CITY OF SACRAMENTO

Permit No: 9807019

1231 I Street, Sacramento, CA 95814

Insp Area: 1

Site Address: 918 R ST SAC
Parcel No: 0090071003

Sub-Type: ACOM
Housing (Y/N): N

CONTRACTOR
SACRAMENTO CONTROL SYSTEMS
11249 SUNCO DR
RANCHO CORDOVA CA 95742

OWNER
SPILMAN CARL E/HELEN E
918 R ST
SACRAMENTO CA 58140

ARCHITECT

Nature of Work: FIRE ALARM

CONSTRUCTION LENDING AGENCY : I hereby affirm under penalty of perjury that there is a construction lending agency for the performance of the work for which this permit is issued (Sec. 3097, Civ. C).

Lender's Name________________ Lender'sAddress________________

LICENSED CONTRACTORS DECLARATION: I hereby affirm under penalty of perjury that I am licensed under provisions of Chapter 9 (commencing with section 7000) of Division 3 of the Business and Professions Code and my license is in full force and effect.

License Class_______ License Number 408126 Date 9-8-98 Contractor Signature David W. Hodge

OWNER-BUILDER DECLARATION: I hereby affirm under penalty of perjury that I am exempt from the contractors License Law for the following reason (Sec. 7031.5, Business and Professions Code; any city or county which requires a permit to construct, alter, improve, demolish, or repair any structure, prior to its issuance, also requires the applicant for such permit to file a signed statement that he or she is licensed pursuant to the provisions of the Contractors License Law (Chapter 9 (commencing with Section 7000) of Division 8 of the Business and Professions Code) or that he or she is exempt therefrom and the basis for the alleged exemption. Any violation of Section 7031.5 by any applicant for a permit subjects the applicant to a civil penalty of not more than five hundred dollars ($500.00);

_____ I, as a owner of the property, or my employees with wages as their sole compensation, will do the work, and the structure is not intended or offered for sale (Sec. 7044, Business and Professional Code: The Contractors License Law does not apply to an owner of property who builds or improves thereon, and who does such work himself or herself or through his/her own employees, provided that such improvements are not intended or offered for sale. If, however, the building or improvement is sold within one year of completion, the owner-builder will have the burden of proving that he/she did not build or improve for the purpose of sale.)

_____ I, as owner of the property, am exclusively contracting with licensed contractors to construct the project (Sec. 7044, Business and Professions Code: The Contractors License Law does not apply to an owner of property who builds or improves thereon, and who contracts for such projects with a contractor(s) licensed pursuant to the Contractors License Law).

_____ I am exempt under Sec.__________ B & PC for this reason:________________

Date________________ Owner Signature________________

IN ISSUING THIS BUILDING PERMIT, the applicant represents, and the city relies on the representation of the applicant, that the applicant verified all measurements and locations shown on the application or accompanying drawings and that the improvement to be constructed does not violate any law or private agreement relating to permissible or prohibited locations for such improvements. This building permit does not authorize any illegal location of any improvement or the violation of any private agreement relating to location of improvements.

I certify that I have read this application and state that all information is correct. I agree to comply with all city and county ordinances and state laws relating to building construction and herby authorize representative(s) of this city to enter upon the abovementioned property for inspection purposes.

Date 9-8-98 Applicant/Agent Signature David W. Hodge

WORKER'S COMPENSATION DECLARATION: I hereby affirm under penalty of perjury one of the following declarations:

_____ I have and will maintain a certificate of consent to self-insure for workers' compensation as provided for by Section 3700 of the Labor Code, for the performance of work for which the permit is issued.

_____ I have and will maintain workers' compensation insurance, as required by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued. My workers' compensation insurance carrier and policy number are:

Carrier REPUBLIC INDEMNITY COMPANY OF AMERICA Policy Number 1356740l 1-99

_____ (This section need not be completed if the permit is for $100 or less) I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the workers' compensation laws of California and agree that if I should become subject to the workers' compensation provisions of Section 3700 of the Labor Code, I shall forthwith comply with those provisions.

