Description

The Simplex 2004FS fire alarm control unit (FACU) delivers flexible initiating circuit monitoring for areas requiring one to four initiating zones.

Figure 1: 2004FS FACU

Features

Convenient FACU operation

- UI with dedicated LEDs for convenient FACU status information
- Program operation using DIP switch settings on main board. Program DACT setting, and date and time setting using service computer (PC)
- USB port provides upload and download PC access for FACU configuration and event history logs
- Download software updates with PC
- Standard onboard DACT provides Contact ID formats
- WALKTEST silent or audible system test

Four standard initiating device circuits (IDCs)

- All IDCs are Class B with individual zone disable
- IDCs can monitor two-wire initiating devices including TrueAlarm™ smoke detectors
- Compatible with the following types of initiating devices:
  - Photoelectric smoke detector
  - Heat detector
  - Combination photo and heat detector
  - Manual pull station

Refer to the *Two-Wire Detector Compatibility Chart: 579-1417* for details.

One standard notification appliance circuit (NAC)

- A single Class A or Class B NAC with solid state overcurrent protection, rated for 1.5 A
- Selectable for Simplex SmartSync™ two-wire horn/strobe control or synchronized strobe control

Standard power supply

- Provides 3 A maximum @ nominal 24 V filtered
- Automatic input power selection operates with either 120 VAC, 60 Hz, 4 A or 240 VAC, 50 Hz, 3 A. The FACU automatically detects the voltage.
- Onboard temperature compensated battery charger for up to 7 Ah

batteries in cabinet and up to 12.7 Ah batteries in separate cabinet

Additional standard features

- Programmable active status reminder
- Three auxiliary relays
- IDCs, NAC, and relay outputs are power limited. AC input, battery circuits, and city circuit module outputs are non-power limited.
- Red cabinet
- UL listed to Standard 864

Available option modules

- City circuit module
- Remote LED annunciators

Standard feature details

Four Class B IDCs

Each Class B IDC can support up to 20 Simplex current-limited smoke detectors or electronic heat detectors. Manual stations and other compatible contact closure initiating devices are also supported. See Reference information, compatible Simplex peripherals.

One 1.5 A onboard NAC

1.5 A onboard NAC provides conventional reverse polarity operation, selectable as Class A or Class B, with electronic control and overcurrent protection. You can select synchronized strobe or SmartSync™ horn/strobe two-wire operation. Select horn control at the FACU for temporal pattern coding, steady on, slow march time of 20 beats a minute (BPM), or fast march time of 120 BPM.

Note: When selected for SmartSync™ horn/strobe control, march time produces 60 BPM.

24 VDC auxiliary output

The following two auxiliary output circuits are available:

- Auxilary 1: non-resettable auxilary power
- Auxilary 2: resettable auxilary power

Total 250mA for both auxilary circuits

Standard auxiliary relay outputs

The following three relay outputs are available, selectable as normally open or normally closed, rated 2 A @ 30 VDC:

- Auxilary relay 1 is the default common trouble relay and is normally energized
- Auxilary relay 2 is common alarm and its default setting is **On Until Reset**
- Auxilary relay 3 is common supervisory

Onboard dual line DACT

The communication format is Contact ID (CID). Reporting includes alarm, supervisory, trouble, and AC failure. Operation includes programmable test report time and power fail report delay.

Power supply and battery charger

DC power output is 3 A @ 24 VDC for FACU use. The temperature compensated battery charger, using sealed lead-acid batteries only, is rated for up to 12.7 Ah batteries and up to 7 Ah batteries fit in the cabinet. Larger batteries require an external cabinet. Depleted battery trouble is monitored and annunciated and you can select depleted battery cutout. The active battery status monitor supervises charger operation.

Optional feature details

City circuit module

This module is available with onboard disconnect switches. You can disable the module from the FACU through DIP switch setting. Connections are for remote station (reverse polarity) or municipal master (local energy). Reporting includes alarm, supervisory, and trouble.

Product selection

Table 1: FACU

Product selection	Color	Model	Description	Listings
2004-9101	Red	Standard FACU	Four Class B IDCs, one Class B or Class A NAC, 3 A power supply with battery charger. Onboard DACT, 120/240 VAC, 50/60 Hz (autoselect)	UL

Table 2: Option modules

Model	Description
2004-9909	City circuit module with disconnect switch, one for each panel.
2606-9111	LED Annunciator, a maximum of two for each panel.

