# Fire Department & Project Submittal

for

At

## Freal Foods
## 2884 Independence Ave.
### Lee's Summit, MO 64064

**Remote Monitoring Central Station:**

**Via Cellular Communicator**

**Alarm Central
5510 East 31st Street
Kansas City, MO  64128
UUFX-S7249-1
816-861-1500**

**Bill Ireland Security Co.
15227 Broadmoor St.
Overland Park, KS 66223
(913) 897-7518**



**Rodney Sheets**

**Archway Systems**

**17020 East 40 Hwy, Suite #1**

**Independence, MO.  64055**

**(816) 709-3358**

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# Part one

## System Overview Outline

| | | | | |
|---|---|---|---|---|
| I. | Location | | | |
| | | Freal Foods, | | |
| | | 2884 Independence Ave. | | |
| | | Lee's Summit, MO 64064 | | |

II. Codes
    A.    NFPA 72 Chapters as Applicable(Remote Station)
    B.    NEC Articles as Applicable
    C.    Local, City, State

III. Control

| | | | | |
|---|---|---|---|---|
| A. | 1 | SK-5208 | Fire Alarm Control Panel W/ Digital Communicator | **EXISTING** |
| B. | 1 | SLETEVI-CFB-PS | Commercial Fire Dual Path Mercantile Model in Red Me | **EXISTING** |
| C. | 1 | AL602UL-ADA | NAC Power Extenders | **EXISTING** |

IV. Fire Alarm Initiating Devices

| | | | | |
|---|---|---|---|---|
| A. | 2 | 2W-B | 2-Wire Photoelectric Detector W/ Thermal & Relay | **EXISTING** |
| B. | 5 | DUCT DETECTOR | Connection Only, Provided by Mechanical Contractor | **EXISTING** |
| C. | 2 | WATER FLOW | Connection Only, Provided by Sprinkler Contractor | **EXISTING** |
| D. | 2 | TAMPER SWITCH | Connection Only, Provided by Sprinkler Contractor | **EXISTING** |

V. Fire Alarm Indicating Devices

| | | | | |
|---|---|---|---|---|
| A. | 21 | P2RL | 2-Wire, Horn Strobe, Red | **20 EXISTING 1 NEW** |
| B. | 2 | SRL | 2 Wire Strobe Multi-CD, Red Wall Mount | **EXISTING** |

VI. Zones
    Zoned Per Prints

VII. Wiring
    All Circuits and Wiring Shall be "Power Limited"
    Initiating Zones Shall be 18/2 or 18/4 U.L. FPL Cable
    Indicating Circuits Shall be 14/2 U.L. FPL Cable
    System Ground Shall be 14 THHN Green Conductor
    Under Ground and Outside Wire shall be 14 THHN in Approved Raceway

VIII. Listings
    A.    All Equipment Shall Be U.L. Listed and Compatible

IX. Power Supply
    A.    Primary - 110 VAC Dedicated 20 Amp Circuit
    B.    Secondary - 18 Amp Hour Batteries

X. Alarm Supervision
    A.    Human

| | | | |
|---|---|---|---|
| B. | Remote Station | Installing Branch/Contractor |
| | Alarm Central | Bill Ireland Security Co. |
| | 5510 East 31st Street | 15227 Broadmoor St. |
| | Overland Park, MO 64128 | Overland Park, KS 66223 |
| | UUFX-S7249-1 | (913) 897-7518 |
| | 816-861-1500 | |

# FIRE ALARM MATRIX WITH OCCUPANT NOTIFICATION

| | ANNUNCIATES ALARM SIGNAL AT CONTROL PANEL AND REMOTE ANNUNCIATOR | ANNUNCIATES SUPERVISORY SIGNAL AT CONTROL PANEL AND REMOTE ANNUNCIATOR | ANNUNCIATES TROUBLE SIGNAL AT CONTROL PANEL AND REMOTE ANNUNCIATOR | TRANSMITS ALARM SIGNAL AT CONTROL CENTRAL STATION | TRANSMITS SUPERVISORY SIGNAL TO CENTRAL STATION | TRANSMITS TROUBLE SIGNAL TO CENTRAL STATION | ACTIVATES INTERIOR HORN/STROBES | ACTIVATES EXTERIOR HORN/STROBE/BELL ABOVE FDC | SHUTDOWN RTU | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SPRINKLER SYSTEM | | | | | | | | | | | | | | | |
| - WATERFLOW SWITCH | ● | | | ● | | | ● | ● | | | | | | | |
| - VALVE TAMPER SWITCH | | ● | | | ● | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| SMOKE DETECTOR | ● | | | ● | | | ● | | | | | | | | |
| DUCT DETECTOR | | ● | | | ● | | | | ● | | | | | | |
| | | | | | | | | | | | | | | | |
| POWER SUPPLY - TROUBLE | | | ● | | | ● | | | | | | | | | |
| COMMUNICATOR - COMMUNICATION FAIL | | | ● | | | | | | | | | | | | |
| COMMUNICATOR - TROUBLE | | | ● | | | ● | | | | | | | | | |
| ABNORMAL CONTROL, CIRCUIT OR DEVICE | | | ● | | | ● | | | | | | | | | |
| LOSS OF POWER | | | ● | | | ● | | | | | | | | | |

# Part Two

# Battery Calculations

# Standby Battery Calculations
## SILENT KNIGHT
## SK-5208

Freal Foods,
2884 Independence Ave.
Lee's Summit, MO 64064

| Part Number | Description | Quantity | Standby Per Device | Current All Devices | Alarm Per Device | Current All Devices |
|---|---|---|---|---|---|---|
| SK-5208 | Fire Alarm Control Panel W/ Digital Communicator | 1 | 0.140000 | 0.140000 | 0.460000 | 0.460000 |
| 2W-B | 2-Wire Photoelectric Detector W/ Thermal & Relay | 2 | 0.000500 | 0.001000 | 0.130000 | 0.260000 |
| SLETEVI-CFB-PS | Commercial Fire Dual Path Mercantile Model in Red Met | 1 | 0.071000 | 0.071000 | 0.200000 | 0.200000 |
| | | | | 0.000000 | | 0.000000 |
| | | | | 0.000000 | | 0.000000 |
| | | | | 0.000000 | | 0.000000 |
| | | | | 0.000000 | | 0.000000 |
| | | | | 0.000000 | | 0.000000 |
| | | | | 0.000000 | | 0.000000 |
| | | | | 0.000000 | | 0.000000 |
| TAC-IDC | Total Alarm Current Max IDC | | 0.000000 | 0.000000 | 0.040000 | 0.000000 |
| TAC-SLC | Total Alarm Current Max SLC | | 0.000000 | 0.000000 | 0.400000 | 0.000000 |
| | | | | Standby | 0.212 | Alarm | 0.920 |

