unit

**Table 5: 1 Bay Control Unit Model Selection**

| Model* | Color | Language & Voltage | Listings | Features | Supv. Current | Alarm Current | Available Option Blocks |
|---|---|---|---|---|---|---|---|
| 4010-9601 | Red | English 120 VAC | UL, CSFM, FM | Basic 1- Bay Control Unit with **2x40 LCD Operator Interface**, 6 A ESS/battery charger, (1) Two-loop Isolated IDNet 2 Communications Channel, Class A or Class B, with support for up to 250 addressable IDNet points; and two, 3 A, Class B, IDNAC SLCs with support for up to 254 addressable notification appliances | 336 mA | 540 mA | Three 4 in. x 5 in. blocks |
| 4010-9602<br>4010-9602-BA | Platinum | | | | | | |
| 4010-9701 | Red | English 220 to 240 VAC | UL, FM | | | | |
| 4010-9702 | Platinum | | | | | | |
| 4010-9603 | Red | English 120 VAC | UL, ULC, CSFM, FM | Same features as above with 48 LED annunciation; alarm current includes 24 annunciator LEDs activated | 356 mA | 605 mA | |
| 4010-9604 | Platinum | | | | | | |

**Note:** Model numbers ending in BA are assembled in the USA.



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**Current Notes:**

1. Basic control unit current does not subtract from the 6 A output rating.
2. Supervisory and alarm current specifications are for determining battery standby requirements.
3. Current specifications include an active RUI channel.
4. IDNet channel device current is not included, see Block Space Option Card Selection for details.
5. IDNAC channel notification appliance current is not included, calculate separately per connected devices.

## Basic Control Unit Model Selection - 2 Bay Control Units

**Note:** Supervisory and Alarm current specifications are for determining battery standby requirements. Current specifications include an active RUI channel. Models with IDNet channels include 20 IDNet device LEDs activated in alarm per channel.

**Table 6: 2 Bay Control Units Model Selection**

| Model | Color | Language & Voltage | Listings | Features | Supv. Current | Alarm Current | Available Option Blocks |
|---|---|---|---|---|---|---|---|
| 4010-9621<br>4010-9621BA | Red | English, 120 VAC | UL, CSFM, FM | Basic control unit with **2x40 LCD Operator Interface**, 6 A ESS/battery charger, (1) Two-loop Isolated IDNet 2 Communications Channel and (1) Four-loop Isolated IDNet 2+2 Communications Module, Class A or Class B, with support for up to 500 addressable IDNet points; and two, 3 A, Class B, IDNAC SLCs with support for up to 254 addressable notification appliances | 411 mA | 655 mA | Ten 4 in. x 5 in. blocks |
| 4010-9622<br>4010-9622BA | Platinum | | | | | | |
| 4010-9721<br>4010-9721BA | Red | English, 220 to 240 VAC | UL, FM | | | | |
| 4010-9722<br>4010-9722BA | Platinum | | | | | | |
| 4010-9609 | Red | English, 120 VAC | UL, ULC CSFM, FM | Same features as above with 48 LED annunciation; alarm current includes 24 annunciator LEDs activated | 431 mA | 720 mA | |
| 4010-9610 | Platinum | | | | | | |
| 4010-9623<br>4010-9623BA | Red | | UL, CSFM, FM | Basic control unit with **InfoAlarm Operator Interface**, 6 A ESS/battery charger, (1) Two-loop Isolated IDNet 2 Communications Channel and (1) Four-loop Isolated IDNet 2+2 Communications Module, and two, 3 A, Class B, IDNAC SLCs with support for up to 254 addressable notification appliances | 493 mA | 721 mA | |
| 4010-9624<br>4010-9624BA | Platinum | | | | | | |
| 4010-9711<br>4010-9711BA | Red | English, 220 to 240 VAC | UL, FM | | | | |
| 4010-9712<br>4010-9712BA | Platinum | | | | | | |
| 4010-9633 | Red | 120 VAC (multiple languages available, contact your local Simplex product supplier for details) | UL/ULC | Basic control unit with **ES Touch Screen Operator Interface**, 6 A ESS/battery charger, (1) Two-loop Isolated IDNet 2 Communications Channel and (1) Four-loop Isolated IDNet 2+2 Communications Module, Class A or Class B, with support for up to 500 addressable IDNet points; and two, 3 A, Class B, IDNAC SLCs with support for up to 254 addressable notification appliances | 506 mA | 771 mA | |
| 4010-9731 | Red | 240 VAC (multiple languages available, contact your local Simplex dealer for details | UL, ULC | Basic control unit with **ES Touch Screen Operator Interface**, 6 A ESS/battery charger, (1) Two-loop Isolated IDNet 2 Communications Channel and (1) Four-loop Isolated IDNet 2+2 Communications Module, Class A or Class B, with support for up to 500 addressable IDNet points; and two, 3 A, Class B, IDNAC SLCs with support for up to 254 addressable notification appliances | 506 mA | 771 mA | |