Table 3: Accessories

Model	Description
4009-9801	Beige external battery cabinet for up to 12.7 Ah batteries. Mount close-nippled to FACU. Dimensions: 16 1/4 in. x 13 1/2 in. x 5 3/4 in. (413 mm x 343 mm x 146 mm) (H x W x D)
2081-9410	Battery bracket conventional, for seismic use

Table 4: Batteries, 12 Volt (see note)

Model	Size	Location
2081-9286	7 Ah	For cabinet mount
2081-9274	10 Ah	Requires 4009-9801 external battery cabinet.
2081-9288	12.7 Ah	

Note: Select one battery model in accordance with system standby requirements. Order quantity of two.

Specifications

Refer to *2004FS Installation Guide: 579-1402* and *2004FS Operation Guide: 579-1403* for additional information.

Table 5: Power ratings

Specification		Rating
AC input ratings	Input voltage	120 VAC, 60 Hz; 240 VAC, 50 Hz, auto-select
	Input current, standard	4 A maximum @ 120 VAC input; 3 A maximum @ 240 VAC input
Power supply output rating		3 A maximum @ 24 VDC in alarm. See NAC details on Detailed NAC ratings
Battery charger		Temperature compensated charger is rated for up to 12.7 Ah
Standby current		136 mA, with 4 IDCs fully loaded, tone-alert silenced, trouble LED on

Table 6: Standard Circuit Ratings, see note 1

Specification			Rating	
NAC See Detailed NAC ratings.			1.5 A maximum @ 24 VDC, for each circuit. Available as Class A or Class B. Class B end-of-line resistor = 10 kΩ, 1/2 W, model 4081-9008, part number 733-894 See note 2.	
IDC	Supervisory current		9 mA maximum	
	Alarm current		60 mA maximum	
	Capacity		Each IDC supports up to 20 detectors (smoke or electronic heat) and manual stations as required. Wiring distance is a maximum of 50 Ω.	
	End-of-line resistor		3.3 kΩ, 1/2 W, model 4081-9002, part number 733-893, for Class B IDCs. See note 3.	
Annunciator communications	Quantity supported		Up to two annunciators	
	Wiring type		Twisted pair 18 AWG (0.82 mm^2)	
	Bus-style wiring		Up to 4000 ft (1219 m), 0.58 µF (580 nF) maximum capacitance, 35 Ω max.	
	Line matching resistor	Bus-style, connect one at FACU and one at end of line	100 Ω, 1/2 W. 4081-9011, part number 733-974	
		T-Tap, connect one at FACU and one at farthest device		
	Suppression		Use 2081-9044 Overvoltage Protectors where wiring leaves and enters a building. Refer to data sheet *S2081-0016*	
Auxiliary power output	Aux 1		250 mA maximum @ 24 VDC. Total 250 mA for both circuits.	
	Aux 2			
Standard auxiliary relay outputs	Relay 1	Trouble operation	Contacts rated 2 A @ 30 VDC, 0.35 power factor. Jumper selectable as N.O. or N.C.	
	Relay 2 and 3	Programmable operation		
Wiring connections for IDC, NAC and Aux circuits			Terminals rated for 18 AWG to 12 AWG (0.82 mm^2 to 3.31 mm^2)	
Wiring connections for annunciator			Terminals rated for 22 AWG to 14 AWG (0.5 mm^2 to 2.5 mm^2)	
Wiring connections for AC input			Terminals rated for 14 AWG to 12 AWG (2.5 mm^2 to 4 mm^2)	

Note:

1. Total DC current = 3 A maximum

2. The NAC Class B circuit can additionally support 3.9K, 4.7K, 5.1K, 5.6K and 15K values for end-of-line (EOL) resistors to accommodate retrofit applications.