| Total Aux current | Maximum Amps: | 2.0000 |
|---|---|---|

## Signal Circuits

| Circuit | Device | Quantity | Alarm Per Device | Current All Devices |
|---|---|---|---|---|
| Circuit 1 | P2RK (15cd) | 1 | 0.088 | 0.088 |
| | | | | 0.000 |
| | | | | 0.000 |
| | | | | 0.000 |
| | | | | 0.000 |
| | | | | 0.000 |
| Total 1 | Maximum Amps: | 2.5000 | | 0.088 |
| Circuit 2 | P2RL (15cd) | 5 | 0.083 | 0.415 |
| | | | | 0.000 |
| | | | | 0.000 |
| | | | | 0.000 |
| | | | | 0.000 |
| | | | | 0.000 |
| Total 2 | Maximum Amps: | 2.5000 | | 0.415 |
| Circuit 3 | P2RL (15cd) | 3 | 0.083 | 0.249 |
| | | | | 0.000 |
| | | | | 0.000 |
| | | | | 0.000 |
| | | | | 0.000 |
| | | | | 0.000 |
| Total 3 | Maximum Amps: | 2.5000 | | 0.249 |
| Circuit 4 | | | | 0.000 |
| | | | | 0.000 |
| | | | | 0.000 |
| | | | | 0.000 |
| | | | | 0.000 |
| | | | | 0.000 |
| Total 4 | Maximum Amps: | 2.5000 | | 0.000 |
| | | | Notification Circuits Alarm | 0.752 |
| Totals | Maximum Amps: | 6 | Total Alarm Amp | 1.672 |

| | | Circuit 1 | Circuit 2 | Circuit 3 | Circuit 4 |
|---|---|---|---|---|---|
| Max Wire Run Distance For AWG | 14 | 7125 | 1511 | 2518 | |
| Actual Wire run Distance | | 50 | 650 | 325 | |
| Voltage Drop for 14 AWG wire | | 0.028 | 1.721 | 0.516 | |

Voltage Drop = 2 * Wire Run Distance * 3.07 Ohms Per 1000 ft 14 AWG * Total Current for Circuit / 1000

| Standby Hours | 24 |
|---|---|
| Standby Battery Draw | 0.212 |
| Standby Amp Hrs | 5.088 |

| Alarm Minutes | 5 |
|---|---|
| Alarm Current | 2.592 |
| Alarm Current by Minutes | 0.215 |

| Battery Size Required with Alarm Time Minutes and 20% Reserve | 6.364 |
|---|---|

| Batteries Size Supplied | 7 | Amp Hours |
|---|---|---|

## Voltage drop Calculations & Current Draws for NACP #1

### AL602UL-ADA

| Device | Current Draw | Circuit #1 | | Circuit #2 | | Circuit #3 | | Circuit #4 | |
|---|---|---|---|---|---|---|---|---|---|
| | | Quantity | Total Current | Quantity | Total Current | Quantity | Total Current | Quantity | Total Current |
| P2RL (15cd) | 0.083 | 7 | 0.581 | 6 | 0.498 | 1 | 0.083 | | 0 |
| SRL (15cd) | 0.060 | | 0 | 2 | 0.12 | | 0 | | 0 |
| | | | 0 | | 0 | | 0 | | 0 |
| | | | 0 | | 0 | | 0 | | 0 |
| | | | 0 | | 0 | | 0 | | 0 |
| | | | 0 | | 0 | | 0 | | 0 |
| | | | 0 | | 0 | | 0 | | 0 |
| | | | 0 | | 0 | | 0 | | 0 |
| | | | 0 | | 0 | | 0 | | 0 |
| | | | 0 | | 0 | | 0 | | 0 |
| | | | 0 | | 0 | | 0 | | 0 |
| | | | 0 | | 0 | | 0 | | 0 |
| Current for Circuit | | | 0.581 | | 0.618 | | 0.083 | | 0 |
| Wire Length Ft for Circuit | | | 300 | | 415 | | 115 | | |
| Max Wire Run Distance For AWG | | | 1079 | | 1014 | | 7554 | | |
| Actual Voltage Drop For Circuit | | | 1.112 | | 1.636 | | 0.061 | | |
| MAX Volt Drop for Circuit | | | 4.400 | | 4.400 | | 4.400 | | 4.400 |

| Device | Device Standby Current | Device Alarm Current | Quantity | Total Standby Draw | Total Alarm Draw | Max Circuit Amps | Wire Size | Alarm Min | Max Panel Amps |
|---|---|---|---|---|---|---|---|---|---|
| AL602UL-ADA | 0.09 | 0.175 | 1 | 0.09 | 0.175 | 3 | 14 | 5 | 6 |
| | | | | 0 | 0 | | | | |
| | | | | 0 | 0 | | | | |
| | | | | 0 | 0 | | | | |
| | | | | 0 | 0 | | | | |

| | | |
|---|---|---|
| | Standby Hours | 24 |
| | Alarm Current: | 1.457 |
| Power Supply Min Voltage | 20.400 | Total Battery Calculation Standby: 2.160 — Battery size Required: 2.737 |
| Device Min Operating Voltage | 16.000 | Alarm Current Min: 0.121 — Batteries Supplied (AH): 7 |

# Part Three

# U.L. Certificates

# CERTIFICATE OF COMPLIANCE

**THIS IS TO CERTIFY** that the Alarm Service Company indicated below is included by Underwriters Laboratories Inc. (UL) in its Product Directories as eligible to use the UL Listing Mark in connection with Certificated Alarm Systems. The only evidence of compliance with UL's requirements is the issuance of a UL Certificate for the Alarm System and the Certificate is current under UL's Certificate Verification Service. This Certificate does not apply in any way to the communication channel between the protected property and any facility that monitors signals from the protected property unless the use of a UL listed or Classified Alarm Transport Company is specified on the Certificate.

**Listed Service From:** **Independence, MO**

**Alarm Service Company: (567706-001)**

**ALARMCENTRAL  L L C**
**13700  E 42ND  TER  S**
**PO BOX  3272**
**INDEPENDENCE  MO 64055**

**Service Center: (567706-001)**

**ALARMCENTRAL  L L C**
**13700  E 42ND  TER  S**
**PO BOX  3272**
**INDEPENDENCE  MO 64055**

**The Alarm Service Company is Listed in the following Certificate Service Categories:**

| File - Vol No. | CCN | Listing Category |
|---|---|---|
| BP9514-1 | CVSU | [Burglar Alarm Systems] Monitoring Station, Residential |
| S7249-1 | UUFX | [Signal and Fire Alarm Equipment and Services] (Protective Signaling Services) Central Station |

**\*\*\*THIS CERTIFICATE EXPIRES ON  31-DEC-2022\*\*\***

"LOOK FOR THE UL ALARM SYSTEM CERTIFICATE"

# Part Four

## Equipment Data Sheets

# SILENT KNIGHT

by Honeywell

# Model 5208
# Fire Alarm Control Panel
# with Digital Communicator

## The Fire Alarm Control Designed to Grow with Your Systems Needs, Without The Growing Pains.

The SK-5208 is a microprocessor based control panel with built-in UL listed communicator designed for applications requiring smoke detection, manual pull stations, and sprinkler supervision. It features an easy to read LCD display with programmable English readout and user friendly tactile keys. The basic unit offers 10 zones of initiation and is expandable up to 30 zones for larger applications. The SK-5208 has a complete line of supervised accessories that provide remote annunciation, auxiliary control zone expansion. Ideal for new and retrofit applications, the SK-5208 delivers the performance to handle your installation.

