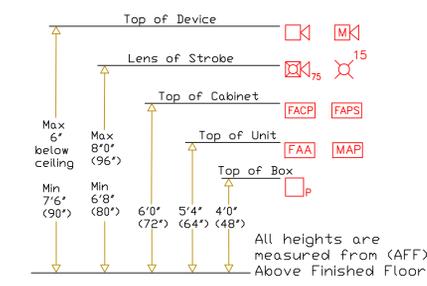


INSTALLED BY:
Arapahoe FIRE PROTECTION
11901 East 14th Ave.
Aurora, Colorado 80010
Voice: (303)366-4905
Email: office@arapahoe-fire.com
Fax: (303)366-4966

| BATTERY CALCULATION | | | | | | |
|-------------------------------|-----|--------------------------------|--------------------------|----------------------------|----------------------|---------------------------|
| LOCATION: 1411 S POTOMAC | | HOURS OF SUPERVISION: 24 HOURS | | | | |
| PANEL: FIRELITE FCPS 24FS6 | | MINUTES OF ALARM: 5 MINUTES | | | | |
| ITEM | QTY | PART NUMBER | DESCRIPTION | Device Supervisory Current | Device Alarm Current | Total Supervisory Current |
| 1 | 1 | FCPS-24S6 | POWER SUPPLY BOARD | 0.065000 | 0.145000 | 0.065000 |
| 2 | 13 | GCS24C | 15cd STROBE CEILING | 0.000000 | 0.120000 | 0.000000 |
| 3 | 2 | GCC24C | 15cd HORN/STROBE CEILING | 0.000000 | 0.143000 | 0.000000 |
| 4 | 2 | GCC24C | 75cd HORN/STROBE CEILING | 0.000000 | 0.223000 | 0.000000 |
| | | | | TOTAL: | | 0.065000 |
| SUPERVISORY: | | | | | | |
| SUB-TOTAL: | | | | 0.065000 | AMPS | |
| 24 HOURS OF SUPERVISORY: | | | | 24.000000 | HOURS | |
| SUB-TOTAL: | | | | 1.560000 | AMP HOURS | |
| ALARM: | | | | | | |
| SUB-TOTAL: | | | | 2.437000 | AMPS | |
| 5 MINUTES OF ALARM: | | | | 0.083333 | HOURS | |
| SUB-TOTAL: | | | | 0.203083 | AMP HOURS | |
| TOTALS: | | | | | | |
| TOTAL SUPERVISORY: | | | | 1.560000 | AMP HOURS | |
| TOTAL ALARM: | | | | 0.203083 | AMP HOURS | |
| TOTAL: | | | | 1.763083 | AMP HOURS | |
| SPARE OF 20% (SPARE) | | | | 0.352617 | AMP HOURS | |
| MINIMUM BATTERY SIZE REQUIRED | | | | 2.115700 | AMP HOURS | |
| BATTERIES SUPPLIED | | | | 7.000 | AMP HOURS | |



DEVICE MOUNTING HEIGHTS

| POWER SUPPLY | | | | VOLTAGE DROP CALCULATION | | | | | | | | | |
|----------------------------|----------------|--------------|-------------|--|------|------------|------------|---------------------|------------------------|-----------|---------------------------------|----------------------|----------------------|
| PANEL: FIRELITE FCPS 24FS6 | | | | LOCATION: 1411 S POTOMAC | | | | | | | | | |
| AVAILABLE FOR DEVICES | CIRCUIT NUMBER | CIRCUIT TYPE | PER CIRCUIT | DEVICES | QUAN | PER DEVICE | PER DEVICE | CURRENT PER CIRCUIT | CIRCUIT OUTPUT VOLTAGE | WIRE GAGE | ESTIMATED ONE-WAY WIRE DISTANCE | CIRCUIT VOLTAGE DROP | MIN. OPERATE VOLTAGE |
| 6.000 | Circuit 1A | NAC | 3.000 | 15cd STROBE C | 13 | 0.12 | 1.560 | 1.440 | 20.4 | 14 | | | |
| | | | | 15cd H/S C | 2 | 0.143 | 0.286 | 1.154 | 20.4 | 14 | | | |
| | | | | 75cd H/S C | 2 | 0.223 | 0.446 | 0.708 | 20.4 | 14 | 175 | 2.559 | 17.841 |
| PANEL TOTALS | | | | NOTES: Current draws are Average (RMS) amperes. All voltage calculations are in volts D.C. Voltage drops are calculated assuming all of the load is at the end of the circuit. Voltage Drop = Resistance X (one way wire Distance X2) X circuit Amp C=CEILING MOUNTED | | | | | | | | | |
| | | | | NEC 2014 TABLE 8 wire gage resistance ohms per 1000 feet 12 2.01 14 3.19 16 5.08 18 8.08 | | | | | | | | | |

VOLTAGE DROP CALCULATIONS POWER SUPPLY

BATTERY CALCULATIONS POWER SUPPLY

GENERAL NOTES

- THE FIRE ALARM SYSTEM CANNOT BE COMBINED WITH BURGLAR ALARM SYSTEMS.
- THE INSTALLER IS REQUIRED TO COORDINATE WITH THE MECHANICAL CONTRACTOR TO DETERMINE INSTALLATION OF SMOKE DETECTORS OR SENSORS (I.E. NOT CLOSER THAN 3 FEET FROM ANY SUPPLY/RETURN DEEFUSER AND THAT ADDITION DETECTION MAY BE REQUIRED DUE TO THE RELOCATION OR SPACING ADJUSTMENT OF DETECTORS, AS A RESULT.)
- FIRE ALARM DEVICES MUST BE PLACED IN PROTECTED AREAS WITH AMBIENT TEMPERATURE RANGING FROM 32° TO 120° F.
- DO NOT PLACE DETECTORS WITHIN 3 FEET OF AIR SUPPLY REGISTERS AND DEEFUSIERS.
- FIRE ALARM SYSTEMS SHALL BE MONITORED BY A CLASS I CENTRAL STATION.
- FIRE ALARM CONTROL PANEL WILL BE PLACED IN THE LOCATION SPECIFIED WITHIN THE PLAN SUBMITTAL UNLESS APPROVED BY THE LIFE SAFETY FIELD INSPECTOR.
- CITY OF AURORA BUILDING CODES DIVISION DOES NOT GRANT APPROVAL FOR ANY VIOLATIONS OF ADOPTED FIRE CODE. CODE VIOLATIONS UNCOVERED DURING FIELD INSPECTIONS MUST BE CORRECTED.
- PER THE 2015 IFC AND THE 2014 NEC THE INSTALLER MUST REQUEST A ROUGH WIRING INSPECTION ON THE FIRE ALARM SYSTEM PRIOR TO REQUESTING A FIRE ALARM FINAL INSPECTION.
- THE CONTRACTOR SHALL CONDUCT A "PRE-TEST" OF THE PROJECT AREA PRIOR TO AN ACCEPTANCE TEST WITH THE BUILDING CODES DIVISION.
- REMOTE ALARM INDICATORS SHALL BE PROVIDED FOR ANY FIRE ALARM DETECTOR LOCATED IN A CONCEALED LOCATION WITH A NORMALLY LOCKED DOOR.
- AT THE TIME OF FINAL FIRE ALARM INSPECTION, THE SYSTEM MUST BE SUPERVISED/MONITORED BY A CLASS I CENTRAL MONITORING AGENCY.
- THE INSTALLING CONTRACTOR (OR DESIGNEE) MUST PROVIDE ALL NECESSARY TESTING EQUIPMENT AND PERFORM ALL TESTING REQUIRED BY THE LIFE SAFETY FIELD INSPECTOR.
- IN-DUCT SMOKE DETECTORS INSTALLED IN CONCEALED LOCATIONS OR WHERE THE DETECTORS ALARM INDICATOR IS NOT READILY VISIBLE TO RESPONDING PERSONNEL SHALL BE PROVIDED WITH REMOTE INDICATORS, REMOTE TEST STATION AND PLACARDING.
- ALL NEW OR EXISTING FIRE ALARM SYSTEMS MUST BE CONNECTED TO AN EXTERIOR HORN AND STROBE DEVICE, IF THE BUILDING IS SPRINKLED, A GENERAL ALARM ACTIVATION AT THE FIRE ALARM CONTROL PANEL WILL ACTIVATE THE EXTERIOR HORN AND STROBE. SILENCING THE PANEL MUST ALLOW THE VISUAL DEVICE TO CONTINUE UNTIL THE PANEL IS RESET.
- FIRE ALARM SYSTEMS SHALL INCLUDE BOTH AUDIBLE AND VISUAL ALARMS. VISUAL ALARMS WILL BE REQUIRED IN ALL ACCESSIBLE PUBLIC AND COMMON-USE AREAS PER THE 2015 IFC AND THE 2003 ANSI A117.1 STANDARD.
- PROVIDE A PRIMARY AND SECONDARY POWER SUPPLY FOR THE FIRE ALARM SYSTEM PER THE 2015 IFC, SECTION 907.5 AND THE 2013 NFPA 72.
- THE FIRE ALARM INSTALLATION CONTRACTOR MUST COMPLETE THE NFPA 72 "RECORD OF COMPLETION" PRIOR TO SCHEDULING THE AHJ ACCEPTANCE TEST.
- FIELD INSPECTION CONSULTATION IS AVAILABLE ON REQUEST. CALL 303.739-7420 TO REQUEST CONSULTATION.
- AUDIBLE ALARM SIGNALING SHALL EXCEED THE PREVAILING SOUND LEVEL IN A ROOM OR SPACE BY 15 DBA. SOUND LEVELS FOR FIRE ALARM SIGNALS SHALL BE 120 DBA MAXIMUM. IFC SECTION 907.10.2. ON REQUEST. CALL 303.739-7420 TO REQUEST AN INSPECTION

