Simplex

*UL Listed**

Datasheet

4007ES Fire Control Units

4007ES Hybrid Fire Detection and Control Unit with MX Digital Addressable Initiation and Notification and Conventional Notification

Introduction



Figure 1: 4007ES Fire Alarm Control Unit (FACU) front view

4007ES series fire detection and control units

4007ES fire alarm control units (FACUs) provide extensive installation, operator, and service features with point and module capacities suitable for a wide range of system applications. You can configure the FACUs for stand-alone or networked fire control operation. You can access typical system response actions, detailed system reviews or configuration updates with the color touchscreen, with password control to limit user access. 4007ES FACUs are compatible with Simplex® ES Network (ES Net) or 4120 fire alarm networks.

4007ES FACUs have a flexible combination of MX Digital addressable initiation, MX Digital addressable loop powered notification, and conventional notification appliance circuits (NACs) as standard features. Refer to ***4007ES Fire Detection and Control Unit with MX Digital Addressable Initiation and Addressable Notification (S4007-0004)*** for 4007ES FACUs that provide addressable notification.

Features

4.3 in. (109 mm) diagonal color touchscreen display

- User interface displays detailed system status and individual point information.
- Support for dual language selection, including unicode character languages.
- A custom background display that appears when not in use.

Power supply

- Includes four NACs with options for Class A or Class B with 6 A total available current.
- You can select the NAC end-of-line resistor value from a range of resistance values for retrofit applications.
- Additional notification power capacity is available using the 4009 IDNet NAC Extender.
- The power supply provides battery backup charging of up to 33 Ah, up to 18 Ah for cabinet mounted batteries and up to 33 Ah batteries for mounting in close-nippled remote battery cabinet.

Electrically isolated MX Digital addressable SLC

- Includes a single dual isolated ESMX Class A loop.
- Connect up to 250 MX addressable devices, with up to 1A of output current to drive loop powered notification devices.
- Use the optional ESMX loop mezzanine card to share loop power and addresses across two loops.

Software feature summary

- You can select the current and previous panel configuration from the onboard memory.
- An internal Ethernet service port is available for service computer connections to perform configuration updates, downloads and uploads, report downloads, and system software updates.
- You can use the Internal USB interface to store job revisions, update revised jobs and panel software, and save detailed system reports from the panel to a memory stick or thumb drive.

Optional modules and connections

- Fire alarm network interface card (NIC) for ES Net or 4120 network.
- Peer-to-Peer network communications, supports either Class B or Class X operation.
- Point or Event DACT assembly that is compatible with Connected Services Gateway.
- ESMX loop mezzanine card to allow two loops to share loop power and addresses.
- Front mounted 48 LED annunciator with custom label inserts.
- Dual Class A IDNAC Isolator (DCAI).
- Remote LED annunciator support through a remote unit interface (RUI) communications port for use with unshielded, twisted pair wiring (UTP).
- Eight point zone/relay modules individually selectable as IDC or relay rated 2 A at 30 VDC (resistive).
- Alarm relays and auxiliary relays.
- Dual RS-232 ports for a printer, PC annunciator or third party interface.
- City connections, with or without a disconnect switch.
- 4003EC Voice Control Panels.
- 4009 Series IDNAC Repeaters.

Mounting options

- A compact red or platinum cabinet for surface or semi-flush mounting; rated NEMA 1 and IP30.

4007ES Listings reference

- UL 864 - Control Units, System (UOJZ); Control Unit Accessories, System, Fire Alarm (UOXX); Control Units.

ES panel compatibility with ES Net

Simplex ES Net is a next generation IP-based fire network that uses industry-standard network technology and infrastructure. Use ES Net for simplified network upgrades, easy terminal connectivity and IP file transfer between nodes, and advanced network diagnostics.

You can upgrade ES fire FACUs to operate on an ES network by adding an ES Net Network Interface Card (NIC) to the panel.