Date 9-8-98 Applicant Signature David W. Hodge

WARNING: FAILURE TO SECURE WORKER'S COMPENSATION COVERAGE IS UNLAWFUL AND SHALL SUBJECT AN EMPLOYER TO CRIMINAL PENALTIES AND CIVIL FINES UP TO ONE HUNDRED THOUSAND DOLLARS ($100,000) IN ADDITION TO THE COST OF COMPENSATION, DAMAGES AS PROVIDED FOR IN SECTION 3706 OF THE LABOR CODE, INTEREST AND ATTORNEY'S FEE.

THIS PERMIT SHALL EXPIRE BY LIMITATION IF WORK IS NOT COMMENCED WITHIN 180 DAYS.

SPILLMAN WAREHOUSE
918 R STREET
SACRAMENTO, CALIFORNIA 95814

Sacramento
Control
Systems

11249 SUNCO DR., SUITE #3
RANCHO CORDOVA, CA 95742
(916) 638-0788
C10 Lic. #408126
CA Lic. #ACO 744

APPROVED
[signature] 8/24/98
SACRAMENTO
FIRE DEPARTMENT

DEPT. OF PLANNING & DEVELOPMENT
APPROVED
UNDER
CHAPTER 9
CITY CODE
City of
SACRAMENTO, CALIF.
BUILDING INSPECTION DIVISION

This set of plans and specifications must be kept on the job at all times and it is unlawful to make any changes or alterations from the same without written permission from the Building Inspection Division.

The approval of this plan and specification SHALL NOT be held to permit or approve the violation of any City Ordinance or State Law.