## Features

- 10 zones, 8 Class B (Style B) and 2 Class A (Style D) or Class B (Style B) zones, expandable to 30 zones
- Supervised zone expanders and I/O modules can be mounted remotely from the main control panel
- Event History Buffer (150 events) with date/time stamp
- All zones are compatible with 2- or 4-wire detectors
- 8 selectable/programmable output patterns for notification appliance circuits
- Built-in Digital Alarm Communicator Transmitter (DACT)
- 4 Notification Appliance Circuits
- 4 programmable general purpose relays
- Programmable smoke verification, pre-alarm delay, cross zoning and enhanced verification mode features that can help minimize false alarms
- Programmable from the built-in control panel touchpad, remote annunciator, or Windows® SKSS downloading software
- Direct connect port for on-site up/downloading with Windows® SKSS downloading software
- Built-in walk test feature
- Single or dual interlock water releasing capability
- Plex door option combines a dead front cabinet door with a clear window, limiting access to the panel while providing single button operation of the reset and silence functions
- Programmable AC trouble relay

- Built-in synchronization for appliances from AMSECO®, Gentex®, Faraday, System Sensor®, and Wheelock®
- Programmable date settings for Daylight Saving Time
- Clock source setting options for 50 Hz, 60 Hz, or internal (uses the panel's internal clock)

## Specifications

| | |
|---|---|
| Operating Voltage: | 24 VDC |
| Primary AC: | 120 Vrms @ 60Hz, 2A |
| Total DC Load: | 6 Amp |
| Current Draw: | |
| Standby: | 140 mA |
| Alarm: | 460 mA |
| Flush Mounting Dimensions: | |
| Height: | 24.75" (62.9 cm) |
| Width: | 14.5" (36.8 cm) |
| Depth: | 3-7/16" (8.73 cm) with 5/8" protruding |
| Overall Dimensions: | |
| Height: | 26-3/8" (67 cm) |
| Width: | 17-3/16" (43.66 cm) |
| Total Depth: | 4" (10.16 cm) |
| Operating Temp: | 32° to 120° F (0° to 49° C) |
| Humidity: | 10 - 93% noncondensing |

## Optional Accessories

- SK-5235 LCD Remote Annunciator
- SK-5217 10 Zone Expander (2 max. per system)
- SK-5280 Status Display Module (8 max. per system)
- 5220 Direct Connect Module
- 5824 Serial/Parallel Printer Interface Module
- SKSS Downloading Software



### SK-5208

- Plex-2 Door Option
- SK-SCK Seismic Compliance Kit
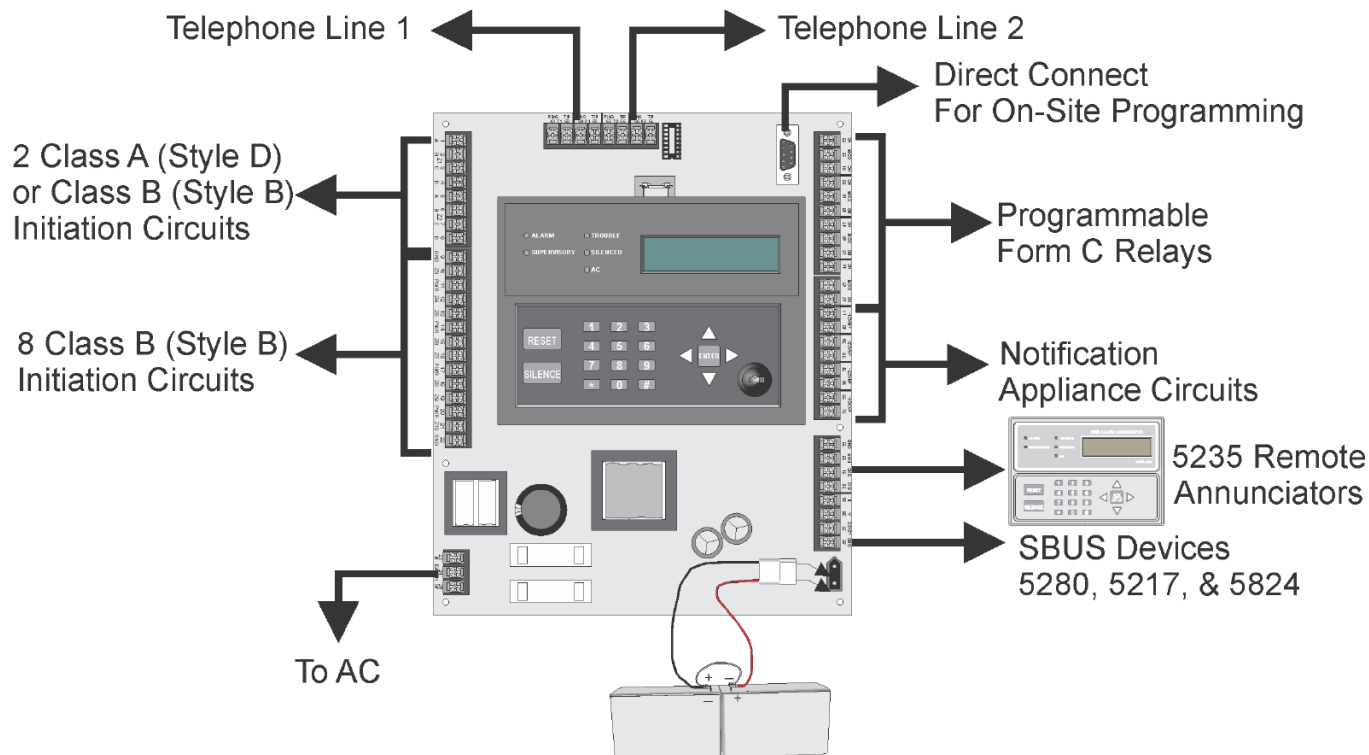
## Listings and Approvals

- UL Listed
- CSFM Listed
- MEA approval 429-92-E Vol. XIII
- OSHPD (CA) OSP-0065-10

# Model 5208
# Fire Alarm Control Panel with Digital Communicator

## Engineering Specification

The system shall contain a fire alarm control panel to supervise and operate heat and smoke detection devices, manual fire alarm devices, alarm notification devices and visual annunciators. The system shall also be capable of monitoring for sprinkler supervisory and water flow conditions. The system must have a built in UL listed fire communicator that can be enabled/disabled as needed on a per job basis. In addition, the system will sound alarms locally for purpose of evacuation.

**SILENT KNIGHT**
by Honeywell

# StarLink™
## COMMERCIAL FIRE

# Commercial Fire Alarm Communicators:
# Standard & Merchantile Models

- **Universal full event sole path cellular commercial fire alarm reporting from any panel brand, virtually anywhere**

- **For use as primary or backup communications on all 12V-24V control panels and FACPs** that communicate using Contact ID

- **Reports to any Central Station nationwide**, with your choice of cellular networks: Verizon Network Certified CDMA or GSM 3/4G on AT&T

- **Easy, flexible installation, activation & online account management**

- **Cost-saving cellular models and plans for any code requirement.** Substantial savings over monthly dedicated landline charges. And, $50 saving incentive with any 2G Communicator upgrade (unlimited).

**UL and NFPA 72 Fire Code-Compliant,** the StarLink Series Wireless Commercial Fire Alarm Communicators provide universal support for any brand 12V to 24V fire alarm control panel, reporting in Contact ID.  With broadest coverage footprint available in Verizon Network Certified ™ CDMA or GSM 3/4G models on the AT&T network, as well as merchantile models, all provide the most economical solution and for easy, versatile installation.