| QUAN. | PART # | DESCRIPTION |
|-------|------------|--|
| 1 | FCPS-24FS6 | FIRELITE POWER SUPPLY |
| 13 | GCS24C | GENTEX MULTI CANDELA STROBE CEILING |
| 4 | GCC24C | GENTEX MULTI CANDELA HORN/STROBE CEILING |
| 2 | PS-1270 | POWER SONIC 7 AMP HOUR BATTERY |

NEW MATERIALS LIST

Tenant remodel in existing sprinkled building.
Existing Simplex fire alarm system.
Installation of new synchronized temporal sounding horn/strobes on a new power supply.
Occupancy Group: B Area: 2,850sf. Construction Type: II-B
Codes Used: 2015ed. IFC, 2013ed NFPA 72

SCOPE OF WORK

City of Aurora Building Division
Project: **Aurora Urology - Fire Alarm**
Address: **1411 S POTOMAC ST Unit 210**
Occupancy Group: **IBC B / 2951 SF**
Construction Type: **IBC Type IIB-SPK**
RSN: **1155003**
Permit: **2016 1188710 000 00 LT**

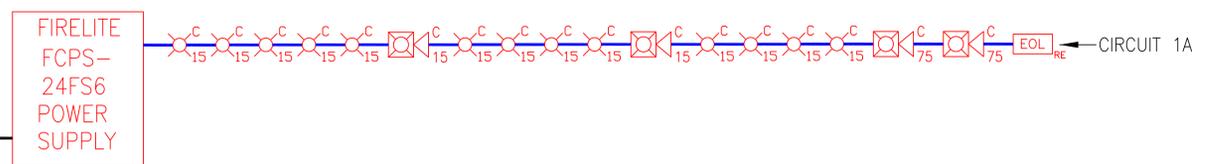
City of Aurora Building Division
Reviewed for Code Compliance
Approved as Noted: **Neil Wiegert**
Date: **Oct 17, 2016**
2009 INTERNATIONAL CODES & 2011 NEC

| DESCRIPTION | CLASS | TYPE |
|----------------------|-------|----------------|
| HORN/STROBE CIRCUITS | B | 2 #14 AWG FPLP |

WIRE CHART

| SYMBOL | DESCRIPTION |
|-------------------|---|
| NAC _A | FIRE ALARM POWER SUPPLY |
| ? | SMOKE DETECTOR (PHOTOELECTRIC) |
| C ₃₀ | STROBE (NUMBER INDICATES CANDELA) |
| C ₇₅ | C INDICATES CEILING MOUNTED |
| C ₇₅ | HORN WITH STROBE (NUMBER INDICATES CANDELA) |
| C ₇₅ | C INDICATES CEILING MOUNTED |
| EOL _{RE} | END OF LINE RESISTOR |

LEGEND



ONE LINE DIAGRAM

| System Inputs | System Outputs | | | | | | | | | |
|-----------------------------------|----------------------------|--------------|----------------|--|--|--|--|--|--|--|
| | Control Panel Annunciation | Notification | Safety Control | | | | | | | |
| 1 Smoke Detector | X | X | | | | | | | | |
| 2 Pull Station | X | X | | | | | | | | |
| 3 Sprinkler Water Flow Switch | X | X | | | | | | | | |
| 4 Sprinkler Tamper Valve | | | | | | | | | | |
| 5 Ground Fault | | | | | | | | | | |
| 6 Open Circuit | | | | | | | | | | |
| 7 Notification Circuit Trouble | | | | | | | | | | |
| 8 Low Battery | | | | | | | | | | |
| 9 AC Power Failure | | | | | | | | | | |
| 10 Communicator Trouble Condition | | | | | | | | | | |

Note: The existing elevator has recall and power shunt.

SEQUENCE OF OPERATIONS

AURORA UROLOGY
 1411 S POTOMAC STREET, SUITE 210
 AURORA, COLORADO 80012

SUBMITTAL PREPARED BY:
ADS
Alarm Design Solutions Inc.
8391 Delaware St, Suite 103
Denver, CO 80221
(303) 828-0802
alarmdesignsolu@cs.com

JOB NUMBER: 5408

NATIONAL INSTITUTE FOR CERTIFICATION
IN ENGINEERING TECHNOLOGIES
Fire Protection Engineering Technology
Fire Alarm Systems