RECEIVED

JUL 24 1998

Building Inspection Division

6282

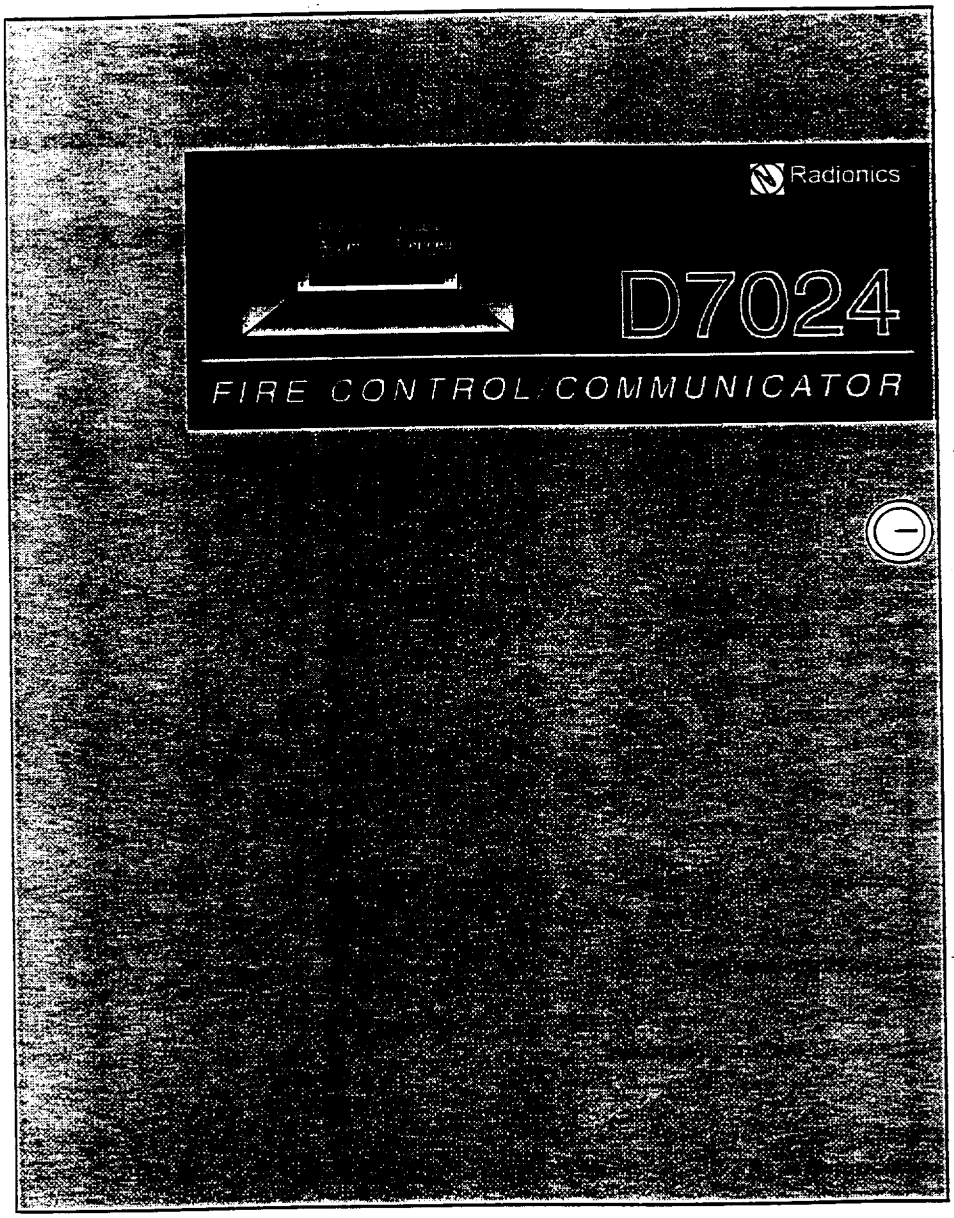
ISSUED

SEP 08 1998

Sacramento Building Division

Plans on microfilm

Reference Guide for the D7024 Control/Communicator



8/14/97

Radionics™

Radionics, Inc., 1800 Abbott Street
Salinas, CA 93901, U.S.A.
Customer Service: (800) 538-5807

D7024 Reference Guide P/N 31499B

1.0 Overview

1.1 System Overview

The D7024 Control/Communicatoris a fully integrated hard-wire fire alarm system. It can support 4 input points (expandable to 8) and 16 individual users. The control panel has a built-in LCD keypad, however, up to 4 additional keypads may be used to provide user interface with the system and programming access for the installer. The D7024 also includes the following features:

- Built-in Dual-line Communicator
- Menu Driven Keypad Programming
- Freely Programmable Alpha Display
- 100 Event History Buffer
- 16 User Codes
- U.L. Listed, C.S.F.M. Approved

1.2 Specifications

1.2.1 Enclosure Housing

The standard enclosure is manufactured from 18 Ga., cold-rolled steel, and measures 15 in. Wide, by 20.75 in. High, by 4.25 in. Deep (38.1 cm Wide, by 52.7 cm High, by 10.8 cm Deep). A keyed lock is included, and the LEDs and display are visible through the door.

1.2.2 Temperature

- Storage and Operating Temperature:
  +32° to +120°F (0° to +49°C)

1.2.3 Power

- Input Power:
  120 V, 60 Hz, 1.5 A (max. 20 A fused)
- Notification Appliance Circuit Power:
  24 VDC nominal, unfiltered (special application) with up to 2.5 A capacity (but limited by overall 4.0 A capacity). Refer to Technogram P/N 34950B for compatible devices
- Auxiliary Power:
  24 VDC nominal, unfiltered (special application) Refer to Technogram P/N 34950B
- Initiating Circuit (Smoke) Power:
  24 VDC nominal
  Refer to Technogram P/N 34445B
- Option Bus Power:
  12 V +/- 5%, 500 mA
- Optional Standby Batteries:
  Two 12 V (in series), 7 - 40 AH

1.2.4 Outputs

- 2 on-board notification circuits - NAC 1 and NAC 2. These are 24 V outputs for notification devices with up to 2.5 A capacity (but limited by overall 4.0 A capacity) on each circuit.
- Wired for standard Class B operation.
- Local Relays: The main panel includes two Form "C" relays. The relay contacts are rated at 6 A, 24 VDC. No transient suppression or overcurrent limiting are performed on the contacts of these relays. The default selection for the relays is to indicate general alarm and general system trouble. By programming them to one or two of the zone numbers described for point/zone mapping, they can be programmed to activate on a variety of conditions.
- Remote Relay Module (D7035): The D7035 is an Octal Relay Module that provides 8 Form "C" relay outputs. It connects to the D7024 via the option bus. The outputs are fully programmable, exactly as the local relays are programmed. Each output operates independently of the other 7 to provide complete flexibility. Communication with the D7035 is supervised.