3. The IDC Class B circuit can additionally support 4.7K EOL in case of retrofit applications.

Table 7: Environmental ratings

Specification	Rating
Operating temperature range	32°F to 120°F (0°C to 49°C)
Operating humidity range	Up to 93% RH, non-condensing @ 90°F (32°C) maximum

Reference information, compatible Simplex peripherals

Table 8: Compatible detectors and accessories

Model	Description
4098-5601	Photoelectric Smoke Detector
4098-5602	Photo and Heat Detector
4098-5610	Heat rate of rise and fixed, 135°F (57°C)
4098-5611	Heat fixed, 135°F (57°C)
4098-5612	Heat fixed, 200°F (93°C)
4098-5613	Heat rate of rise and fixed, 200°F (93°C)
4098-9688	Two-Wire Duct Detector with Housing and Relay
4098-9686	Four-Wire Duct Detector with Housing and Relay
4098-9854	Sampling tube for 12 in. (305 mm) duct width
4098-9855	Sample tube for 13 in. to 23 in. (330 mm to 584 mm) duct width
4098-9856	Sample tube for 24 in. to 46 in. (610 mm to 1,168 mm) duct width
4098-9857	Sample tube for 46 in. to 71 in. (1,168 mm to 1,803 mm) duct width
4098-9858	Sample tube for 71 in. to 95 in. (1,803 mm to 2,413 mm) duct width

Table 9: New intelligent conventional detectors

PID	Device description	Compatible bases				
		4 in. standard	5 in. standard, existing	6 in. adaptor for 5 in. base	5 in. 2-wire relay base	5 in. 4-wire relay base
4098-5601	Photoelectric Smoke Detector	4098-5261	4098-5207	4098-9799	4098-5680	4098-5682
4098-5602	Photo and Heat Detector	4098-5261	4098-5207	4098-9799	4098-5680	4098-5682
4098-5610	Heat rate of rise and fixed, 135°F (57°C)	4098-5261	4098-5207	4098-9799	4098-5680	4098-5682
4098-5611	Heat fixed, 135°F (57°C)	4098-5261	4098-5207	4098-9799	4098-5680	4098-5682
4098-5612	Heat fixed, 200°F (93°C)	4098-5261	4098-5207	4098-9799	4098-5680	4098-5682
4098-5613	Heat rate of rise and fixed, 200°F (93°C)	4098-5261	4098-5207	4098-9799	4098-5680	4098-5682

Table 10: Compatible system expansion panels

Model	Type	Description	Data sheet
4009 series	Remote NAC extender	Provides remote NACs. Includes power supply and battery charger. A maximum of one extender for single host NAC input. 2004FS uses single NAC output to provide control.	*S4009-0002*
Note: Contact your local Simplex product supplier for additional compatible peripherals.			

Additional NAC power

For additional NAC power, use the 4009 NAC Extender. Refer to datasheet S4009-0002 for additional information.

Table 11: NAC power accessories

PID	Description
4009-9201	4009 IDNet NAC Extender with 4, Class B NACs and 8 A power supply. 120 VAC input, seismic tested, UL Listed
4009-9301	4009 IDNet NAC Extender with 4, Class B NACs and 8 A power supply. 240 VAC input, UL Listed
4009-9807	NAC Option Card. Adds four conventional NACs, one maximum
4009-9808	Dual Class A adapter, for two NAC outputs, four maximum
2975-9802	Semi-Flush Trim Kit, red trim

Supervisory and alarm currents

Table 12: Supervisory and alarm currents

Model	Module	Supervisory	Alarm
2004-9101	Standard FACU	100 mA	150 mA with an additional 60 mA for each IDC in Alarm
2004-9909	City circuit module with disconnect switch	30 mA	60 mA
2606-9111	Remote LED annunciator	24 mA	26 mA

Current calculation information:
- To determine total supervisory current, add currents of modules in FACU to base system value and all auxiliary loads.
- To determine total alarm current, add currents of modules in FACU to base system alarm current and add all panel NAC loads and all auxiliary loads.

Remote annunciator options

The 2004FS supports 2606-9111 remote LED annunciators.

Annunciators communicate at a rate of 9600 baud with 24 VDC power supplied by separate wiring.
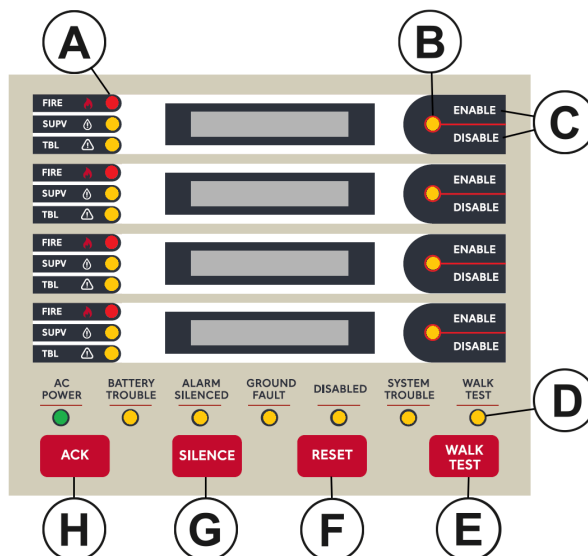
Figure 2: 2606-9111 LED annunciator