Joel Blatt S.E.T.
NICET #103704 Level IV
EXP. 10/1/2019

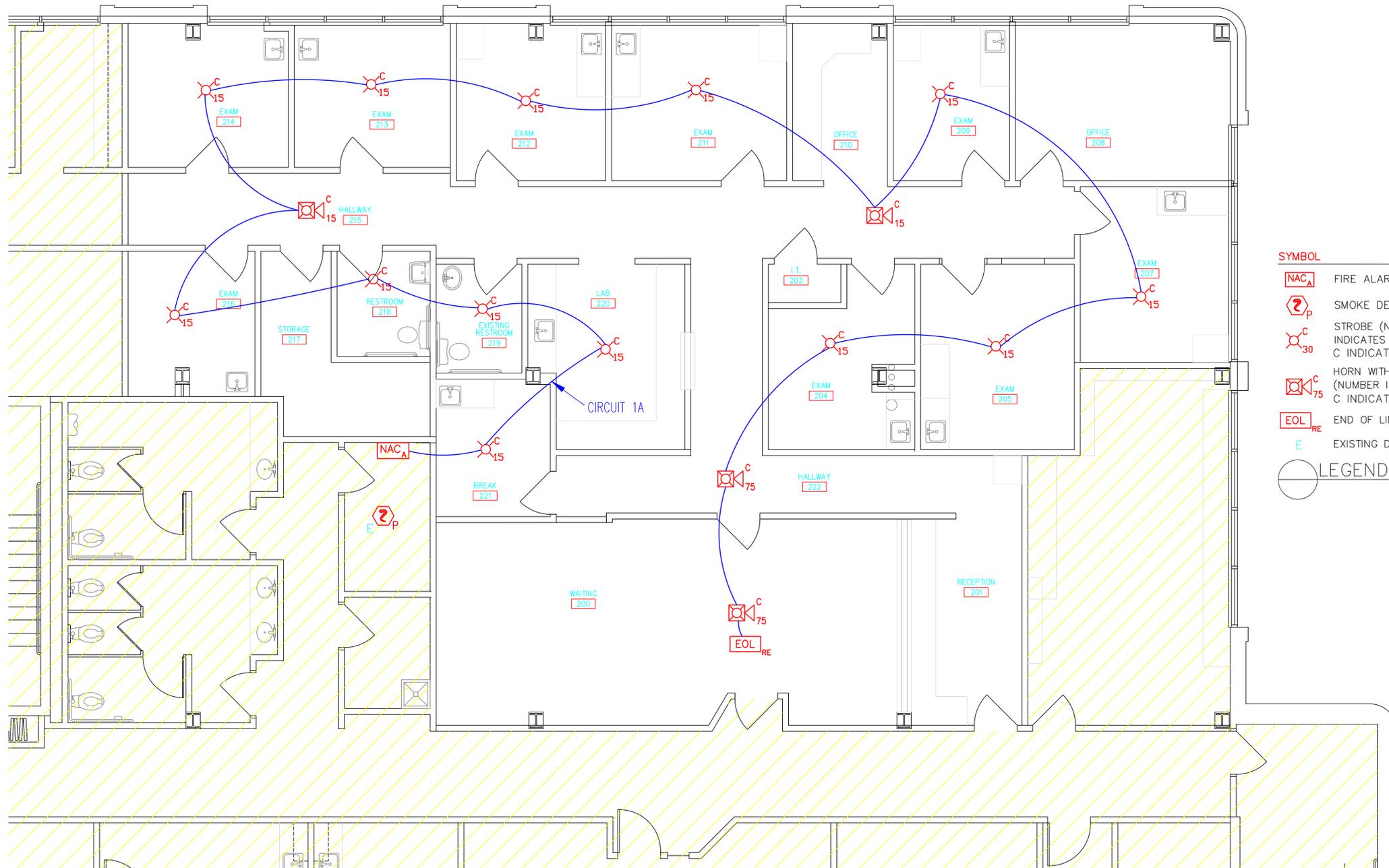
DATE: 10/04/16 SCALE: N.T.S.
REVISION:
PAGE NAME: TITLE PAGE

FA-1
SHEET
1 OF 2

INSTALLED BY:

 11901 East 14th Ave.
 Aurora, Colorado 80010
 Voice: (303)366-4905
 Email: office@arapahoefire.com
 Fax: (303)366-4966

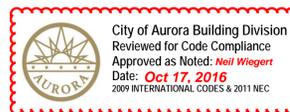
AURORA UROLOGY
 1411 S POTOMAC STREET, SUITE 210
 AURORA, COLORADO 80012



| SYMBOL | DESCRIPTION |
|---|--|
|  | FIRE ALARM POWER SUPPLY |
|  | SMOKE DETECTOR (PHOTOELECTRIC) |
|  | STROBE (NUMBER INDICATES CANDELA) C INDICATES CEILING MOUNTED |
|  | HORN WITH STROBE (NUMBER INDICATES CANDELA) C INDICATES CEILING MOUNTED |
|  | END OF LINE RESISTOR |
|  | EXISTING DEVICE |
|  | LEGEND |

PARTIAL 2ND FLOOR FIRE ALARM PLAN

SCALE: 1/4" = 1'-0"



SUBMITTAL PREPARED BY:

Alarm Design Solutions Inc.
 8391 Delaware St, Suite 103
 Denver, CO 80221
 (303) 828-0802
 alarmdesignsolu@cs.com

JOB NUMBER: 5408
 NATIONAL INSTITUTE FOR CERTIFICATION
 IN ENGINEERING TECHNOLOGIES
 Fire Protection Engineering Technology
 Fire Alarm Systems

 Joel Blatt S.E.T.
 NICET #103704 Level IV
 EXP. 10/1/2019
 DATE: 10/04/16 SCALE: 1/4"=1'-0"
 REVISION:
 PAGE NAME: FLOOR PLAN
FA-1
 SHEET
 2 OF 2

2015

2013

Fire Alarm System Acceptance Inspection

2009-IFC and 2007-NFPA 72

This worksheet is for jurisdictions that permit the use of 2007 NFPA 72 in lieu of IFC's referenced 2002 NFPA 72.

Date of Inspection: _____ Permit Number: _____

Business/Building Name: _____ Address of Project: _____

Contractor: _____ Contractor's Phone: _____

Reference numbers following worksheet statements represent an NFPA code section unless otherwise specified.

Pass | Fail | NA | General

- 1. ___ | ___ | ___ Obtained a copy of the fire alarm installation certification and a Record of Completion from installer, 4.5.2.1.
- 2. ___ | ___ | ___ Approved plans are on site.
- 3. ___ | ___ | ___ Fire alarm control unit (FACU) and remote annunciator (RA) are installed consistent with approved plans, 4.4.6.1.1. and 7.10.
- 4. ___ | ___ | ___ A zone and legend map is provided at the RA or an approved location.
- 5. ___ | ___ | ___ Fire alarm zones are properly identified on the FACU and RA panels.
- 6. ___ | ___ | ___ The fire alarm system power supply is a dedicated 120 AC branch circuit, which is labeled, 4.4.1.4.2.2.
- 7. ___ | ___ | ___ Type and gauge of wire or cable(s) for each circuit are consistent with the plans.
- 8. ___ | ___ | ___ Device location and installation are consistent with the plans.
- 9. ___ | ___ | ___ Pull stations are installed at the proper height and location, 42 in. to 48 in. and within the 200 ft. maximum travel distance, 5.13 and IFC 907.5.2.1 and 907.5.2.2.
- 10. ___ | ___ | ___ A Contractor Sound Pressure Level (dBA) Pretest Room Log is provided and verified with the use of a sound meter during a sound pressure test.

Operational

- 11. ___ | ___ | ___ Fire alarm audible notification devices sound throughout the occupancy providing a sound pressure level at least a minimum of 15 dBA above the average ambient noise level or 5 dBA above the maximum noise level. For bedrooms with closed door provide at least 75 dBA at the pillow, 7.4.4.1, IFC 907.6.2.1.1.
- 12. ___ | ___ | ___ Fire alarm audible devices are a three-pulse temporal pattern unless they were permitted to match existing audible devices, 6.8.6.5.1.
- 13. ___ | ___ | ___ Fire alarm visual notification device intensity (cd) ratings and settings, mounting height (80 in. to 96 in.), and location, are consistent with the plans, 7.5.4.1.
- 14. ___ | ___ | ___ Emergency voice/ alarm communications systems is tested and documentation is provided documenting the verbal statement(s) are distinguishable and understandable, Table 10.4.2.2.15(b).
- 15. ___ | ___ | ___ In sprinklered buildings, the fire alarm notification devices will activate by operation of the sprinkler flow alarm.
- 16. ___ | ___ | ___ HVAC duct detectors are supervised by the fire alarm system, detectors are all tested to verify if they can sample the air stream, fans shut down upon activation and visual and audible status alarm functions, Table 10.4.2.2.14(g).
- 17. ___ | ___ | ___ A central, remote or proprietary monitoring service received various signals during system tests.
- 18. ___ | ___ | ___ Verify that the correct and distinctive signals are received (alarm, trouble, and supervisory alarms), 4.4.3.3, 10.4.1.1
- 19. ___ | ___ | ___ Two monitoring circuits are provided, both circuits send correct signals to monitoring company within 90 seconds, Table 10.4.2.2.16.
- 20. ___ | ___ | ___ Verify proper operation of magnetic door-releasing hardware and/or ventilation shutdown.
- 21. ___ | ___ | ___ Sprinkler tamper switch activation transmits a trouble signal at the annunciator panel.
- 22. ___ | ___ | ___ Fire department communications system, if provided, is operational.
- 23. ___ | ___ | ___ For air sampling and flame detectors, test the device in accordance with the manufacturer's instructions.
- 24. ___ | ___ | ___ Restoreable heat and smoke detectors, and pull stations are tested.
- 25. ___ | ___ | ___ Trouble condition is created for each circuit and the FACU responds appropriately.
- 26. ___ | ___ | ___ Remote annunciator displays the correct zone and device information.