To upgrade an existing 4120 network to ES Net, you must replace all of the 4120 NIC cards on the network loop with ES Net NICs.

You cannot mix ES NICs and 4120 NICs on the same network loop.

* Additional listings may be applicable; contact your local Simplex product supplier for the latest status.

For more detailed information on ES Net, refer to *ES Net Network Applications, Communications, Options and Specifications (S4100-0076)* and talk to your local Simplex product supplier.

Operator interface

Convenient status information

You can view the display status LEDs through the glass window when the locking door is closed. The user interface is a 4.3 in. (109 mm) diagonal color touchscreen LCD with separate status LEDs, see Figure 2.

LED indicators describe the general category of activity and the LCD provides more detail. Authorized users can unlock the door to gain access to the control functions and additional detail.

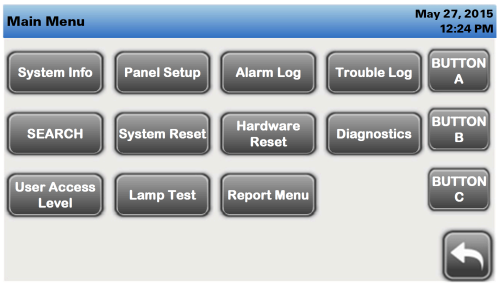
Touchscreen display with LED status indicators



Figure 2: Touchscreen display with LED status indicators

Operator screen reference

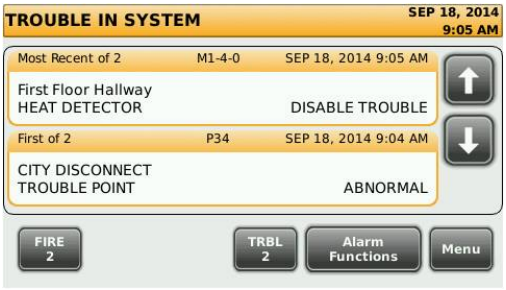
Main Menu: Use this screen to easily navigate to the required function. Buttons A, B, and C have programmable functions.



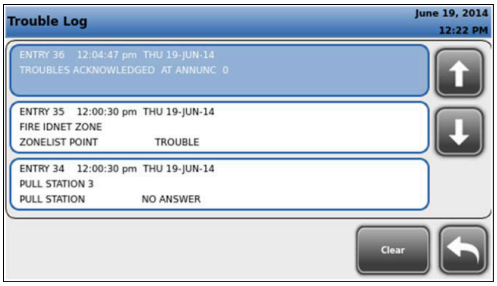
System Alarm: Identify active alarms, with custom labels shown. Use the arrows to navigate through the list.



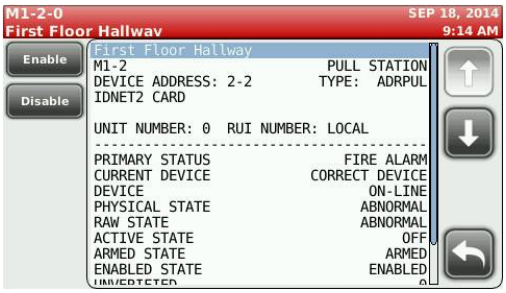
System Trouble: Identify active troubles, with custom labels shown. Use the arrows to navigate through the list.



Trouble Log: Review past troubles, with time stamp and point details shown.



Point Information: Review point details. Use the arrows to navigate through the information.



User Access Login: Controls access to panel operations as determined by the panel.



Operator interface and software features

- Use the touchscreen display with password access to easily access operator information.
- Multiple automatic and manual diagnostics to reduce maintenance.
- View alarm and trouble history logs from the display, print with a connected printer, or download to a service computer. Up to 1,000 entries are available for each, with a total of 2,000 events.
- You can use module-level ground-fault searching to locate and isolate modules with grounded wiring.
- The WALKTEST silent or audible system test performs an automatic self-resetting test cycle and supports up to eight WALKTEST groups.
- You can use Install Mode to group 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.