**Note:** Model numbers ending in BA are assembled in the USA.

**Current Notes:**

1. Basic control unit current does not subtract from the 6 A output rating.
2. Supervisory and alarm current specifications are for determining battery standby requirements.



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3. Current specifications include an active RUI channel.
4. IDNet channel device current is not included, see Block Space Option Card Selection for details.
5. IDNAC channel notification appliance current is not included. Control unit current assumes 20 LEDs activated in alarm on each IDNet channel.

## Addressable Device Load Specifications for Battery Standby

| Addressable Channel Loading Reference | Device Load | Supervisory Current | Alarm Current |
|---|---|---|---|
| IDNet 2 and IDNet 2+2 Communications Channel Output | for every 50 Devices | 40 mA | 1 mA per device in alarm; 2 mA per activated device LED |
| IDNAC Communications Channel Output | for every 50 Appliances | 40 mA | Calculate per selected appliances |



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## Block Space Option Card Selection

Maximum block option module quantities may require 2 bay cabinets, 1 bay cabinets are limited to three option block spaces total. See Cabinet One and Two Bay Loading Reference for option module availability. Supervisory and Alarm current specifications are for determining battery standby requirements.

**Table 7: Single Block Option Modules**

| Model | Features | | Supervisory Current | Alarm Current | Option Block Usage |
|---|---|---|---|---|---|
| 4010-9912 | Serial DACT, includes two 2080-9047 cables, 14 ft (4.3 m) long, RJ45 plug and spade lugs | | 30 mA | 40 mA | 1 block (must mount in top bay, block D) |
| 4010-9908 | 4 Point Aux Relay Module | | 15 mA | 60 mA | 1 block (11 maximum) |
| 4010-9916 | Voltage Regulator Module, 22.8 to 26.4 VDC (25 VDC nominal); isolated and resettable output; includes earth detection circuit and trouble relay for status monitoring | | 3 A maximum with 2.5 A load | 4.9 A maximum with 4 A load | 1 block (1 maximum) |
| 4010-9918 | Dual RS-232 Module | | 60 mA | | 1 block (3 maximum) |
| 4010-9930 | Dual Class A IDNAC Isolator (DCAI); converts a single Class B IDNAC SLC input to two Class A or two Class B SLC outputs; provides short circuit isolation between each Class A or B output circuit; requires up to two IDNAC addresses; the total current remains controlled by the Class B input source SLC at 3 A maximum; select up to two per IDNAC SLC; each isolated loop supports up to 30 device addresses<br>**Note:** up to 30 additional device addresses may be installed between each 4905-9929 TrueAlert Addressable Isolator+ Module, not to exceed the maximum address and unit loading specifications for the IDNAC channel | | 12.7 mA | 25 mA | A 1 block, (4 maximum, 2 per IDNAC channel), 1 can be mounted on the ESS |
| 4010-9915 | BACpac Ethernet Portal Module; requires 4010-9918 RS-232 Module (no address required) | | 123 mA | 123 mA | 1 block (3 maximum) |
| 4010-9901 | VESDA HLI | | 60 mA | | 1 block (1 maximum) |
| 4010-9936 | 4 DPDT Auxiliary Relays with Feedback, contacts rated for 2A Resistive/0.5A Inductive @ 30 VDC or 0.5A Resistive/0.5A Inductive @ 120VAC (see 579-1306 installation instructions for additional information) | | 18 mA | 65 mA | 1 block (11 Maximum) |