- 27. ____ | ____ | ____ Battery load test: the system is switched to battery operation 24 hours before the test and in the presence of the inspector the notification devices are activated and operate for 5 minutes or 15 minutes for emergency voice alarms.
- 28. ____ | ____ | ____ Check battery charger, measure load voltage, and open circuit voltage.
- 29. ____ | ____ | ____ Test ground-fault monitoring circuit, if provided.
- 30. ____ | ____ | ____ Under primary and secondary power, perform these tests:
 - ____ | ____ | ____ A. power light on and in normal condition, trouble signal when on secondary power.
 - ____ | ____ | ____ B. supervisory signals: fire pump power loss or phase reversal, water level/temp, pressure switches, control valves, etc.
 - ____ | ____ | ____ C. silence switch functions.
 - ____ | ____ | ____ D. a 2nd alarm initiating zone overrides silence switch.
 - ____ | ____ | ____ E. trouble signals and FACU panel lights operate for each circuit tested; disconnect .wires from devices and primary power supply to simulate trouble conditions.
 - ____ | ____ | ____ F. on secondary power, measure standby and alarm current demand.
 - ____ | ____ | ____ G. trouble and alarm reset switches operate.
 - ____ | ____ | ____ H. emergency voice alarms: the message is clear and distinct.
 - ____ | ____ | ____ I. initiating devices tested, audible sound pressure levels, and visuals operate.
 - ____ | ____ | ____ J. panel lamp test switch operates: if provided.
 - ____ | ____ | ____ K. field zones and device address signals corresponded with panel zones and addresses.
 - ____ | ____ | ____ L. elevator(s) recall to designated floor and alternate floor in accordance with 6.16.3.
- 31. ____ | ____ | ____ Other systems activate fire alarm: kitchen hood suppression system, clean agent, etc.
- 32. ____ | ____ | ____ As-builts are required when system installation is not consistent with the plans.
- 33. ____ | ____ | ____ Circuit loop resistance is within specifications and a test may be required if the system wiring has changed from the plans.
- 34. ____ | ____ | ____ Heat and spot smoke detectors are not within 4 in. of the sidewall, or if on the sidewall, the detector is 4 in. to 12 in. from the ceiling, 5.6.3.1, 5.7.3.2.1.
- 35. ____ | ____ | ____ Visual devices in a room or adjacent space with more than 2 devices within the field of view the flash are synchronized, 7.5.4.1.2(3). Devices in a corridor with more than 2 devices within the field of view and a maximum spacing of 100 ft., are synchronized, 7.5.4.2.5 and 7.5.4.2.7.
- 36. ____ | ____ | ____ Visual devices are wall mounted 80 in. to 96 in. above the floor level unless otherwise permitted by the approved plans and the fire code official, 7.5.4.1.
- 37. ____ | ____ | ____ Supplemental (extra) visual devices are permitted to be mounted less than 80 in. above the floor, 7.7.2.
- 38. ____ | ____ | ____ Ceiling-mounted devices are listed for use and spaced in accordance with Table 7.5.4.1.1(b) and the approved plans.

*Note: additional testing criteria is found in NFPA 72: Chapter 10.

Additional Comments:

| |
|--|
| |
| |
| |
| |
| |
| |
| |
| |

Inspection Date: _____ Approved or Disapproved FD Inspector: _____

Inspection Date: _____ Approved or Disapproved FD Inspector: _____

Fire Alarm Installation Certification

Permit #: _____ Date: _____

| | Property Protected | System Installer | System Supplier |
|-----------------|--------------------|------------------|-----------------|
| Business Name: | _____ | _____ | _____ |
| Address: | _____ | _____ | _____ |
| Representative: | _____ | _____ | _____ |
| Telephone: | _____ | _____ | _____ |

Location of Plans: _____

Location of Owner's Manual: _____

1. **Certification of System Installation:** Complete this section after system is installed, but prior to conducting operational acceptance tests. Check wiring for opens, ground faults, and improper branching.

This system installation was inspected and found to comply with the installation requirements of:

- _____ NFPA 72
- _____ Article 760 of NEC
- _____ Manufacturer's Instructions
- _____ Other (specify; FM, UL, etc.) _____

Print Name: _____

Signed: _____ Date: _____

Organization: _____

2. **Certification of System Operation:** All operational features and functions of this system were tested and found to be operating properly in accordance with the requirements of:

- _____ NFPA 72
- _____ Design Specifications
- _____ Manufacturer's Instructions
- _____ Other (specify) _____

Print Name: _____

Signed: _____ Date: _____

Organization: _____



www.firelite.com

July 8, 2004

DF-52301 • D-025

FCPS-24FS6 24 Volt, 6 Amp Remote Power Supply

Section: Power Supplies/Accessories

GENERAL

The **FCPS-24FS6** is a compact, cost-effective, 6-amp remote power supply with battery charger. The FCPS-24FS6 may be connected to any 12- or 24-volt Fire Alarm Control Panel (FACP) or may stand alone. Primary applications include Notification Appliance (bell) Circuit (NAC) expansion (to support ADA requirements and NAC synchronization) or auxiliary power to support 24-volt system accessories. The FCPS-24FS6 provides *regulated* and *filtered* 24 VDC power to four Notification Appliance Circuits configured as either four Class B (Style Y) or Class A (Style A, with ZNAC-4 option module). Alternately, the four outputs may be configured as all non-resettable or all resettable or two non-resettable and two resettable. The FCPS-24FS6 also contains a battery charger capable of charging up to 18 Amp Hour batteries.

FEATURES

- UL Listed NAC Synchronization using System Sensor, Wheelock or Gentex (Commander Series) appliances.
- Cascadable up to 10 power supplies (four with Gentex) with strobe timing maintained.
- Operates as a sync follower or a sync generator (default). * See note on reverse side.
- Contains two, fully-isolated input/control circuits (triggered from FACP Notification Appliance Circuit [*NAC expander mode*] or jumpered permanently on [*stand-alone mode*]).
- Optional mounting kit, P/N 90286, to internally house addressable SLC control module (CRF-300 or CMF-300) for alarm activation.
- Four Class B (Style Y) or four Class A (Style Z) (with ZNAC-4 Module) Notification Appliance Circuits.
- 6.0 A full load output (3.0 A maximum per circuit) in NAC expander mode (UL 864).
- 4.0 A continuous output in stand-alone mode (UL 1481).
- In stand-alone mode, output power circuits may be configured as resettable (reset line from FACP required) or non-resettable or a mix of two and two.
- Fully *regulated* and *filtered* power output (optimal for powering four-wire smoke detectors, annunciators and other system peripherals requiring regulated/filtered power).
- Power-limiting technology meets UL power-limiting requirements.
- Form-C normally-closed trouble relay.
- Fully supervised power supply, battery and Notification Appliance Circuits.
- Selectable earth fault detection.
- AC trouble report selectable for immediate or 8 hour delay.
- Works with virtually any UL 864 fire alarm control which utilizes an industry-standard reverse-polarity notification circuit (including unfiltered and unregulated bell power).
- Requires input trigger voltage of 9.0 - 32 VDC.
- Self-contained in compact, lockable cabinet (15" [38.1 cm] H x 14.5" [36.8 cm] W x 2.75" [7.0 cm] D).
- Includes integral battery charger capable of charging up to 18 AH batteries. Cabinet capable of housing 7.0 AH batteries.
- Battery charger may be disabled via dip switch for applications requiring larger batteries.
- Fixed, clamp-type terminal blocks accommodate up to 12 AWG (3.1 mm²) wire.