Mechanical description

- Features a locking door with a polycarbonate window.
- The latching front panel assembly swings forward for convenient internal access.
- You can use the smooth box surfaces to locally cut conduit entrance holes exactly where required.
- Modules are power-limited except as noted, such as relay modules.
- The bottom battery compartment takes two batteries, up to 18 Ah. Mount the batteries within the cabinet. The charger capacity is up to 33 Ah. For batteries greater than 18 Ah, see Module and accessories selection information for external battery cabinet details.

MX Digital addressable device control

The 4007ES addressable panel provides an MX Digital addressable Signaling Line Circuit (SLC) that supervises wiring connections and the individual device communications status on the SLC and also provides loop power to drive addressable notification devices.

With two-wire MX Digital SLCs, initiation, monitoring, and control devices can communicate their identity and status and receive fire alarm system control, see Compatible addressable devices. The MX Digital SLC is compatible with many types of existing cable, which helps with system retrofits. Communications distances can be up to 2 km (6560 ft).

Additional addressable interface modules include circuit isolators, conventional IDC zone adapters. The modules interface with other system circuits such as fans, dampers, and elevator controls.

MX Digital addressable device operation

Each addressable device on the MX Digital 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. 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 you can turn the LEDs on steady from the panel. The LCD monitors, logs, and displays the location and status of addressable devices, and each device has a unique 40 character custom label for identification.

Compatible addressable devices

- Smoke sensors, heat sensors, multi sensor smoke/heat sensors and triple sensors including smoke, heat and carbon monoxide detection.
- Sensor bases with loop powered sounder or sounder-beacon.
- Wall mounted loop powered beacons and sounder-beacons.
- Single, dual, and multiple I/O modules including relay, signal, monitor and separate line-powered isolator modules.
- Indoor and outdoor break glass call points.
- Single and dual action manual pull stations.

Diagnostics and default device type

Sensor status

With MX Digital operation, the FACU automatically indicates 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 MX Digital operation to maintain the sensitivity level of each sensor.

Modular MX Digital sensors

MX Digital sensors use the same base and different sensor types (smoke or heat sensor) and you can interchange them to meet specific location requirements. This means you can substitute sensors during building construction when conditions are temporarily dusty. Instead of covering smoke sensors, which disables them, you can install heat sensors without reprogramming the FACU. The FACU 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.

MX Digital addressable channel capacity

The 4007ES addressable FACU provides an isolated output MX Digital SLC that supports up to 250 addressable initiating, monitoring, control, and loop powered notification points intermixed on the same pair of wires.

Table 1: MX Digital SLC wiring specifications

Specification		Rating
MX Loop Output	Voltage	40 VDC maximum
	Current	1 A maximum
Addresses per Loop		250 maximum
Loop Distance		6560 ft (2000 m) typical maximum
		Note: Wire lengths may be longer depending on wiring characteristics and other conditions, consult your Simplex product representative for additional details
Loop Resistance		150 Ω maximum
Loop Capacitance		0.2 µF maximum
Loop Inductance		1.5 mH maximum
Communications Voltage		40 V peak maximum

4007ES mounting and module location reference

The following image is an example of one possible panel configuration. The standard panel does not include all the cards shown. See Table 2 for details.