| 4010-9935 | 8 point zone/relay 4 in. x 5 in. flat module. Supports eight Class B or four Class A IDCs. Mounts in any open block in a master controller or expansion bay. Alarm current shown is for eight Class B IDCs using 3.3K end-of-line-resistors with four IDCs in alarm and four IDCs in standby. Standby current shown is for all eight IDCs in standby. Detector current is added separately. Refer to 579-1236 Zone/Relay Module Installation Instructions for more information | | 83 mA | 295 mA | 1 block (11 maximum) |
| 4010-6305 | 25V regulator harness for 8 point zone/relay module. One required for each 8 point zone/relay module to be powered by the 4010-9916 25V regulator module. A maximum quantity of five 8 point zone/relay modules can be powered from the 4010-9916 25V regulator module. | | N/A | | |
| 4010-9929 | **IDNet 2+2 Module**, 250 point capacity; electrically isolated output with **four** short circuit isolating Class B or Class A output loops; alarm currents for 50 and above devices includes 20 device LEDs in alarm; see above for individual device currents | No device | 50 mA | 60 mA | 1 block (3 maximum) |
| | | 50 devices | 90 mA | 150 mA | |
| | | 125 devices | 150 mA | 225 mA | |
| | | 250 devices | 250 mA | 350 mA | |

**Note:** For single block option modules, select three maximum if no dual block module is selected; select one maximum if a dual block module or the module bracket is selected.



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**Table 8: Dual Vertical Block (Flat) Modules****

| Model | Features | Option Block Usage | Supervisory Current | Alarm Current |
|---|---|---|---|---|
| 4010-9928 | **For 1-Bay Units Only:** Dual Vertical Block Card Mounting Kit, allows selecting two, dual Vertical Block (flat) modules from the list below; mounts at right angle to chassis (note block usage details) | Two vertical blocks (must mount in blocks A & B) | N/A | |
| 4010-9923 * | SafeLINC Internet Interface | Two vertical blocks (one maximum) | 115 mA | |

**Note:**

*UL, ULC, and CSFM listed.

** For details on other dual vertical block network options refer to data sheets S4100-0029, S4100-0056, S4100-0057, S4100-0076, and S4100-0061.

## Additional Control Unit Option Selection

**Table 9: Additional Control Unit Option Selection when block space is not used**

| Model | Features | Supervisory Current | Alarm Current | Mounting Requirements |
|---|---|---|---|---|
| 4010-9909 | City Connect Module with disconnect switches | 20 mA | 36 mA | Select one maximum, mounts on ESS |
| 4010-9910 | City Connect Module | | | |
| 4010-9911 | Alarm Relay Module | 15 mA | 37 mA | |
| 4100-5128 | Battery Distribution Terminal Block, mounts to side of box, required when battery connection leaves the 4010ES box (also used in the 4100ES fire alarm control unit) | | | |

## Miscellaneous Accessories

**Table 10: LED Kits (LEDs are pluggable, use to change color for local application requirements)**

| Model | Description |
|---|---|
| 4100-9843 | 8 Yellow LED Kit |
| 4100-9844 | 8 Green LED Kit |
| 4100-9845 | 8 Red LED Kit |
| 4100-9855 | 8 Blue LED Kit |
| 4100-0650 | Battery Shelf, required for 50 Ah batteries (2 Bay cabinets only) |
| 4010-9831 | French Applique Kit for ES Touch Screen Display Panels (order separately as required for Canadian French panels) |