California
State Fire
Marshal
7315-0075:206

MEA
219-02-E



FCPS-24FS6.tif

Fire-Lite® Alarms is a Honeywell company.

This document is not intended to be used for installation purposes. We try to keep our product information up-to-date and accurate. We cannot cover all specific applications or anticipate all requirements. All specifications are subject to change without notice.

For more information, contact **Fire-Lite Alarms**, One Fire-Lite Place, Northford, Connecticut 06472. Phone: (800) 627-3473, Toll-Free FAX: (877) 699-4105.

ISO 9001
CERTIFIED
ENGINEERING & MANUFACTURING
QUALITY SYSTEMS

STANDARDS and CODES

The FCPS-24FS6 complies with the following standards:

- **NFPA 72** National Fire Alarm Code.
- **UL 864** Standard for Control Units for Fire Alarm Systems (*NAC expander mode*).
- **UL 1481** Power Supplies for Fire Alarm Systems (*stand-alone mode*).

SPECIFICATIONS

Primary (AC) Power

- FCPS-24FS6: 120 VAC 60 Hz, 3.2 A maximum
- Wire size: minimum 14 AWG (2.0 mm²) with 600V insulation.

Control Input Circuit

- Trigger Input Voltage: 9.0 to 32 VDC.
- Trigger Current: 2.0 mA (16 - 32 V).
(per input) 1.0 mA (9 - 16 V).

Trouble Contact Rating

- 5.0 A at 24 VDC.

Auxiliary Power Output

- Specific Application Power - 500 mA maximum.

Output Circuits

- +24 VDC filtered, regulated.
- 3.0 A maximum for any one circuit.
- 4.0 A maximum total continuous current for all outputs (*Stand-alone mode*).
- 6.0 A maximum total short-term current for all outputs (*NAC Expander mode*).

Secondary Power (Battery) Charging Circuit

- Supports lead-acid batteries only.
- Float Charge Voltage: 27.6VDC.
- Maximum Charge Current: 1.5 A.
- Maximum Battery Capacity: 18 AH.

ORDERING INFORMATION

FCPS-24FS6 Remote charger power supply (120 VAC). Includes main printed circuit board, transformers, red enclosure, and installation instructions.

FCPS-2456RB Replacement mother board.

PN 90286 FCPS-24F Module Mounting Kit

ZNAC-4 Class A (Style Z) NAC option module

A77-716B 12/24 VDC end-of-line relay for monitoring 4-wire smoke detector power.

BAT-1270 Battery, 12 volt, 7.0 AH (*two required*).

APPLICATIONS

Example 1

Expand notification appliance power an additional 6.0 amps. Use up to 4 Class B (Style Y) outputs or 4 Class A (Style Z) outputs (using the ZNAC-4).

In this example, the FACP notification appliance circuits will activate the FCPS-24FS6 when reverse polarity activation occurs. Trouble conditions on the FCPS-24FS6 are sensed by the FACP through the Notification Appliance Circuit.

Example 2

Use the FCPS-24FS6 to expand auxiliary regulated 24 volt system power up to 4 amps. Both non-resettable and resettable power options are available.

Resettable outputs are created by connecting the resettable output from the FACP to one or both of the FCPS-24FS6 inputs.

Example 3

Use addressable control modules to activate the FCPS-24FS6 versus the FACP Notification Appliance Circuits. This typically allows for mounting the FCPS-24FS6 at greater distances* away from the FACP while expanding system architecture in various applications.

In this example, an addressable control module is used to activate the FCPS-24FS6 and an addressable monitor module is used to sense FCPS-24FS6 trouble conditions. Local auxiliary power output from the FCPS-24FS6 provides power to the addressable control module.

*Fire•Lite's MS-9200, MS-9200UD, (198-point) or MS-9600 (636-point) addressable FACP's have the capability of locating control and monitor modules up to 10,000 feet (3048 m) away.

Sync Follower/Generator Note: In some installations, it is necessary to synchronize the flash timing of all strobes in the system for ADA compliance. Strobes accomplish this by monitoring very short timing pulses on the NAC power, which are created by a Fire Alarm Control Panel such as the Fire•Lite MS-9600. When installed at the end of a MS-9600 NAC wire run, this power supply can track (i.e. "follow") the strobe synchronization timing pulses on the existing NAC wire run. This maintains the overall system flash timing of the additional strobes attached to this power supply.

When this power supply is configured (via DIP switch settings) as a "sync follower," this supply's NAC outputs track the strobe synchronization pulses present at this supply's sync input terminal. The pulses are originated from an upstream FACP or other power supply.

When this power supply is configured (via DIP switch settings) as a "sync generator," this supply's sync input terminal are not used. Rather, this power supply is the originator of the strobe synchronization pulses on this power supply's NAC outputs. In "sync generator" mode, the sync type (System Sensor, Wheelock, or Gentex) is selectable via DIP switch settings.

GENTEX CORPORATION

Commander⁴ Series Selectable Candela Evacuation Signals

GCS/GCC 24VDC S E R I E S

Applications

The GCS/GCC Series is a ceiling mount strobe or horn/strobe combination that offers dependable audible and visual alarms and the lowest current consumption.

The GCS/GCC offers tamperproof field selectable candela options of 15, 30, 75, 95, 115 and 150 candela.

The GCC horn offers a continuous or synchable temporal three in 2400Hz and mechanical tone. All tones are easy for the professional to change in the field by using switches. The models are shipped from the factory in the temporal three alarm mode.

The GC Series has a very minimal operating current and has a minimum flash rate of 1Hz regardless of input voltage.

The Commander⁴ Series comes standard with the 4" mounting plate which incorporates the popular Super-Slide[®] feature that allows the installer to easily test for supervision. The product also features a locking mechanism which secures the product to the bracket without any screws showing.

The Commander⁴ also features the patented Checkmate[®] - Instant Voltage Verification feature which allows the installer to check the voltage drop draw without removing the signal.

The GC Series appliances are ANSI/UL 464 and ANSI/UL 1971 listed for use with fire protective systems and are warranted for three years from the date of purchase.



Product Listings

SIGNALING



LISTED



- ANSI/UL 464 and ANSI/UL 1971 Listed
- FM Approved
- CSFM: 7135-0569:122 (GCC)
7125-0569:123 (GCS)
- MEA: 285-91-E

Patents

- 7,375,617 May 20, 2008

Product Compliance

- NFPA 72
- Americans with Disabilities Act (ADA)
- IBC/IFC/IRC
- City & State ordinances/Laws/Regulations
- Quality Management System is certified to:
ISO 9001:2008



ASSEMBLED IN
THE USA

Standard Features

- Nominal voltage 24VDC
- Tamperproof field selectable candela options of 15, 30, 75, 95, 115 & 150
- Super-Slide[®] Bracket - Ease of Supervision Testing
- Checkmate[®] - Instant Voltage Verification
- Unit Dimensions: 6" (15.24 cm) x 2.6" (6.604 cm)
- Synchronize strobe and/or horn with Gentex AVSM Control Module
- Prewire entire system, install mounting bracket, then install signals
- Documented lower installation and operating costs
- Input Terminals 12 to 18 AWG
- Switch Selection for High or Low dBA
- Switch Selection for 2400Hz or Mechanical Tone
- Switch Selection for Continuous or Temporal 3
- Tamperproof re-entrant grill
- Surface mount with the GCSB (Gentex Ceiling Surface Mount Box)
- Silence audible while visual appliance will remain flashing (for use in accepted jurisdictions)
- Faceplate available in red or off-white