**Safeguard Accounts & Reliability.** For applications currently relying upon quickly-disappearing traditional phone lines, StarLink wireless communicators can be used for primary or backup communications, and will not only safeguard the fire alarm reporting transmissions for the future, but provide the end-user monthly savings for each costly FACP-dedicated landline they replace.  And, for upgrading older wireless fire alarm communicators on 2G and other phased-out cellular networks, standard StarLink Fire Models, SLE-CDMA-FIRE and SLE-GSM-FIRE, offer a $50 tradeup incentive to help defray the cost of the hardware replacement to the advanced state-of-the-art StarLink model of choice.

**Flexible Performance & Reporting Options.** StarLink Fire provides full data reporting, as a primary or backup, to any central station of your choice, without requiring any special equipment on premises.  Ultra-affordable plans are available to meet various codes and requirements, with supervisory check-ins from 200 seconds, to 5-minutes, to an hour.   The units are very easily activated, plans and options are selected, and 24/7 account management is provided all through www.napcocomnet.com. And, StarLink Fire Communicators are easily connected to any panel or Fire Alarm Control Panel (FACP) standardly operating between 12V and 24V.  Flexible in any application, StarLink Fire also comes in standard, or Merchantile Models in metal housings, with code-compliant supervision, with or without using conduit; and choice of power options, powered by the panel or using its own 120V Power Supply.

*Code-compliant standard or merchantile metal models (right and left, respectively) .*

## Napco StarLink3 Universal Sole Path Fire Alarm Communicators

- Choice of plans with varying supervisory check-ins from 200 seconds, to 5-minutes to 1 hour, Verizon or AT&T

- **Patented Signal Boost™** signal amplification  circuit and high-gain performance antenna for longer range and reliability nationwide

- **Money-saving 2G Tradeup incentive credit**

- **Bonus: Full High-Speed Napco Panel remote uploading/ downloading**

- **COMPLIANCES:** NFPA72 Editions: 2013, 2010, 2007; UL 864, 9th Ed., UL1610, UL985, UL1023

NAPCO
COMMERCIAL GRADE

UL CERTIFIED

verizon NETWORK CERTIFIED

# StarLink Fire Specifications

## STANDARD SLE-CDMA-FIRE & SLE-GSM-FIRE MODELS:

- Durable ABS plastic housing includes three keyhole slots for mounting (for commercial application, aligns with triple gang boxes.)
- Dimensions: 5-3/8"x 7-7/8"x 1-7/8" (HxWxD)
- Weight: 13.5 oz
- 3 LED Indicators - Green, Signal Strength; Amber- Busy/ Activation; Red-Trouble
- Patented Signal Boost™ signal amplification circuit and high-gain performance antenna
- Operating Environment: 0 to 49° C (32-120°F), up to 93% humidity (non-condensing)
- 12V - 24V Universal FACP Support, auto-current sensing. Support all brands communicating in Contact ID

## MERCHANTILE MODELS (similar to above, with):

- Locking Metal Enclosure with Hinged door & 2 key-slots for wall mounting (LED indicators, inside).
- Dimensions: 9-5/8"x 11-3/4" x 3-3/8"D (HxWxD)
- Weight: 8 lbs (max., power supply models)
- **Electrical Ratings for 120VAC, 60Hz**
- **For Models with Power Supply:**
  - Input Voltage: 120VAC Nominal
  - Input Current: 400mA maximum
  - Maximum Charging Current: 200mA
- **Electrical Ratings for +12V**
- **For Models without Power Supply:**
  - Input Voltage: 11-15VDC (power-limited output from listed control panel)
  - Input Current: 65mA with peak RF transmission current of 400mA.
- **Electrical Ratings for the IN 1 Burg/Fire Input:**
  - Input Voltage: 9-15VDC
  - Maximum Input Current: Up to 2mA from FACP NAC circuit
- **Electrical Ratings for IN 2 and IN 3:**
  - Maximum Loop Voltage: 15VDC
  - Maximum Loop Current: 1.2mA
- **Electrical Ratings for 3 PGM Outputs:**
  - Open Collector Outputs: Maximum voltage 3V when active; 15V maximum when not active
  - Maximum PGM Sink Current: 50mA mount.
- Operating Environment 0 to 49° C (32-120°F), up to 93% humidity (non-condensing)
- 12V - 24V Universal FACP Support, auto-current sensing. Support all brands communicating in Contact ID.

# Ordering Information

## FIRE MODELS*

**SLE-GSM-FIRE** Standard ABS Fire Sole Path Alarm Communicator, GSM 3/4G on AT&T Network

**SLE-CDMA-FIRE** as above, but CDMA communications, Verizon-Network Certified

**SLE3/4G-CFB-PS** Commercial Fire model in red metal housing, on AT&T Network with power supply and 16.5V / 20VA transformer mounted inside housing

**SLECDMA-CFB-PS** as above, but CDMA communications, Verizon-Network Certified

**SLE3/4G-CFB** Commercial Fire model in red metal housing on AT&T Network. Powered directly from control panel

**SLECDMA-CFB** as above, but CDMA communications, Verizon-Network Certified

## ACCESSORIES:

**SLE-DLEXT** Optional, as above, for downloading, extends distance to Napco panel up to 100'

**TRF20** Optional Plug in AC Transformer, 16.5V / 20VA (use is subject to local code compliance)

**SLE-DLCBL** Optional High-Speed Napco Panel Up/download cable

### Also Available: StarLink Intrusion Radios in standard and merchantile versions



SLE-GSM-3/4G Standard Burglary Radio, GSM 3/4G on AT&T Network.

SLE-CDMA as above, but CDMA communications, Verizon-Network Certified.

SLECDMA-CB Commercial Burglary CDMA Radio in white metal housing. Powered directly from control panel.

SLE3/4G-CB as above, but CDMA communications, Verizon-Network Certified.

SLE3/4G-CB-TF Commercial Burglary GSM 3/4G Radio in white metal housing with power supply and TRF12 plug-in 16.5V / 20VA transformer.

SLECDMA-CB-TF as above, but CDMA communications, Verizon-Network Certified.

**COMPLIANCES: NFPA 72** Editions: 2013, 2010, 2007; **UL** 864, 9th Ed., UL1610, UL985, UL1023

*StarLink Fire are also rated to support Intrusion/Burglary alarm reports where applicable. StarLink™ and Signal Boost are trademarks of NAPCO. Pats. Pending. Specifications subject to change.
©NAPCO, 2015.7 Napco Security Technologies Inc. (NASDAQ:NSSC)    A676

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AL602ULADA

## Overview

AL602ULADA are extremely cost effective voltage regulated remote NAC Power Extenders. They may be connected to any 24 volt Fire Alarm Control Panel (FACP). Primary applications include Notification Appliance Circuit (NAC) expansion (supports ADA requirements) and providing auxiliary power to support system accessories.

## Specifications

**Agency Listings:**
- UL Listed Control Units and Accessories for Fire Systems (UL 864).
- MEA - NYC Department of Buildings Approved.
- CSFM - California State Fire Marshal Approved.
- FM - Factory Mutual Approved.
- NFPA 72 Compliant.

**Input:**
- Power input 120VAC 60 Hz, 4 amp.
- Two (2) Class A, Style Z or two (2) Class B, Style W, X, Y FACP inputs.
- Two (2) NC dry contact trigger inputs.

**Output:**
- 24VDC @ 6.5 amp max total alarm current.
- 2.5 amp max current per output.
- Separate 1.0 amp auxiliary output.
- Two (2) outputs may be paralleled for more power on an indicating circuit.
- Programmable supervised indicating circuit outputs: Four (4) Class B, Style W, X, Y or Two (2) Class A, Style Z or One (1) Class A, Style Z and Two (2) Class B, Style W, X, Y.
- Thermal and short circuit protection with auto reset.