**Table 11: End User and Factory Programming Tools**

| Model | Description |
|---|---|
| 4100-8802 | End User Programming Unit Software |
| 4100-0292 | Custom Label Editing (USB Dongle) |
| 4100-0295 | Port Vectoring Setup and Control (USB Dongle) |
| 4100-0296 | Access Level/Passcode Editing (USB Dongle) |
| 4100-0298 | WalkTest Configuration Setup and Control (USB Dongle) |
| 4010-0831 | Custom Labels and Programming (requires 4010-8810) |
| 4010-8810 | Factory Programming (select) |

## Network Interface and Network Media Card Product Selection

4010ES fire alarm control units are compatible with Simplex ES Net network or 4120 network fire alarm products.

- Refer to datasheet *S4100-0076* for additional information on compatible ES Net fire alarm products.
- Refer to datasheet *S4100-0056* for additional information on compatible 4120 network fire alarm products.
- Refer to datasheet *S4100-0061* for additional information on the Building Network Interface Card.



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## Cabinet One and Two Bay Loading Reference

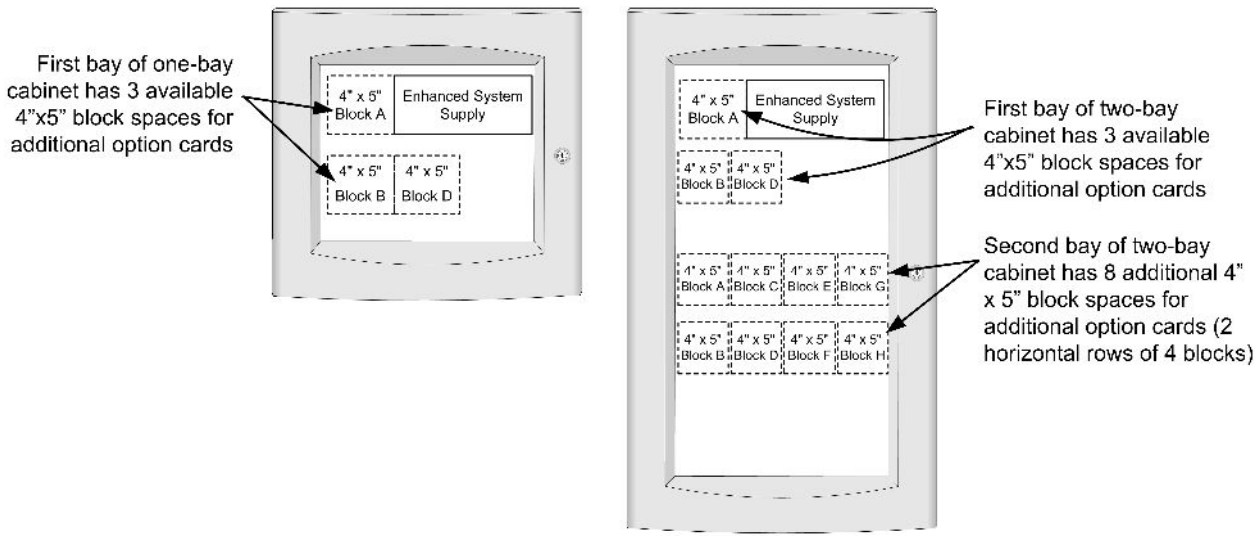



**Figure 14: Cabinet One and Two Bay Loading Reference**

**Note:** Some spaces may be used by basic control unit features.

## Cabinet Dimension Reference

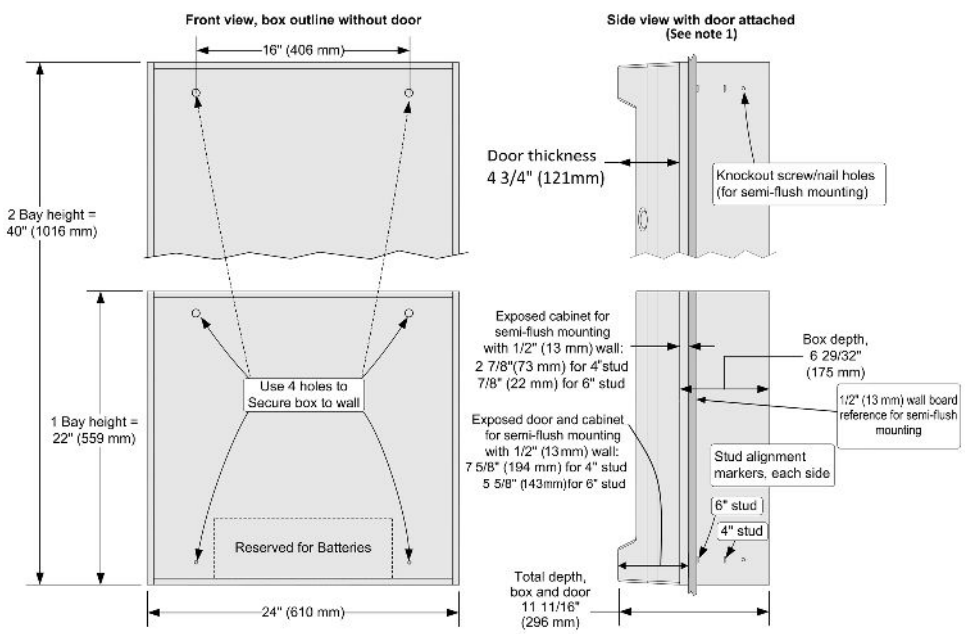



**Figure 15: Cabinet dimension reference**

**Note:**

1. Side View dimensions are shown with minimal cabinet and door protrusion from the exterior wall. For 6 in. stud construction with minimum protrusion shown, the door will open 90 degrees. To allow the door to open 180 degrees, the exposed cabinet dimension from the exterior wall must be a minimum of 3 in. (76 mm) for both 4 in. and 6 in. stud construction.



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## General Specifications

**Table 12: 4010ES General Specifications**

| Specification | | Rating | |
|---|---|---|---|
| **AC Input Current** | 120 VAC Models | 4 A maximum, 120 VAC @ 60 Hz nominal | |
| **AC Input Current** | 220 to 240 VAC Models | 2 A maximum, 220/230/240 VAC @ 50 or 60 Hz | |