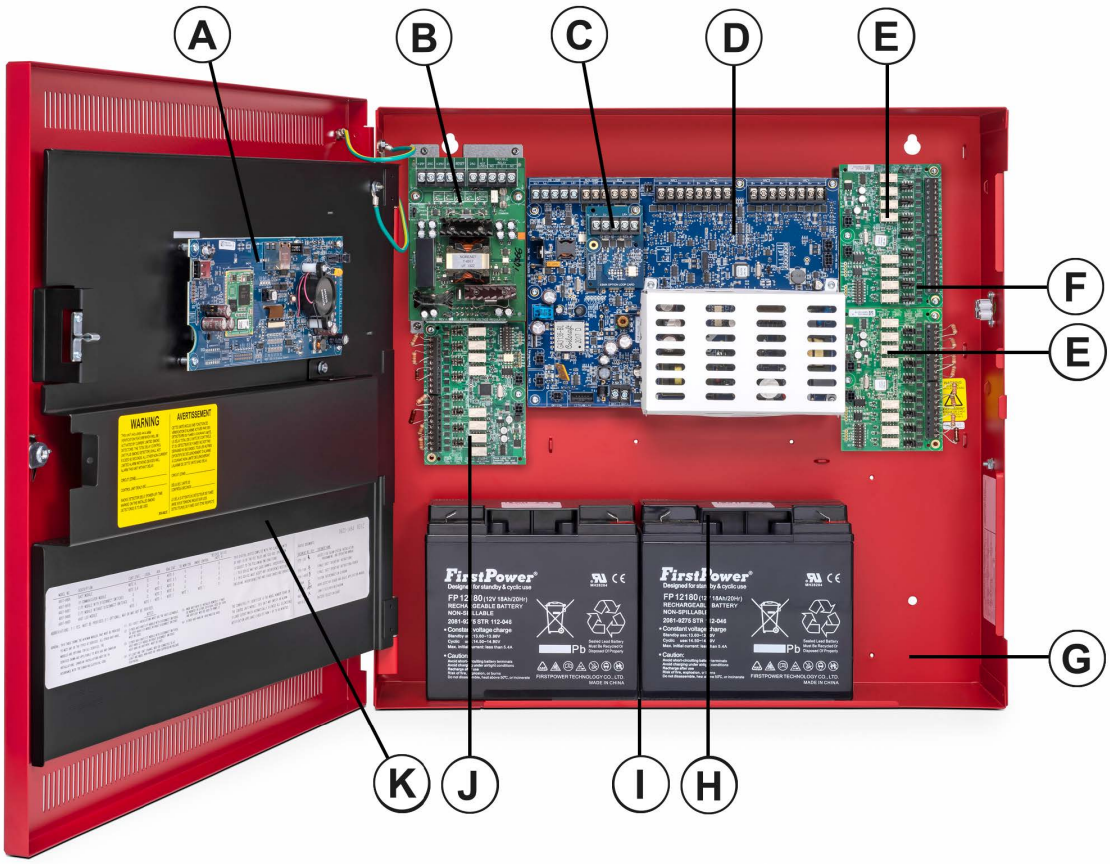


Figure 3: 4007ES mounting and module location reference

Table 2: Module locations

Key	Description
A	CPU and User Interface assembly, included.
B	Location for the following optional modules: • 4007-9801 Zone/Relay Module • 4007-9812 Dual RS-232 Interface • 4007-9804 Dual Class A IDNAC Isolator (DCAI) • 4007-9802 25 V Regulator Module, as shown
C	4007-6312 optional Loop Mezzanine Card.
D	Power Supply Assembly, included.
E	Location for additional 4007-9801 Zone/Relay Module.
F	An additional block that sits on spacers above E. You can mount the 4007-9810 NIC or 4007-9817 NIC here with or without modules mounted below it in E. When you use fiber media cards and an SDACT is present, the SDACT requires a 650-1838 flat mounting bracket, ordered separately.
G	Location for optional 4007-9806 SDACT, module not shown. **Note:** The SDACT includes a 650-1838 flat mounting bracket, available separately. Some pre-existing systems with an angled SDACT bracket will need to be replaced with the flat mounting bracket when a Network Interface Card is installed.
H	Location for optional 4007-9807 or 4007-9808 City Circuit Module, or 4007-9809 Relay Module.
I	Battery location for up to 18 Ah batteries. **Note:** No conduit entry or wiring in this area, 14 7/8 in. (378 mm) wide.
J	Primary location for optional 4007-9801 Zone/Relay Module.
K	Location for optional 4007-9805 LED Module.