GCS Series 24 Volt Ceiling Mount Selectable Strobe

| Model Number | Part Number | Nominal Voltage | Candela |
|--------------|--------------|-----------------|--------------------------|
| GCS24CR | 904-1213-002 | 24VDC | 15, 30, 75, 95, 115, 150 |
| GCS24CW | 904-1215-002 | 24VDC | 15, 30, 75, 95, 115, 150 |
| GCS24PCR | 904-1214-002 | 24VDC | 15, 30, 75, 95, 115, 150 |
| GCS24PCW | 904-1216-002 | 24VDC | 15, 30, 75, 95, 115, 150 |

GCC Series 24 Volt Ceiling Mount Selectable Horn/Strobe

| Model Number | Part Number | Nominal Voltage | Candela | Reverberant dBA @ 10ft. per ANSI/UL 464 | In Anechoic Room dBA @ 10ft. |
|--------------|--------------|-----------------|--------------------------|---|------------------------------|
| GCC24CR | 904-1209-002 | 24VDC | 15, 30, 75, 95, 115, 150 | 81-86 | 90 |
| GCC24PCR | 904-1210-002 | 24VDC | 15, 30, 75, 95, 115, 150 | 81-86 | 90 |
| GCC24CW | 904-1211-002 | 24VDC | 15, 30, 75, 95, 115, 150 | 81-86 | 90 |
| GCC24PCW | 904-1212-002 | 24VDC | 15, 30, 75, 95, 115, 150 | 81-86 | 90 |

Model Designations:

C = Ceiling Mount
R = Red Faceplate W = White Faceplate

All units are available in plain (no lettering).

Plain units are non-returnable.

GC24 Product Strobe Current Ratings (mA)

| | Candela | 15cd | 30cd | 75cd | 95cd | 115cd | 150cd |
|---------------------|---------------------|-------|-------|-------|-------|-------|-------|
| 24VDC (16-33 Volts) | 24VDC | 72mA | 101mA | 167mA | 200mA | 214mA | 286mA |
| | UL Max ¹ | 120mA | 120mA | 200mA | 220mA | 290mA | 321mA |

GCC24 Product Horn Decibel and Current Ratings (mA)

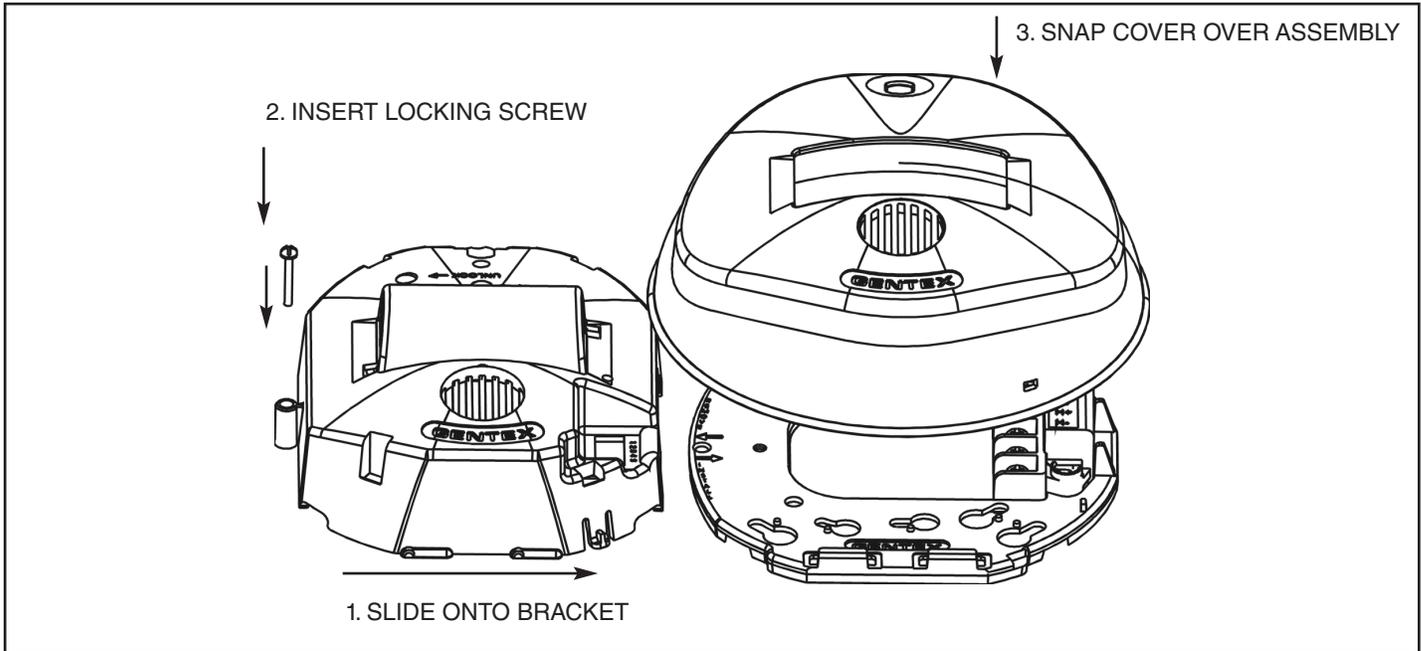
| Horn Mode | Minimum dBA @ 10ft. per ANSI/UL 464 (HIGH) | Minimum dBA @ 10ft. per ANSI/UL 464 (LOW) | Regulated 24VDC Max. Operating @ High Setting (mA) |
|-----------------------|--|---|--|
| Temp 3 2400Hz | 83 | 75 | 23 |
| Temp 3 Mechanical | 81 | 73* | 22 |
| Continuous 2400Hz | 86 | 78 | 23 |
| Continuous Mechanical | 84 | 76 | 22 |

NOTES:

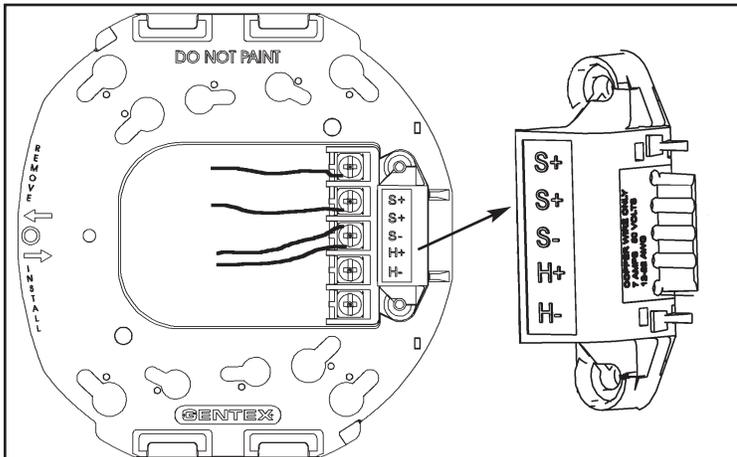
- Operating temperature: 32° to 120°F (0° to 49°C). The GC Series is not listed for outdoor use.
- The sound output for the temporal 3 tone is rated lower since the time the horn is off is averaged into the sound output rating. While the horn is producing a tone in the temporal 3 mode its sound pressure is the same as the continuous mode.
- For nominal and peak current across UL regulated voltage range for filtered DC power and unfiltered (FWR [Full Wave Rectified]) power, see installation manual.
- Gentex does not recommend using a coded or pulsing signaling circuit with any of our strobe products (see Technical Bulletin Number 014).
- * Operating the horn in this mode at this voltage will result in not meeting the minimum ANSI/UL 464 reverberant sound level required for public mode fire protection service. These settings are acceptable only for private mode fire alarm use. Use the high dBA setting for public mode application (not applicable when using the chime tone. The chime tone is always private mode).

¹ RMS current ratings are per UL average RMS method. UL max current rating is the maximum RMS current within the listed voltage range (16-33VDC for 24VDC units). For strobes the UL max current is usually at the minimum listed voltage (16VDC for 24VDC units). For audibles the max current is usually at the maximum listed voltage. For unfiltered FWR ratings, see installation manual.