| **ESS Power Supply Output Ratings** | Power Supply Output Rating | 6 A output for "Special Application" appliances<br>**Note:** The 6 A output rating of the ESS was determined such that optional module currents, and external device and appliance currents can be directly added together, not to exceed 6 A total. | Output switches to battery backup during mains AC failure or brownout conditions |
| | IDNAC SLC Ratings | 3 A, regulated 29 VDC during Alarm, 127 addresses, 139 unit loads; DC-DC converter circuit is >92% efficient over operating range | |
| | IDNAC SLC Wiring | Output terminals are rated for 20 to 12 AWG with duplicate output terminals rated for two wires each, allowing up to four Class B branch circuit T-taps to be made in the cabinet; additional T-taps may be made in external wiring junction cabinets or boxes | |
| | Auxiliary Power Tap | 2 A maximum, rated 19.1 to 31.1 VDC | |
| **Compatible Special Application Appliances** | | Simplex TrueAlert ES and TrueAlert addressable notification appliances; contact your Simplex product representative for compatible appliances | |
| **Battery Charger Rating (sealed lead acid batteries)** | Battery capacity range | UL listed for battery charging of 6.2 Ah up to 110 Ah; ULC listed for charging up to 50 Ah batteries; For 1 bay cabinets, battery capacity above 33 Ah requires a separate cabinet. For 2 bay cabinets, battery capacity above 50 Ah requires a separate cabinet. See data sheet S2081-0012 for further details. | |
| | Charger characteristics and performance | Temperature compensated, dual rate, recharges depleted batteries within 48 hours per UL Standard 864; to 70% capacity in 12 hours per ULC Standard S527 | |
| **Environmental** | Operating Temperature | 32°F to 120°F (0°C to 49°C) | |
| | Operating Humidity | Up to 93% RH, non-condensing @ 90°F (32°C) maximum | |
| **Additional Technical Reference** | Installation Instructions | 579-1150 | |
| | Operating Instructions | 579-969 | |

## 4010ES Card Address Allocation

The 4010ES has a maximum Internal and External Card Address Limit of 20 Card Addresses. Use the Table below to calculate 4010ES card address allocation.