**Battery Backup:**
- Charging voltage is 26.2-26.4VDC.
- Built-in charger for sealed lead acid or gel type batteries.
- Automatic switchover to stand-by battery when AC Fails.
- Zero voltage drop when switching over to battery backup.

**Supervision:**
- AC fail supervision (form "C" contact, 1 amp / 28VDC). Factory set for 30 seconds with optional 2.5 to 3 hour delay setting (field selectable).
- Instant local AC trouble reporting relay (form "C" contact, 1 amp / 28VDC).
- Battery presence and low battery supervision (form "C" contact, 1 amp / 28VDC).

**Visual Indicators:**
- Input and output status LED indicators.

**Special Features:**
- 2-wire horn/strobe Sync mode allows audible notification appliances (horns) to be silenced while visual notification appliances (strobes) continue to operate.
- Sync protocols include Potter/Amseco, Faraday, Gentex®, System Sensor®, and CooperWheelock®.
- Temporal Code 3, Steady Mode, Input to Output Follower Mode (maintains synchronization of notification appliances circuit).
- Compatible with 12VDC or 24VDC fire panels.
- Output loop supervision steered to input 1 or input 2.
- Signal circuit trouble memory (helps identify intermittent loop problems).
- Common trouble input and output for external trouble signals tie-in.
- Ground fault detection.
- Unit includes power supply, red enclosure, cam lock, and battery leads.

**Mechanical:**
- Enclosure Dimensions (H x W x D approx.): 15.5" x 12" x 4.5" (393.7mm x 304.8mm x 114.3mm)
- Product weight (approx.): 9.6 lbs. (4.35 kg).
- Shipping weight (approx.): 12.3 lbs. (5.58 kg).

## Agency Approvals

**UL** UL Listed Control Units and Accessories for Fire Alarm Systems (UL 864) Ninth Edition
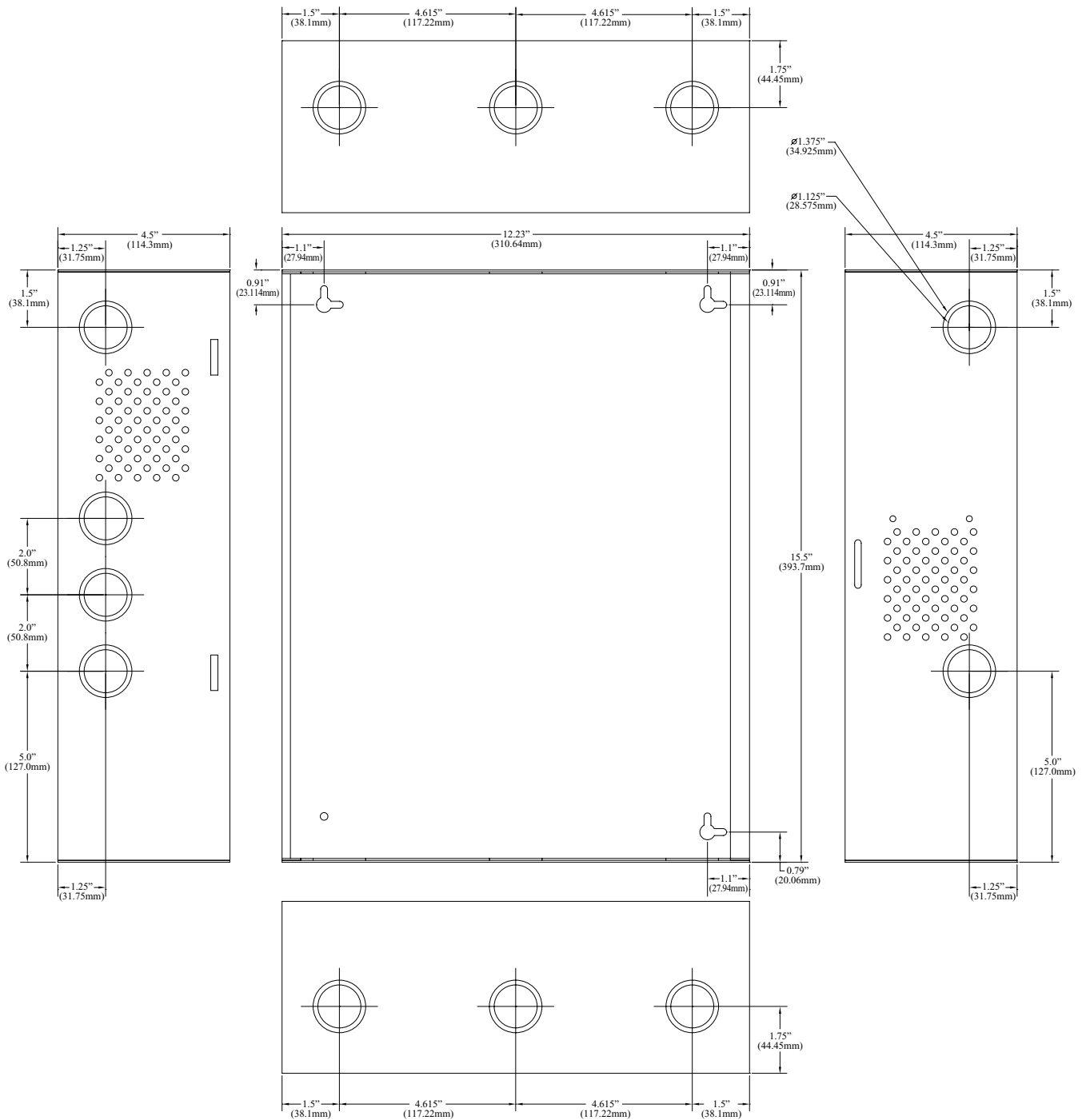
California State Fire Marshal Approved.

**MEA** Approved NYC Department of Buildings Approved.

FM APPROVED Factory Mutual Approved.

# Enclosure Dimensions *(H x W x D approximate)*:

15.5" x 12" x 4.5" (393.7mm x 304.8mm x 114.3mm)

1.5"
(38.1mm)

4.615"
(117.22mm)

4.615"
(117.22mm)

1.5"
(38.1mm)

1.75"
(44.45mm)

∅1.375"
(34.925mm)

∅1.125"
(28.575mm)

4.5"
(114.3mm)

1.25"
(31.75mm)

1.5"
(38.1mm)

2.0"
(50.8mm)

2.0"
(50.8mm)

5.0"
(127.0mm)

1.25"
(31.75mm)

12.23"
(310.64mm)

1.1"
(27.94mm)

1.1"
(27.94mm)

0.91"
(23.114mm)

0.91"
(23.114mm)

15.5"
(393.7mm)

1.1"
(27.94mm)

0.79"
(20.06mm)

4.5"
(114.3mm)

1.25"
(31.75mm)

1.5"
(38.1mm)

5.0"
(127.0mm)

1.25"
(31.75mm)

1.75"
(44.45mm)

1.5"
(38.1mm)

4.615"
(117.22mm)

4.615"
(117.22mm)

1.5"
(38.1mm)

# Photoelectric Smoke Detectors

*System Sensor i³™ series smoke detectors represent significant advancement in conventional detection. The i³ family is founded on three principles: installation ease, intelligence, and instant inspection.*

## Features

- Plug-in detector line, mounting base included
- Large wire entry port
- In-line terminals with SEMS screws
- Mounts to octagonal and single-gang back boxes, 4-square back boxes, or direct to ceiling
- Stop-Drop 'N Lock attachment to base
- Removable detector cover and chamber
- Built-in remote maintenance signaling
- Drift compensation and smoothing algorithms
- Simplified sensitivity measurement
- Wide-angle, dual-color LED indication
- Loop testing via EZ Walk feature
- Built-in test switch

**Installation ease.** The i³ line redefines installation ease with its plug-in design. This allows an installer to pre-wire bases (included with heads). The large wire entry port and in-line terminals provide ample room for neatly routing the wiring inside the base. The base accommodates a variety of back box mounting methods as well as direct mounting with drywall anchors. To complete the installation, i³ heads plug into the base with a simple Stop-Drop 'N Lock™ action.