2606-9111 LED annunciator features:

- 17 dedicated LEDs for zone-wise alarm, supervisory or trouble indication, alarm silenced, lost communication, power on, system trouble, and ground trouble.
- Keyswitch access controlled switches for acknowledge, alarm silence, and reset
- Local tone-alert

Keyboard reference

Figure 3: Keyboard reference, FACU view with door closed

Callout	Description	Callout	Description
A	Three LEDs for each zone: • **FIRE** (alarm) • **SUPV** (supervisory) • **TBL** (trouble status)	B	One disabled status LED for each zone.
C	**ENABLE/DISABLE** buttons next to zone labels to quickly disable or enable respective zones.	D	Seven respective system status LED for **AC POWER**, **BATTERY TROUBLE**, **ALARM SILENCED**, **GROUND FAULT**, **DISABLED**, **SYSTEM TROUBLE**, and **WALK TEST**.
E	**WALK TEST** activates the walk test feature and turn on the control unit piezo.	F	**RESET** restores FACU to normal when all alarmed inputs are returned to normal.
G	**SILENCE** causes audible notification appliances to be silenced, used after evacuation is complete and while alarm source is being investigated.	H	**ACK** acknowledges all unacknowledged alarm, supervisory and trouble events, logs the acknowledge, silences the operator FACU and all annunciator tone-alerts, and turns flashing LEDs into steady.

IDC operation modes

Select the following IDC operation modes through SW1 configuration on the main system board of the FACU.

Table 13: IDC operation modes

Function type	Description	Device state	IDC status
Fire	Fire monitor zone	Normal =	Normal
		Abnormal =	FIRE
		Short =	FIRE
		Open =	TROUBLE
WSO	Combination waterflow and water supervisory zone	Normal =	Normal
		Current Limited =	SUPERVISORY
		Short =	ALARM
		Open =	TROUBLE
SUPV	Supervisory monitor	Normal =	Normal
		Abnormal =	SUPERVISORY
		Short =	SUPERVISORY
		Open =	TROUBLE
VSMOKE	Verified fire alarm, the abnormal (current limited) state causes the alarm verification cycle to start. A short is an immediate alarm	Normal =	NORMAL
		Abnormal =	VERIFY
		Short =	FIRE
		Open =	TROUBLE

Detailed NAC ratings

Table 14: Detailed NAC ratings

NAC Ratings, Maximum per NAC	Appliances
NAC rating: 1.5 A maximum	TrueAlert Non-addressable horns, strobes, and horn/strobes
Regulated 24 VDC: 1.5 A **Note:** 1. Total load must be within 3A including other loads. 2. Refer battery calculation for NAC loading.	Power for other UL listed appliances, use associated external synchronization modules where required.

NAC operation modes

Select the following NAC operation modes through SW2 configuration on the main system board of the FACU.

Table 15: NAC operation modes

Function type	Description
SSIG	Alarm signal, on until silenced
RSIG	Alarm signal, on until reset
QALERT	SmartSync™ two-wire horn/strobe control. Horn on until silenced, strobe on until reset

Relay operation modes

Table 16: Common fire alarm operations

Function type	Condition for relay activation	Condition for relay deactivation
RRELAY	General alarm	Reset
SUPV	Supervisory condition	Clear
TRBL	Trouble condition	Clear

Additional programming feature details

Table 17: Additional programming feature details

| Function	Details
History logs	Three separate logs: alarm (10 entries), supervisory (10 entries), and trouble (30 entries). You can query logs separately, or as a combined log. Download logs for printing or archiving using the USB port
WALKTEST	Allows one person to perform system testing. Alarm or trouble tests are followed by automatic reset, the alarm zone is sounded out by associated audible notification or the response is silently logged into the Alarm log
Access protection	Level 1 = acknowledge, silence, system reset, and lamp test. FACU programming using DIP switches on main boards.