1.2.5 Points (Initiating Circuits)

All points work with 2 or 4-wire detectors. The system has an optional alarm verification feature.

- Number of 2-wire Circuits:
  4 circuits, expandable to 8
- Type of Circuit:
  Class B, Style B
- End-of-Line Resistor:
  2.21k ohms, P/N 25899 U.L. Listed
- Supervisory Current:
  8 - 20 mA
- Required Current for Alarm:
  25 mA
- Maximum Short Circuit Current:
  44 mA
- Maximum Line Resistance:
  150 ohms
- Circuit Voltage Range:
  20.4 to 28.2 VDC
- Maximum Detectors per Point:
  20 detectors (2-wire)
- Total Detector Standby Current:
  3 mA max.
- Response Time:
  500 milli-seconds and programmable from 1 second to 15 seconds.

1.2.6 Keypads

- Maximum # of keypads:
  4 D7033 keypads
- Maximum wire length each:
  1000 feet
- Maximum wire length total:
  4000 feet in system
- Wire type:
  4 conductor, unshielded, #22 AWG (0.8 mm) "Telephone quad" or #18 AWG (1.0 mm) quad wiring can be home-run or daisy-chained.

Note: No more than 2 keypads recommended on any 1000 foot run.

Note: Shared cable is not recommended for keypad, multiplex, options bus, telephone, or siren wiring.

1.2.7 Communicator

Will report to two (2) phone numbers with full single, double, and back-up reporting. Communicates in SIA, Contact ID, BFSK, and 4/2 Tone burst formats.

1.2.8 Users

The system allows up to 16 individual users. Each user can have their own PIN number (the 4 digit code entered at the keypads) and their own authority level (to determine which functions he may perform).

1.2.9 Lightning Protection

MOVs and spark gaps provide protection from lightning surges and static discharges.

1.2.10 Backup Battery Calculation

- The following table is used to calculate the standby battery capacity required by NFPA when using the D7024:

Device	Quantity	Standby Current Per Device	Total Standby Current (Quantity x Standby Current Per Device)	Alarm Current Per Device	Total Alarm Current (Quantity x Alarm Current Per Device)
D7033 Keypad		100 mA		100 mA	
D7034 - 4 Point Expander		44 mA		**	
D7035 - Octal Relay*		10 mA + 40 mA*		10 mA + 40 mA*	
Smoke Detectors				**	
Bells, Horns, etc.					
Other sensors					
Other					
		Grand Total		Grand Total	

* = When calculating Standby and Alarm Current for the Octal Relay Module, use 10 mA plus 40 mA for each activated relay.

** = Will not exceed 40 mA per loop in alarm.

1.2.11 Standby Current Load

- Battery AH - (20% Storage + 0.375 AH's Alarm)
- The following table is the derated battery divided by hours minus the control standby (210 mA):

Rechargeable Battery Size	Max. Standby for 24 hours	Max. Standby for 48 hours	Max. Standby for 60 hours	Max. Standby for 72 hours	Max. Standby for 80 hours
7 AH	X	X	X	X	X
8 AH	80 mA	X	X	X	X
14 AH	280 mA	50 mA	X	X	X
15 AH	310 mA	70 mA	X	X	X
17.2 AH	380 mA	100 mA	50 mA	X	X
21 AH	510 mA	170 mA	100 mA	50 mA	X
28 AH	740 mA	280 mA	190 mA	130 mA	100 mA
30 AH	810 mA	320 mA	220 mA	150 mA	120 mA
33 AH	910 mA	370 mA	260 mA	190 mA	150 mA
35 AH	980 mA	400 mA	290 mA	210 mA	170 mA
38 AH	1080 mA	450 mA	330 mA	240 mA	200 mA
40 AH	1140 mA	480 mA	350 mA	260 mA	220 mA