**Intelligence.** i³ detectors offer a number of intelligent features to simplify testing and maintenance. Drift compensation and smoothing algorithms are standard with the i³ line to minimize nuisance alarms. 2-wire i³ detectors can generate a remote LED-indicated maintenance signal when connected to the 2W-MOD2 loop test/maintenance module or a panel equipped with the i³ protocol. The SENS-RDR, a wireless device, displays the sensitivityof i³ detectors in terms of percent-per-foot obscuration.

**Instant inspection.** The i³ series provides wide-angle red and green LED indicators for instant inspection of the detector's condition: normal standby, out-of-sensitivity, alarm, or freeze trouble. When connected to the 2W-MOD2 loop test/maintenance module or a panel with the i³ protocol, the EZ Walk loop test feature is available on 2-wire i³ detectors. This feature verifies the initiating loop wiring by providing LED status indication at each detector.

## Agency Listings

| UL LISTED S911 | FM APPROVED 3011446 | 7272-1653:152 | MEA approved 290-01-E | MSFM approved 2093 | ETL LISTED 3180932 |

# ⓘ³ Smoke Detector Specifications

## Architectural/Engineering Specifications

Smoke detector shall be a System Sensor i³ Series model number_____, listed to Underwriters Laboratories UL 268 for Fire Protection Signaling Systems. The detector shall be a photoelectric type (Model 2W-B, 4W-B) or a combination photoelectric/thermal (Model 2WT-B, 4WT-B) with thermal sensor rated at 135°F (57.2°C). The detector shall include a mounting base for mounting to 3½-inch and 4-inch octagonal, single-gang, and 4-inch square back boxes with a plaster ring, or direct mount to the ceiling using drywall anchors. Wiring connections shall be made by means of SEMS screws. The detector shall allow pre-wiring of the base and the head shall be a plug-in type. The detector shall have a nominal sensitivity of 2.5 percent-per-foot nominal as measured in the UL smoke box. The detector shall be capable of automatically adjusting its sensitivity by means of drift compensation and smoothing algorithms. The detector shall provide dual-color LED indication that blinks to indicate power up, normal standby, out of sensitivity, alarm, and freeze trouble (Model 2WT-B, 4WT-B) conditions. When used in conjunction with the 2W-MOD2 module, 2-wire models shall include a maintenance signal to indicate the need for maintenance at the alarm control panel and shall provide a loop testing capability to verify the circuit without testing each detector individually.

## Electrical Specifications

| | |
|---|---|
| Operating Voltage | Nominal: 12/24 V non-polarized<br>Minimum: 8.5 V<br>Maximum: 35 V |
| Maximum Ripple Voltage | 30% peak to peak of applied voltage |
| Standby Current | 2-wire: 50 $\mu$A maximum average; 4-wire: 50 $\mu$A maximum average |
| Maximum Alarm Current | 2-wire: 130 mA limited by control panel; 4-wire: 20 mA @12 V, 23 mA @ 24 V |
| Peak Standby Current | 2-wire: 100 $\mu$A; 4-wire: n/a |
| Alarm Contact Ratings | 2-wire: n/a; 4-wire: 0.5 A @ 30 V AC/DC |

## Physical Specifications

| | |
|---|---|
| Dimensions (including base) | 5.3 inches (127 mm) diameter; 2.0 inches (51 mm) height |
| Weight | 6.3 oz (178 g) |
| Operating Temperature Range | 2W-B and 4W-B: 32°F to 120°F (0°C to 49°C); 2WT-B and 4WT-B: 32°F to 100°F (0°C to 37.8°C) |
| Operating Humidity Range | 0 to 95% RH non-condensing |
| Thermal Sensor | 135°F (57.2°C) fixed |
| Freeze Trouble | 2WT-B and 4WT-B only: 41°F (5°C) |
| Sensitivity | 2.5%/ft nominal |
| Input Terminals | 14 to 22 AWG |
| Mounting | 3½-inch octagonal back box<br>4-inch octagonal back box<br>Single-gang back box<br>4-inch square back box with a plaster ring<br>Direct mount to ceiling |

## LED Modes / Power-Up Sequence for LED Indication

| LED Mode | Green LED | Red LED | Condition | Duration |
|---|---|---|---|---|
| Power up | Blink every 10 seconds | Blink every 10 seconds | Initial LED status indication | 80 seconds |
| Normal (standby) | Blink every 5 seconds | off | | |
| Out of sensitivity | off | Blink every 5 seconds | | |
| Freeze trouble | off | Blink every 10 seconds | | |
| Alarm | off | Solid | | |

# Ordering Information

| Model | Thermal | Wiring | Alarm Current |
|---|---|---|---|
| 2W-B | No | 2-wire | 130 mA max. limited by control panel |
| 2WT-B | Yes | 2-wire | 130 mA max. limited by control panel |
| 4W-B | No | 4-wire | 20 mA @ 12 V, 23 mA @ 24 V |
| 4WT-B | Yes | 4-wire | 20 mA @ 12 V, 23 mA @ 24 V |

**Accessories**

| | | | |
|---|---|---|---|
| 2W-MOD2 | 2-wire loop test / maintenance module | RT | Removal / replacement tool |
| SENS-RDR | Sensitivity reader | A77-AB2 | Retrofit adapter bracket, 6.6 inch (16.76 cm) diameter |

# Indoor Selectable-Output Horns, Strobes, and Horn Strobes for Wall Applications

*System Sensor L-Series audible visible notification products are rich with features guaranteed to cut installation times and maximize profits with lower current draw and modern aesthetics.*

## Features

- Updated Modern Aesthetics
- Small profile devices for Horns and Horn Strobes
- Plug-in design with minimal intrusion into the back box
- Tamper-resistant construction
- Automatic selection of 12- or 24-volt operation at 15 and 30 candela
- Field-selectable candela settings on wall units: 15, 30, 75, 95, 110, 135, and 185
- Horn rated at 88+ dBA at 16 volts
- Rotary switch for horn tone and two volume selections
- Mounting plate for all standard and all compact wall units
- Mounting plate shorting spring checks wiring continuity before device installation
- Electrically Compatible with legacy SpectrAlert and SpectAlert Advance devices
- Compatible with MDL3 sync module
- Listed for wall mounting only

**The System Sensor L-Series** offers the most versatile and easy-to-use line of horns, strobes, and horn strobes in the industry with lower current draws and modern aesthetics. With white and red plastic housings, standard and compact devices, and plain, FIRE, and FUEGO-printed devices, System Sensor L-Series can meet virtually any application requirement.