Installation and module placement reference

Figure 4: Cabinet dimensions and wiring, in. (mm)
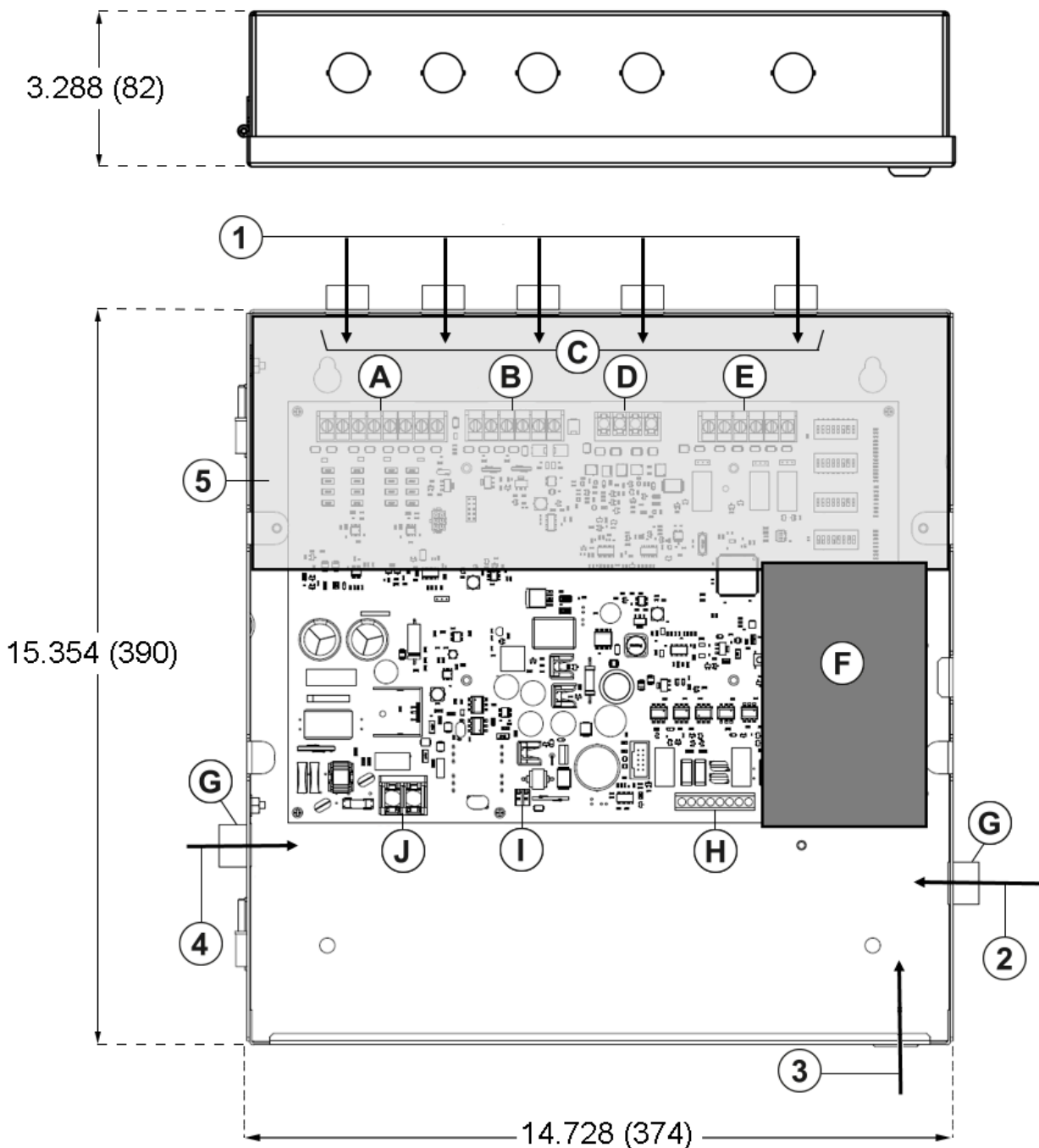
Callout	Description	Callout	Description
1	Power limited (PL) circuits: IDC, NAC, relay, auxiliary power, annunciator wiring	2	Non-power limited (NPL) circuit: DACT, city circuits
3	NPL circuit: battery connection if located in a separate battery cabinet	4	NPL circuit: AC power
5	Shaded areas are power limited wiring areas.	—	—
A	IDC circuit	B	Annunciator and auxiliary circuits
C	PL conduit entry	D	NAC circuit
E	Relays circuit	F	City circuit card
G	NPL conduit entry	H	DACT connector
I	Battery connection	J	AC power