Mounting Super-Slide®

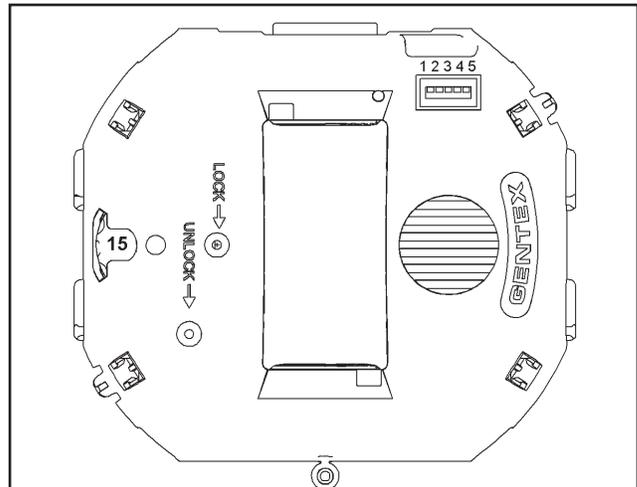


Checkmate® Instant Voltage Verification



The access holes are provided in the back of the terminal block to allow the voltage to be measured directly without removing the device. Typically this would be done at the end of the line to confirm design criteria. Most measurements will be taken using the S+ and S- locations although access is provided to other locations. **NOTICE: CARE SHOULD BE TAKEN TO NOT SHORT THE TEST PROBES.**

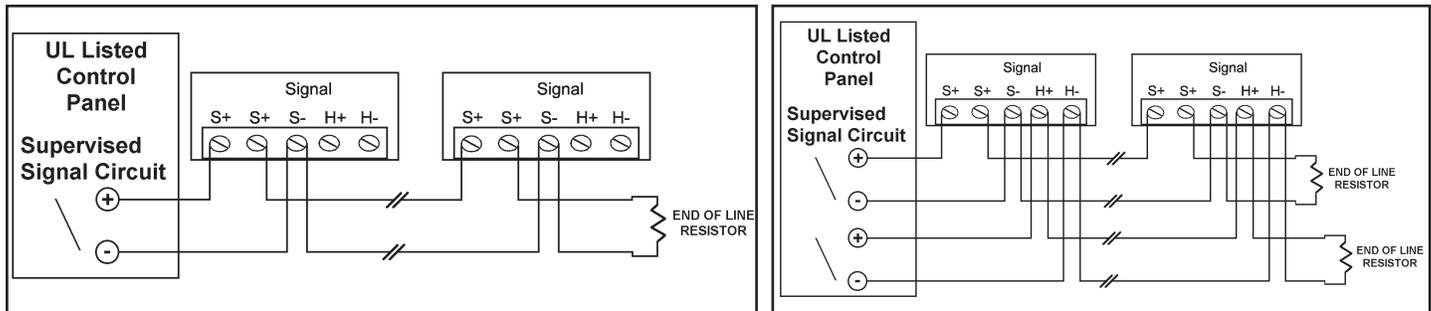
Switch Locations



Switch positions 1 and 2 in the down position to select isolated horn and strobe power inputs. Switch 3 selects between temporal or non-temporal tone. Up is temporal. Switch 4 selects between mechanical or high frequency tone. Up is mechanical. Switch 5 selects between high or low dBA. Up is high dBA.

GCS/GCC 24VDC SERIES

Conventional GC Series Wiring Diagrams



NOTES:

- All strobes are designed to flash as specified with continuous applied voltage. Strobes should not be used on coded or pulsing signaling circuits. However, use of the Gentex AVSM control module or Gentex synchronization protocol is permitted to synchronize the strobe, horn and/or mute the horn. See Technical Bulletin 014 for additional information.
- **FOR SYNCHRONIZATION WIRING INFORMATION, REFERENCE AVSM CONTROL MODULE DATA SHEET (551-0031) AND/OR AVSM CONTROL MODULE MANUAL (550-0284) FOR SYNCHRONIZATION MODULE WIRING DIAGRAMS. AVSM CONTROL MODULE DATA SHEET AND MANUAL CAN BE OBTAINED AT <http://www.gentex.com> OR CALL GENTEX CORPORATION AT 1-800-436-8391.**

Architect & Engineering Specifications

The visible and audible/visible signal shall be Gentex model GCS or GCC or approved equal and shall be listed by Underwriters Laboratories Inc. per ANSI/UL 1971 for the GCS and ANSI/UL 464 for the GCC. The notification appliance shall also be listed with the California State Fire Marshal (CSFM) and the Bureau of Standards and Appeals (NYC).

The notification appliance (combination audible/visible units and audible units only) shall produce a peak sound output of 90dBA or greater as measured at 24VDC in an anechoic chamber. The signaling appliance shall also have the capability to silence the audible signal while leaving the visible signal energized with the use of a single pair of power wires. Additionally, the user shall be able to select either continuous or temporal tone output with the temporal signal having the ability to be synchronized.

The audible/visible and visible signaling appliance shall also maintain a minimum flash rate of 1Hz or up to 2Hz regardless of power input voltage. The appliance shall have an operating current of 72mA or less at 24VDC for the 15 candela strobe circuit.

The appliance shall be polarized to allow for electrical supervision of the system wiring. The unit shall be provided with a mounting bracket with terminals with barriers for input/output wiring and be able to mount to a single gang or double gang box or double workbox with the use of an adapter plate. The unit shall have an input voltage range of 16-33 volts with either direct current or full wave rectified power.

The appliance shall be capable of test supervision without disconnecting wires, verify voltage without removing unit and be capable of mounting to a surface back box.

24 units per carton
 29 pounds per carton

GENTEX CORPORATION

Fire Protection Products Group • www.gentex.com
 10985 Chicago Drive • Zeeland, Michigan 49464
 616.392.7195 • 1.800.436.8391 • 616.392.4219 Fax

Gentex Corporation reserves the right to make changes to the product data sheet at their discretion.

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551-0051-06



PS-1270 12 Volt 7.0 AH

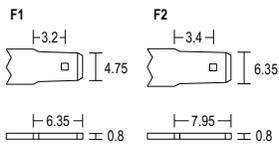
Rechargeable Sealed Lead Acid Battery

We've Got The Power.™

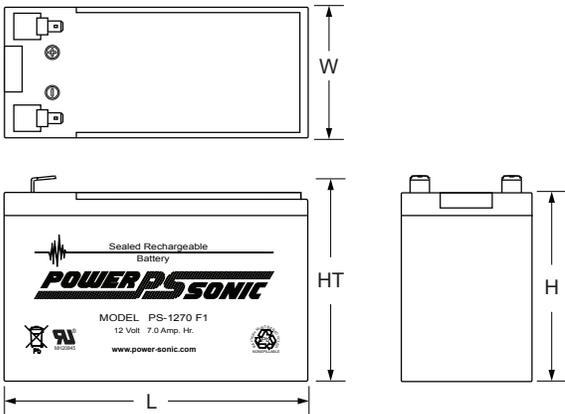


Terminals (mm)

- F1 - Quick disconnect tabs, 0.187" x 0.032" - Mate with AMP. INC. FASTON "187" series — OR —
- F2 - Quick disconnect tabs, 0.250" x 0.032" - Mate with AMP. INC. FASTON "250" series



Physical Dimensions: in (mm)



L: 5.95 (151) W: 2.56 (65) H: 3.70 (94) HT: 3.86 (98)

Tolerances are +/- 0.04 in. (+/- 1mm) and +/- 0.08 in. (+/- 2mm) for height dimensions. All data subject to change without notice.