Note: You must provide a system ground for Earth Detection and transient protection devices. Make this connection to an approved, dedicated Earth connection in accordance with NFPA 70, Article 250, and NFPA 780.

Power supply output details

- **2 A auxiliary output (AUX/SNAC):** Select either as resettable auxiliary power of 2 A at 24 VDC, or as a simple NAC (SNAC) for sounder base power, four-wire detector power, or door holder power.
- **4 A output rating:** Includes current for conventional notification appliances, MX devices, module currents, and auxiliary output current. Battery charging, CPU, and power supply current are not subtracted from the 4 A.
- **Low battery voltage cutout:** Select when required.
- **Battery and charger monitoring:** Includes battery charger status and low or depleted battery conditions. The status information provided to the master controller includes analog values for battery voltage, charger voltage and current, actual system voltage and current, and IDNAC SLC current.
- **Battery charger:** Dual rate, temperature compensated. Charges up to 18 Ah sealed lead-acid batteries in the battery compartment, and charges up to 33 Ah batteries in an external cabinet.
- **MX Digital SLC output:** Provides electrically isolated Class B or Class A communication. Capacity for 250 addressable points. Use the optional ESMX mezzanine card to share loop power and addresses across two loops.
- **Compatible RUI remote equipment:**
  - Up to six 4606-9202 and 4606-9205 Color Touchscreen Annunciators
  - 4100 Series 24 I/O and LED/Switch modules
  - 4602 Series LED/Switch and I/O Annunciator modules, including 4602-9101 Status Command Units (SCU), and 4602-9102 Remote Command Units (RCU).
- **RUI communications:** Controls up to 10 remote devices at up to 2500 ft (762 m) for single run, or 10,000 ft (3048 m) total if wiring is Class B and T-tapped. You can select output as Class B or Class A.
- **Four onboard Class B/Class A NACs:**
  - Rated 3 A each for Special Application appliances. Includes options for SmartSync horn and strobe control, or strobe synchronization. Rated 2 A each for Regulated 24 VDC appliances.
  - NAC end-of-line (EOL) resistor values are selectable as 10 kΩ, 3.9 kΩ, 4.7 kΩ, 5.1 kΩ, 5.6 kΩ, or 15 kΩ.

Product selection

Table 3: Product selection

Model	Color	Description	Standby	Alarm
4007-9301	Red	4007ES Hybrid with four conventional 3 A NACs and a 6 A output power supply or battery charger. Includes MX communications for 250 addressable points. **Note:** The Standy and Alarm loads in this table do not include point or circuit loads. Add optional module and other currents separately for battery calculations. The base panel current does not subtract from the 4 A power available for optional modules and external loads.	190 mA	235 mA
4007-9302	Platinum			

Module and accessories selection information

Table 4: Factory programming options

Model	Description
4007-8810	Factory Programming (select)
4007-0831	Custom Labels and Programming (requires 4007-8810)

Table 5: Field installed optional modules

Model	Description		Standby	Alarm
4007-9801	Eight Point Zone/Relay Module. Each point is selectable as an IDC input or Relay output. Class A IDCs require two points, one out and one return, select up to four maximum. Alarm current shown is for eight Class B IDCs using 3.3K end-of-line (EOL) resistors with four IDCs in alarm and four IDCs in standby. Supervisory current shown is for all eight IDCs in standby. Detector current is added separately. Refer to ***Zone/Relay Module Installation Instructions (579-1103)*** for additional information.		83 mA max	295 mA max
4007-9802	25 VDC Regulator Module. 2 A maximum output. Use to power Zone/Relay modules connected to initiating devices requiring nominal 25 VDC voltage. Refer to ***2-Wire Detector Compatibility Chart (579-832)*** for application details.	with one module	190 mA	445 mA
		with two modules	290 mA	801 mA
		with three modules	390 mA	1156 mA
4007-6312	ESMX optional loop mezzanine card. Provides a second dual isolated Class A loop to allow the onboard ESMX loop and the ESMX mezzanine card to share addresses and loop power.		NA	NA