The L-Series line of wall-mount horns, strobes, and horn strobes include a variety of features that increase their application versatility while simplifying installation. All devices feature plug-in designs with minimal intrusion into the back box, making installations fast and foolproof while virtually eliminating costly and time-consuming ground faults.

To further simplify installation and protect devices from construction damage, the L-Series utilizes a universal mounting plate for all models with an onboard shorting spring, so installers can test wiring continuity before the device is installed.

Installers can also easily adapt devices to a suit a wide range of application requirements using field-selectable candela settings, automatic selection of 12- or 24-volt operation, and a rotary switch for horn tones with two volume selections.

## Agency Listings



S5512
S4011

FM approved except for ALERT models 3057383, 3057072

7125-1653:0504
7135-1653:0503

# L-Series Specifications

### General

L-Series standard horns, strobes, and horn strobes shall mount to a standard 2 x 4 x 1 $\frac{7}{8}$-inch back box, 4 × 4 × 1½-inch back box, 4-inch octagon back box, or double-gang back box. L-Series compact products shall mount to a single-gang 2 × 4 × 1$\frac{7}{8}$-inch back box. A universal mounting plate shall be used for mounting ceiling and wall products for all standard models and a separate universal mounting plate shall be used for mounting wall compact models. The notification appliance circuit wiring shall terminate at the universal mounting plate. Also, L-Series products, when used with the Sync•Circuit™ Module accessory, shall be powered from a non-coded notification appliance circuit output and shall operate on a nominal 12 or 24 volts. When used with the Sync•Circuit Module, 12-volt-rated notification appliance circuit outputs shall operate between 8.5 and 17.5 volts; 24-volt-rated notification appliance circuit outputs shall operate between 16.5 and 33 volts. Indoor L-Series products shall operate between 32 and 120 degrees Fahrenheit from a regulated DC or full-wave rectified unfiltered power supply. Strobes and horn strobes shall have field-selectable candela settings including 15, 30, 75, 95, 110, 135, and 185.

### Strobe

The strobe shall be a System Sensor L-Series Model _____ listed to UL 1971 and shall be approved for fire protective service. The strobe shall be wired as a primary-signaling notification appliance and comply with the Americans with Disabilities Act requirements for visible signaling appliances, flashing at 1 Hz over the strobe's entire operating voltage range. The strobe light shall consist of a xenon flash tube and associated lens/reflector system.

### Horn Strobe Combination

The horn strobe shall be a System Sensor L-Series Model _____ listed to UL 1971 and UL 464 and shall be approved for fire protective service. The horn strobe shall be wired as a primary-signaling notification appliance and comply with the Americans with Disabilities Act requirements for visible signaling appliances, flashing at 1 Hz over the strobe's entire operating voltage range. The strobe light shall consist of a xenon flash tube and associated lens/reflector system. The horn shall have two audibility options and an option to switch between a temporal three pattern and a non-temporal (continuous) pattern. These options are set by a multiple position switch. The horn on horn strobe models shall operate on a coded or non-coded power supply.

### Synchronization Module

The module shall be a System Sensor Sync•Circuit model MDL3 listed to UL 464 and shall be approved for fire protective service. The module shall synchronize SpectrAlert strobes at 1 Hz and horns at temporal three. Also, while operating the strobes, the module shall silence the horns on horn strobe models over a single pair of wires. The module shall mount to a 411⁄16 × 411⁄16 × 21⁄8-inch back box. The module shall also control two Style Y (class B) circuits or one Style Z (class A) circuit. The module shall synchronize multiple zones. Daisy chaining two or more synchronization modules together will synchronize all the zones they control. The module shall not operate on a coded power supply.

| Physical/Electrical Specifications | |
|---|---|
| Standard Operating Temperature | 32°F to 120°F (0°C to 49°C) |
| Humidity Range | 10 to 93% non-condensing |
| Strobe Flash Rate | 1 flash per second |
| Nominal Voltage | Regulated 12 DC or regulated 24 DC/FWR[1,2] |
| Operating Voltage Range | 8 to 17.5 V (12 V nominal) or 16 to 33 V (24 V nominal) |
| Operating Voltage Range MDL3 Sync Module | 8.5 to 17.5 V (12 V nominal) or 16.5 to 33 V (24 V nominal) |
| Input Terminal Wire Gauge | 12 to 18 AWG |
| Wall-Mount Dimensions (including lens) | 5.6″L × 4.7″W × 1.91″D (143 mm L × 119 mm W × 49 mm D) |
| Compact Wall-Mount Dimensions (including lens) | 5.26" L x 3.46" W x 1.91" D (133 mm L x 88 mm W x 49 mm D) |
| Horn Dimensions | 5.6″L × 4.7″W × 1.25″D (143 mm L × 119 mm W × 32 mm D) |
| Compact Horn Dimensions | 5.25" L x 3.45" W x 1.25" D (133mm L x 88mm W x 32mm D) |

1. Full Wave Rectified (FWR) voltage is a non-regulated, time-varying power source that is used on some power supply and panel outputs.
2. Strobe products will operate at 12 V nominal only for 15 cd and 30 cd.

## UL Current Draw Data

**UL Max. Strobe Current Draw (mA RMS)**

| | Candela | 8–17.5 Volts DC | 16–33 Volts DC | 16–33 Volts FWR |
|---|---|---|---|---|
| Candela Range | 15 | 88 | 43 | 60 |
| | 30 | 143 | 63 | 83 |
| | 75 | N/A | 107 | 136 |
| | 95 | N/A | 121 | 155 |
| | 110 | N/A | 148 | 179 |
| | 135 | N/A | 172 | 209 |
| | 185 | N/A | 222 | 257 |

**UL Max. Horn Current Draw (mA RMS)**

| Sound Pattern | dB | 8–17.5 Volts DC | 16–33 Volts DC | 16–33 Volts FWR |
|---|---|---|---|---|
| Temporal | High | 39 | 44 | 54 |
| Temporal | Low | 28 | 32 | 54 |
| Non-Temporal | High | 43 | 47 | 54 |
| Non-Temporal | Low | 29 | 32 | 54 |
| 3.1 KHz Temporal | High | 39 | 41 | 54 |
| 3.1 KHz Temporal | Low | 29 | 32 | 54 |
| 3.1 KHz Non-Temporal | High | 42 | 43 | 54 |
| 3.1 KHz Non-Temporal | Low | 28 | 29 | 54 |
| Coded | High | 43 | 47 | 54 |
| 3.1 KHz Coded | High | 42 | 43 | 54 |