**INSTRUCTIONS:** Below is a list of 4010ES equipment and the quantity of card addresses they consume

1. For the applicable control unit, write in the Card Address Consumption value in the Card Address Allocation column.

**Note:** Only select one control unit

2. For the option cards to be installed on the 4010ES, write in the Card Address Consumption value in the Card Address Allocation column.
3. Total the Card Address Allocation column (total must not exceed 20).

| Model | Description | Card Address Consumption | Card Address Allocation | Notes |
|---|---|---|---|---|
| **Control Units (Select One)** | | | | |
| 4010-9601<br>4010-9602<br>4010-9701<br>4010-9702 | 2x40 Display, (1) IDNet 2 Communications Channel, Single Bay Box | 2 | | |
| 4010-9603<br>4010-9604 | 2x40 Display, (1) IDNet 2 Communications Channel; 48 Pluggable LED Module, Single Bay Box | 3 | | |
| 4010-9609<br>4010-9610 | 2x40 Display, (1) IDNet 2 and (1) IDNet 2+2 Communications Channel, 48 Pluggable LED Module, Two-Bay Box | 4 | | |
| 4010-9621<br>4010-9621BA | 2x40 Display, (1) IDNet 2 and (1) IDNet 2+2 Communications Channel, Two-Bay Box | 3 | | |
| 4010-9622<br>4010-9622BA | 2x40 Display, (1) IDNet 2 and (1) IDNet 2+2 Communications Channel, Two-Bay Box | | | |
| 4010-9721<br>4010-9721BA | 2x40 Display, (1) IDNet 2 and (1) IDNet 2+2 Communications Channel, Two-Bay Box | | | |
| 4010-9722 | 2x40 Display, (1) IDNet 2 Communications Channel and (1) IDNet 2+2 Communications Channel, Two-Bay Box | | | |