Table 5: Field installed optional modules

Model	Description		Standby	Alarm
4007-9805	Panel Mounted 48 LED Status Annunciator Module. Provides 24 Yellow LEDs, 20 Red LEDs, and four Red/Green LEDs that are programmable for up to 24 IDC zones of alarm and trouble annunciation, or as required for custom annunciation requirements.	no LEDs on	10 mA	10 mA
		with LEDs on	1.75 mA per LED, 105 mA max	
4007-9806	SDACT Module for Point or Event Reporting. Order 2080-9047 connection cables as required, see Table 9		30 mA	40 mA
4007-9807	City Circuit Module with Disconnect Switch		20 mA	36 mA
4007-9808	City Circuit Module without Disconnect Switch		20 mA	36 mA
4007-9809	Relay Module. Relays for Alarm, Supervisory, and Trouble, rated 2 A resistive @ 32 VDC		15 mA	37 mA
4007-9812	Dual RS-232 Interface Module, compatible with Simplex remote printer, PC annunciator or third party interface (two ports/connections maximum).		60 mA	60 mA

Table 6: Field installed optional network modules

Model	Description	Standby	Alarm
4007-2504	Connected Services Gateway with IP Communicator	125 mA	125 mA

Network interface and network media card product selection

4007ES FACUs are compatible with Simplex ES Net network or 4120 network fire alarm products. Refer to the following data sheets for more information:

- For compatible ES Net fire alarm products, refer to ***ES Net Network Applications, Communications, Options and Specifications (S4100-0076)***.
- For compatible 4120 network fire alarm products, refer to ***4120 Network Communications, Options, and Specifications; International (S4100-0056)***.
- For details on the Building Network Interface Card, refer to ***Building Network Interface Card (BNIC) Models 4100-6047 and 4010-9914 (S4100-0061)***.

Table 7: Batteries

Model	Capacity	Battery mounting details
2081-9272	6.2 Ah	12 V Batteries for cabinet mounting. Select one battery model in accordance with system standby requirements. 24 VDC requires two batteries wired in series.
2081-9274	10 Ah	
2081-9288	12.7 Ah	
2081-9275	18 Ah	
2081-9287	25 Ah	Requires 4009-9801 external battery cabinet, see Table 8.
2081-9276	33 Ah	

Table 8: Battery cabinets

Model	Color	Capacity	Dimensions (H x W x D)	Description
4009-9801	Beige	For batteries up to 33 Ah, see note.	13 1/2 in. x 16 1/4 in. x 5 3/4 in. (343 mm x 413 mm x 146 mm)	External battery cabinet without charger, for mounting close-nippled to the FACU cabinet. Includes locking solid door. Use battery harness 734-304 for a NAC power supply and harness 734-303 for an IDNAC power supply. Battery harnesses are shipped with the panel.

Note: 33 Ah capacity requires 2081-9276 square 33 Ah batteries.

Table 9: Accessories

Model	Description
2080-9047	DACT cable, 14 ft (4.3 m) long, RJ45 plug one end, spade lugs on the other. Each phone line connection requires one cable.
2975-9812	Red semi-flush box trim; 1 7/16 in. (37 mm) wide, four corners and trim pieces for top, bottom, and sides.
2975-9813	Platinum semi-flush box trim; 1 7/16 in. (37 mm) wide, four corners and trim pieces for top, bottom, and sides.
4081-9018	10 kΩ, 1 W EOL resistor harness for non-addressable NACs if 4007-9801 is used.
2081-9031	Series resistor for WSO, non-addressable IDCs. N.O. water flow and tamper on same circuit, wires after water flow and before tamper. 470 ohms, 1 W, encapsulated, two 18 AWG leads (0.82 mm^2), 2 1/2 in. L x 1 3/8 in. W x 1 in. H (64 mm x 35 mm x 25 mm)