**UL Max. Current Draw (mA RMS), 2-Wire Horn Strobe, Candela Range (15–115 cd)**

| DC Input | 8-17.5 Volts 15cd | 30cd | 16-33 Volts 15cd | 30cd | 75cd | 95cd | 110cd | 135cd | 185cd |
|---|---|---|---|---|---|---|---|---|---|
| Temporal High | 98 | 158 | 54 | 74 | 121 | 142 | 162 | 196 | 245 |
| Temporal Low | 93 | 154 | 44 | 65 | 111 | 133 | 157 | 184 | 235 |
| Non-Temporal High | 106 | 166 | 73 | 94 | 139 | 160 | 182 | 211 | 262 |
| Non-Temportal Low | 93 | 156 | 51 | 71 | 119 | 139 | 162 | 190 | 239 |
| 3.1K Temporal High | 93 | 156 | 53 | 73 | 119 | 140 | 164 | 190 | 242 |
| 3.1K Temporal Low | 91 | 154 | 45 | 66 | 112 | 133 | 160 | 185 | 235 |
| 3.1K Non-Temporal High | 99 | 162 | 69 | 90 | 135 | 157 | 175 | 208 | 261 |
| 3.1K Non-Temporal Low | 93 | 156 | 52 | 72 | 119 | 138 | 162 | 192 | 242 |

| FWR Input | 16-33 Volts 15cd | 30cd | 75cd | 95cd | 110cd | 135cd | 185cd |
|---|---|---|---|---|---|---|---|
| Temporal High | 83 | 107 | 156 | 177 | 198 | 234 | 287 |
| Temporal Low | 68 | 91 | 145 | 165 | 185 | 223 | 271 |
| Non-Temporal High | 111 | 135 | 185 | 207 | 230 | 264 | 316 |
| Non-Temportal Low | 79 | 104 | 157 | 175 | 197 | 235 | 283 |
| 3.1K Temporal High | 81 | 105 | 155 | 177 | 196 | 234 | 284 |
| 3.1K Temporal Low | 68 | 90 | 145 | 166 | 186 | 222 | 276 |
| 3.1K Non-Temporal High | 104 | 131 | 177 | 204 | 230 | 264 | 326 |
| 3.1K Non-Temporal Low | 77 | 102 | 156 | 177 | 199 | 234 | 291 |

## Horn Tones and Sound Output Data

**Horn and Horn Strobe Output (dBA)**

| Switch Position | Sound Pattern | dB | 8–17.5 Volts DC | 16–33 Volts DC | FWR |
|---|---|---|---|---|---|
| 1 | Temporal | High | 84 | 89 | 89 |
| 2 | Temporal | Low | 75 | 83 | 83 |
| 3 | Non-Temporal | High | 85 | 90 | 90 |
| 4 | Non-Temporal | Low | 76 | 84 | 84 |
| 5 | 3.1 KHz Temporal | High | 83 | 88 | 88 |
| 6 | 3.1 KHz Temporal | Low | 76 | 82 | 82 |
| 7 | 3.1 KHz Non-Temporal | High | 84 | 89 | 89 |
| 8 | 3.1 KHz Non-Temporal | Low | 77 | 83 | 83 |
| 9* | Coded | High | 85 | 90 | 90 |
| 10* | 3.1 KHz Coded | High | 84 | 89 | 89 |

* Settings 9 and 10 are not available on the 2-wire horn strobes.
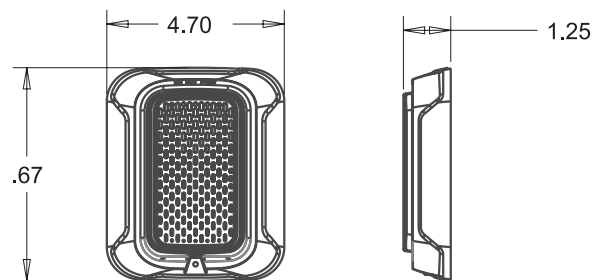
# L-Series Dimensions
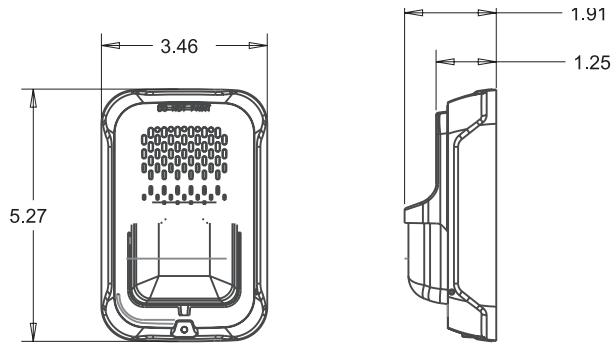


**Compact Strobe / Horn Strobe**

3.46
5.27
1.91
1.25



**Compact Horn**

3.46
5.27
1.25



**Strobe / Horn Strobe**

4.70
5.67
1.91
1.25



**Horn**

4.70
.67
1.25
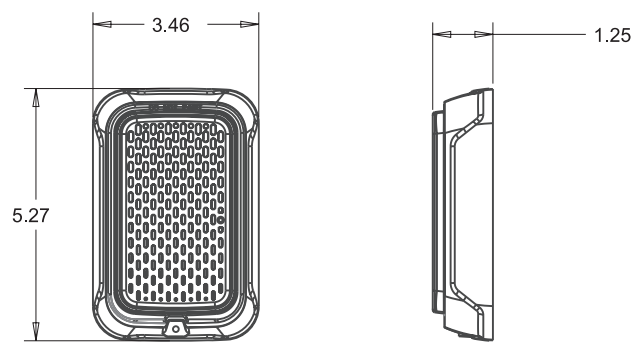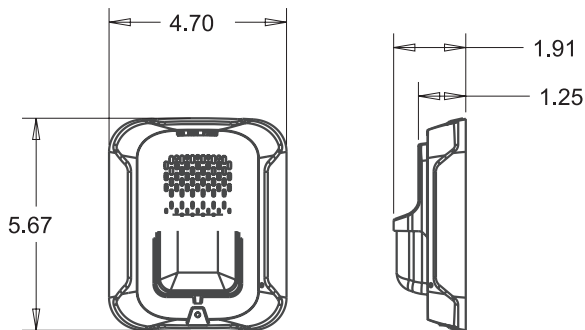
## L-Series Ordering Information

| Model | Description |
|---|---|
| **Wall Horn Strobes** | |
| P2RL | 2-Wire, Horn Strobe, Red |
| P2WL | 2-Wire, Horn Strobe, White |
| P2GRL | 2-Wire, Compact Horn Strobe, Red |
| P2GWL | 2-Wire, Compact Horn Strobe, White |
| P2RL-P | 2-Wire, Horn Strobe, Red, Plain |
| P2WL-P | 2-Wire, Horn Strobe, White, Plain |
| P2RL-SP | 2-Wire, Horn Strobe, Red, FUEGO |
| P2WL-SP | 2-Wire, Horn Strobe, White, FUEGO |
| **Wall Strobes** | |
| SRL | Strobe, Red |
| SWL | Strobe, White |
| SGRL | Compact Strobe, Red |
| SGWL | Compact Strobe, White |
| SRL-P | Strobe, Red, Plain |
| SWL-P | Strobe, White, Plain |
| SRL-SP | Strobe, Red, FUEGO |
| SWL-CLR-ALERT | Strobe, White, ALERT |

| Model | Description |
|---|---|
| **Horns** | |
| HRL | Horn, Red |
| HWL | Horn, White |
| HGRL | Compact Horn, Red |
| HGWL | Compact Horn, White |
| **Accessories** | |
| TR-2 | Universal Wall Trim Ring Red |
| TR-2W | Universal Wall Trim Ring White |
| SBBRL | Wall Surface Mount Back Box, Red |
| SBBWL | Wall Surface Mount Back Box, White |
| SBBGRL | Compact Wall Surface Mount Back Box, Red |
| SBBGWL | Compact Wall Surface Mount Back Box, White |

**Notes:**
All -P models have a plain housing (no "FIRE" marking on cover)
All -SP models have "FUEGO" marking on cover
All -ALERT models have "ALERT" marking on cover

# Part Five

# Floor Plan Layout