Figure 5: Mounting main system board
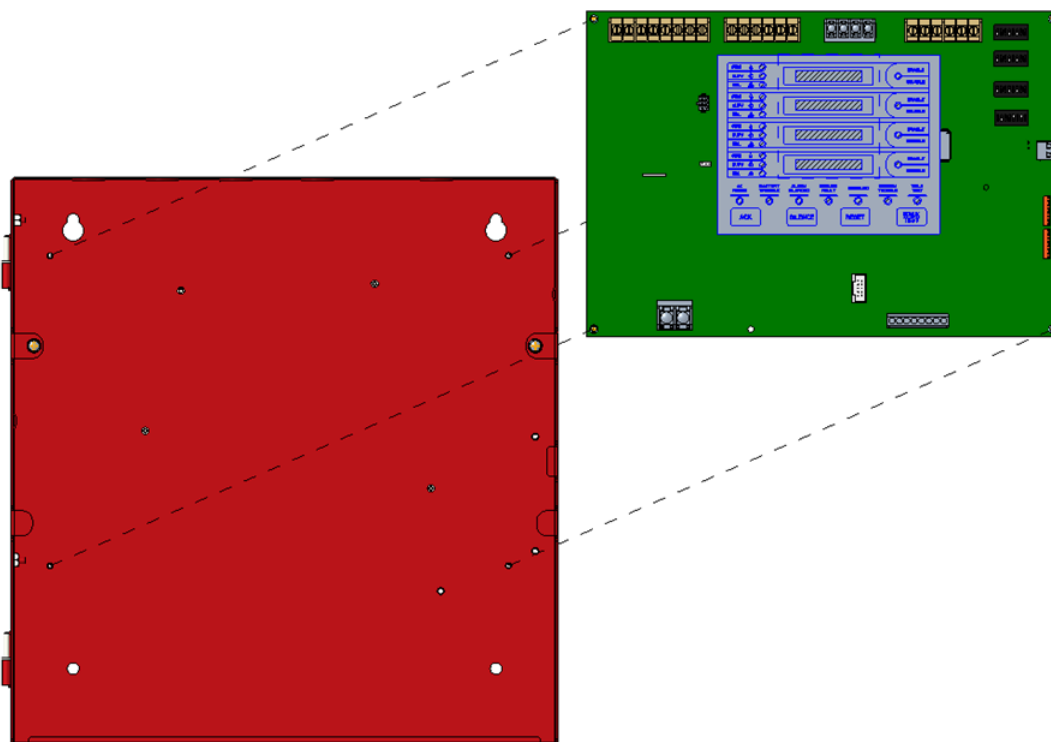
Additional compatible equipment and reference

Table 18: Additional product reference data sheets

Title	Document number
4009 IDNet NAC Extender	S4009-0002
Photoelectric Smoke Detectors for Two-Wire and Four-Wire Bases with Smoke/Heat Detection	S4098-0059
Electronic Horn, Free-Run or SmartSync™ Operation, Non-Addressable	S4901-0010
SmartSync™ Two-Wire Operation, Non-Addressable Mini-Horns	S4901-0013
SmartSync™ 2-Wire Operation, Non-Addressable Electronic Chime	S4902-0004
Non-Addressable Audible/Visible Notification Appliances for 4-Wire Operation (Horn/Strobe)	S4903-0011
Visible Notification Appliances with Synchronized Flash;Non-Addressable, SmartSync™ Operation Compatible	S4906-0001
SmartSync™ Operation Audible/Visible Notification with Horn and Synchronized Flash, Non-Addressable	S4906-0002
Weatherproof Notification Appliances (non-addressable) Wall Mount Visible Only (V/O) and Audible/Visible (A/V)	S4906-0010
Multi-Candela, High Intensity (non-addressable) Strobe and Horn/Strobe	S4906-0011
SmartSync™ Operation Audible/Visible Notification with Chime and Synchronized Flash, Non-Addressable	S4906-0012
Multi-Tone Horns; SmartSync™ Controlled or Free-run; with 520 Hz output, Non-Addressable	S49CMT-0001
Audible/Visible Notification Appliances; Multi-Tone FM Approved* Horn/Strobe with 520 Hz Output, Non-Addressable	S49CMTV-0001