General specifications

Table 10: General specifications

Specification			Rating	
Input power		120 VAC input	2 A maximum @ 102 VAC to 132 VAC, 50/60 Hz.	
		240 VAC input	1 A maximum @ 204 VAC to 264 VAC, 50/60 Hz.	
		Battery	6 A maximum @ 24 VDC (during battery operation).	
4007ES power supply output ratings	Power supply output rating		6 A total, including module currents and auxiliary power outputs.	Output switches to battery backup during mains AC failure or brownout conditions
	NAC ratings		3 A each for Special Application Appliances.	
			2 A each for Regulated 24 DC Appliances.	
	Auxiliary power tap		2 A maximum, 24 VDC nominal (19.5 VDC 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 ratings, sealed lead-acid batteries	Battery capacity range		UL listed for battery charging of 6.2 Ah up to 33 Ah. Batteries larger than 18 Ah require a remote battery cabinet.	
	Charger characteristics and performance		Temperature compensated, dual rate, recharges depleted batteries within 48 hours per UL Standard 864.	
Custom background display details			Supported file types: JPG, BMP, GIF, and PNG. Recommended image type is JPG, recommended image size is 480 x 240, and the file size limit is 100kb.	
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 4007ES and network product reference data sheets

Table 11: Additional 4007ES and network product reference data sheets

Title	Document number
Serial DACT (SDACT) for 4100ES, 4010ES, 4007ES	S2080-0009
Connected Services Gateway - Central Station Communication and SafeLINC Cloud Services	S2080-0091
4003EC Voice Control Unit	S4003-0002
4007ES Extinguishing Release Applications	S4007-0003
4007ES Fire Detection and Control Unit with MX Digital Addressable Initiation and Addressable Notification	S4007-0004
4009 NAC Extender	S4009-0002
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
NDU with SPS Power Supplies for 4120 Network	S4100-0036
InfoAlarm Command Center with SPS Power Supplies	S4100-0045
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
ES Net Network Products and Specifications	S4100-0076
NDU with SPS Power Supplies for ES Net	S4100-0077
InfoAlarm Command Center with EPS Power Supplies	S4100-0101
NDU with EPS Power Supplies for 4120 Network	S4100-0102
NDU with EPS Power Supplies for ES Net	S4100-0104
PC Annunciator	S4190-0013
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 Series Color Touchscreen LCD Annunciators	S4606-0003

4007ES additional reference

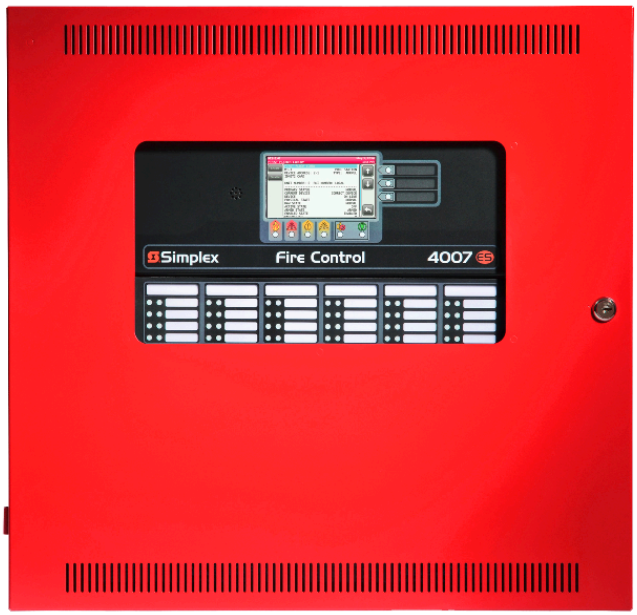


Figure 4: 4007ES with IDNAC Notification and optional 48 LED Annunciator Module, 4007-9805



Figure 5: 4606-9205 Color LCD Touchscreen Remote Annunciator, Platinum



Figure 6: 4606-9202 Color LCD Touchscreen Remote Annunciator, Red

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