Features

- Absorbent Glass Mat (AGM) technology for superior performance
- Valve regulated, spill proof construction allows safe operation in any position
- Power/volume ratio yielding unrivaled energy density
- Rugged impact resistant ABS case and cover (UL94-HB)
- Approved for transport by air. D.O.T., I.A.T.A., F.A.A. and C.A.B. certified
- U.L. recognized under file number MH 20845

Performance Specifications

Nominal Voltage 12 volts (6 cells)

Nominal Capacity

| | |
|-------------------------------------|---------|
| 20-hr. (350mA to 10.50 volts) | 7.00 AH |
| 10-hr. (650mA to 10.50 volts) | 6.50 AH |
| 5-hr. (1.2A to 10.20 volts) | 6.00 AH |
| 1-hr. (4.5A to 9.00 volts) | 4.50 AH |
| 15-min. (14A to 9.00 volts) | 3.50 AH |

Approximate Weight 4.80 lbs. (2.18 kg)

Energy Density (20-hr. rate) 1.49 W-h/in³ (90.95 W-h/l)

Specific Energy (20-hr. rate) 17.50 W-h/lb (38.58 W-h/kg)

Internal Resistance (approx.) 23 milliohms

Max Discharge Current (7 Min.) 21.0 amperes

Max Short-Duration Discharge Current (10 Sec.)..... 70.0 amperes

Shelf Life (% of nominal capacity at 68°F (20°C))

| | |
|----------------|-----|
| 1 Month | 97% |
| 3 Months..... | 91% |
| 6 Months | 83% |

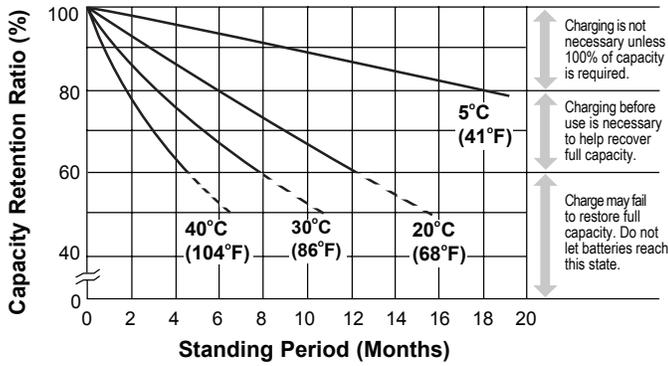
Operating Temperature Range

Charge.. -4°F (-20°C) to 122°F (50°C)
 Discharge..... -40°F (-40°C) to 140°F (60°C)

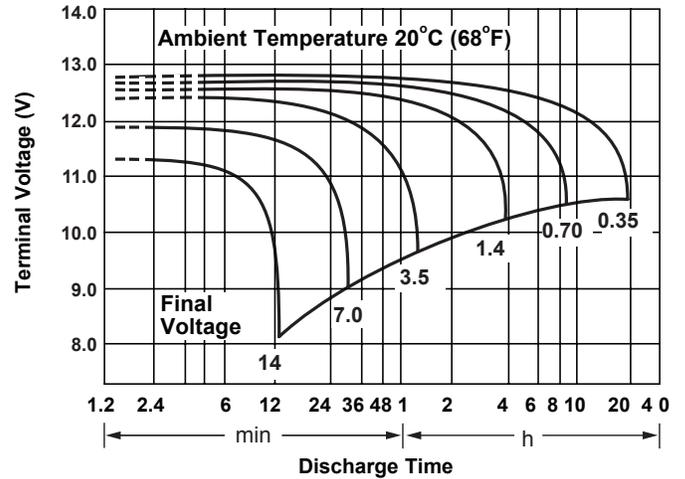
Case ABS Plastic

Power-Sonic Chargers PSC-12800A, 12800A-C

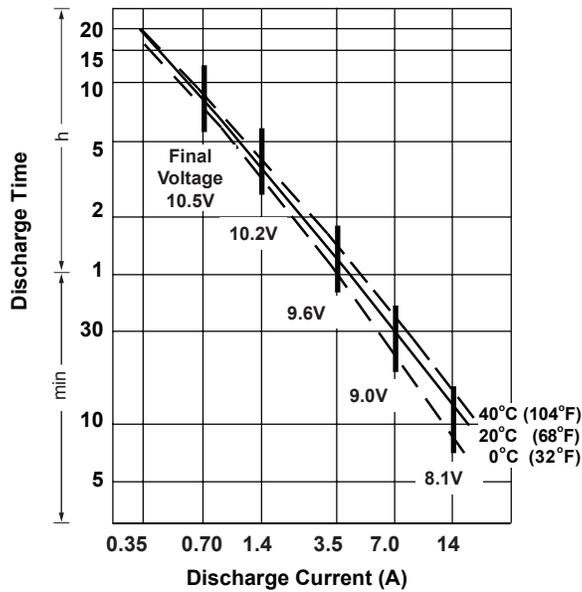
Shelf Life & Storage



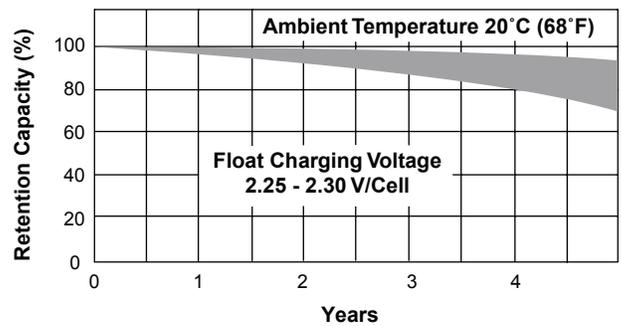
Discharge Characteristics



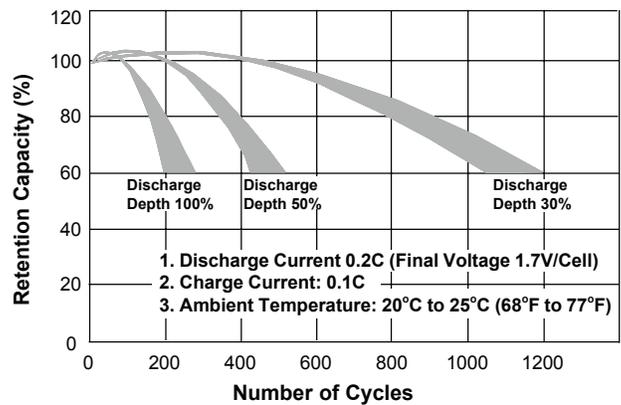
Discharge Time vs. Discharge Current



Life Characteristics in Stand-By Use



Life Characteristics in Cyclic Use



Charging

Cycle Applications: Limit initial current to 2.1A. Charge until battery voltage (under charge) reaches 14.4 to 14.7 volts at 68°F (20°C). Hold at 14.4 to 14.7 volts until current drops to under 70mA. Battery is fully charged under these conditions, and charger should be disconnected or switched to "float" voltage.

"Float" or "Stand-By" Service: Hold battery across constant voltage source of 13.5 to 13.8 volts continuously. When held at this voltage, the battery will seek its own current level and maintain itself in a fully charged condition.

Note: Due to the self-discharge characteristics of this type of battery, it is imperative that they be charged within 6 months of storage, otherwise permanent loss of capacity might occur as a result of sulfation.

Chargers

Power-Sonic offers a wide range of chargers suitable for batteries up to 100AH. Please refer to the Charger Selection Guide in our specification sheets for "C-Series Switch Mode Chargers" and "Transformer Type A and F Series". Please contact our Technical department for advice if you have difficulty in locating suitable models.

Further Information

Please refer to our website www.power-sonic.com for a complete range of useful downloads, such as product catalogs, material safety data sheets (MSDS), ISO certification, etc..

Contact Information

DOMESTIC SALES

Tel: +1-619-661-2020
 Fax: +1-619-661-3650
 national-sales@power-sonic.com

CUSTOMER SERVICE

Tel: +1-619-661-2030
 Fax: +1-619-661-3648
 customer-service@power-sonic.com

TECHNICAL SUPPORT

Tel: +1-619-661-2020
 Fax: +1-619-661-3648
 support@power-sonic.com

INTERNATIONAL SALES

Tel: +1-650-364-5001
 Fax: +1-650-366-3662
 battery@power-sonic.com