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| Model | Description | | Card Address Consumption | Card Address Allocation | Notes |
|---|---|---|---|---|---|
| 4010-9623<br>4010-9623BA | InfoAlarm Display, (1) IDNet 2 and (1) IDNet 2+2 Communications Channel, Two-Bay Box | | 4 | | |
| 4010-9624<br>4010-9624BA | | | | | |
| 4010-9711<br>4010-9711BA | InfoAlarm Display, (1) IDNet 2 and (1) IDNet 2+2 Communications Channel, Two-Bay Box | | | | |
| 4010-9712<br>4010-9712BA | | | | | |
| 4010-9633 | ES Color Touch Screen Display, (1) IDNet 2 Communications Channel and (1) IDNet 2+2 Communications Channel, 2 Bay Box | | | | |
| 4010-9731 | | | | | |
| **Control Unit Option Cards (Select As Required)** | | | | | |
| 4010-9901 | Flat VESDA HLI Card | | 1 | | |
| 4010-9922 | Flat 4120 Network Interface Card | | | | |
| 4010-6310 | Flat ES Net Network Interface Card | | | | |
| 4010-9908 | 4 Point Flat Aux Relay Module | | | | |
| 4010-9912 | Serial DACT | | | | |
| 4010-9923 | SafeLINC Internet Interface Card | | | | |
| 4010-9914 | Building Network Interface Card | | | | |
| 4010-9918 | Dual RS-232 Module | | | | |
| 4010-9935 | 8 Zone Initiating Device Circuit - Class B | | | | |
| 4010-9936 | 4-Point Auxiliary Relay Module with Feedback | | | | |
| 4010-9929 | IDNet 2+2 Communications Module | | | | |
| **Remote Annunciation (Select As Required)** | | | | | |
| 4100-9401 | Red Cabinet, English | Remote InfoAlarm Command Center | 2 | | |
| 4100-9403 | Platinum Cabinet, English | | | | |
| 4100-9441 | Red Cabinet, with blank inserts for key labels | | | | |
| 4100-9443 | Platinum Cabinet, with blank inserts for key labels | | | | |
| 4100-9404 | Red Cabinet | Remote ES Touch Screen Display | 1 | | |
| 4100-9405 | Platinum Cabinet | | | | |
| 4606-9102 | 4010ES RUI LCD Annunciator, English | | 1 | | |
| 4602-9101 | Status Command Unit (SCU) LED Annunciator | | | | |
| 4602-9102 | Remote Command Unit (RCU) LED Annunciator w/control | | | | |
| 4602-9150 | Graphic I/O RCU/SCU Assembly for custom annunciator | | | | |
| 4602-7101 | Graphic I/O RCU/SCU Assembly for custom annunciator | | | | |
| 4602-7001 | RCU for cabinet mount | | | | |
| 4602-6001 | SCU for cabinet mount | | | | |
| 4100-7401 | 24 Point I/O Graphic Module for custom annunciator | | | | |
| 4100-7402 | 64/64 LED Switch Controller for custom annunciator | | | | |
| 4100-7403 | 32 Point LED Driver Module for custom annunciator | | | | |
| 4100-7404 | 32 Point Switch Input Module for custom annunciator | | | | |
| | **Total Card Addresses (Not to Exceed 20)** | | **TOTAL** | | |



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## Additional 4010ES and Network Product Reference

**Table 13: Additional 4010ES and Network Product Reference**

| Subject | Data Sheet |
|---|---|
| Serial DACT (SDACT) for 4100ES, 4010ES, 4007ES | *S2080-0009* |
| Seismic Battery Brackets Reference | *S2081-0019* |
| 4003EC Voice Control Unit | *S4003-0002* |
| 4009 IDNet NAC Extender | *S4009-0002* |
| 4009 IDNAC Repeater | *S4009-0004* |
| 4010ES Panels with Conventional Notification | *S4010-0004* |
| 4010ES Extinguishing Release Applications | *S4010-0005* |
| InfoAlarm Command Center for the 4010ES Panels | *S4010-0008* |
| InfoAlarm Command Center for the 4010ES Panels (INTL) | *S4010-0009* |
| 4010ES Panels with Addressable Notification | *S4010-0011* |
| 4010ES Panels with Addressable Notification (INTL) | *S4010-0012* |
| External 110 Ah Battery Charger for 4100ES, 4010ES | *S4081-0002* |
| Graphic I/O Modules for 4100ES, 4010ES, 4007ES | *S4100-0005* |
| Interface to VESDA Air Aspiration Detection Systems | *S4100-0026* |
| Multiple Signal Fiber Optic Modems for 4120 Networks | *S4100-0049* |
| BACpac Ethernet Module | *S4100-0051* |
| 4120 Network Products and Specifications | *S4100-0056* |
| Building Network Interface Card (BNIC) | *S4100-0061* |
| SafeLINC Internet Interface | *S4100-0062* |
| ES Net Network Products and Specifications | *S4100-0076* |
| NDU with ES-PS Power Supplies for 4120 Network | *S4100-1036* |
| Remote ES Touch Screen Displays for 4100ES and 4010ES Panels | *S4100-1070* |
| NDU with ES-PS Power Supplies for ES Net | *S4100-1077* |
| TrueSite Workstation | *S4190-0016* |
| TrueSite Incident Commander | *S4190-0020* |
| 24-Pin Dot Matrix Fire Alarm System Remote Printer | *S4190-0027* |
| SCU/RCU Annunciators | *S4602-0001* |
| 4606-9102 Remote LCD Annunciator | *S4606-0002* |

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