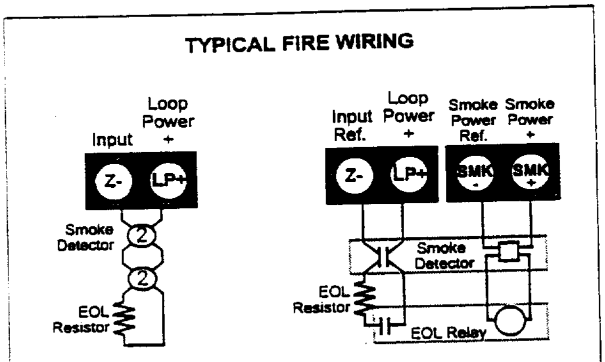
Note: When batteries larger than 17.2 AH are used, an optional battery enclosure (Wheelock BATC-R) must be used. Battery wires must be #12 AWG (2.1 mm).

3.0 Control Terminal Wiring

WARNING: Before servicing this equipment, remove all power including the transformer, battery, and phone lines. A complete functional test is required after any programming.

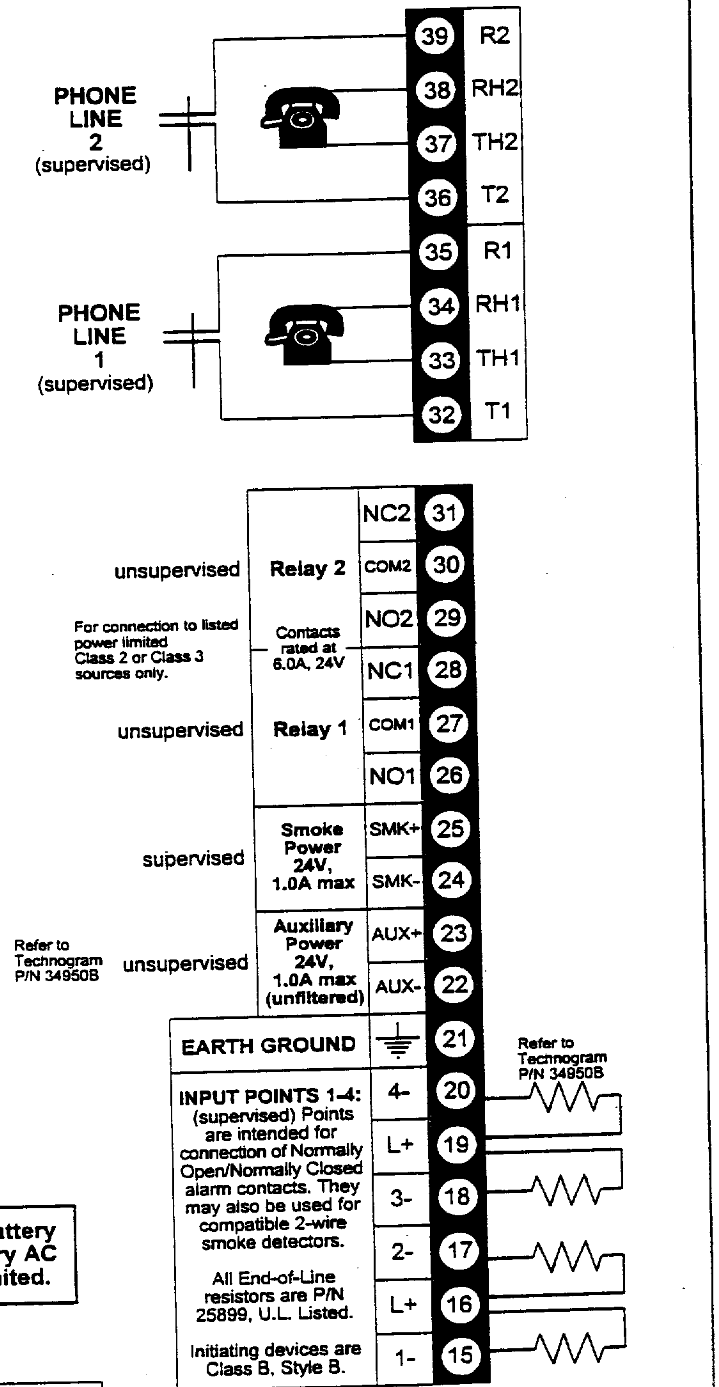
CAUTION: Incorrect connections may result in damage to the unit.

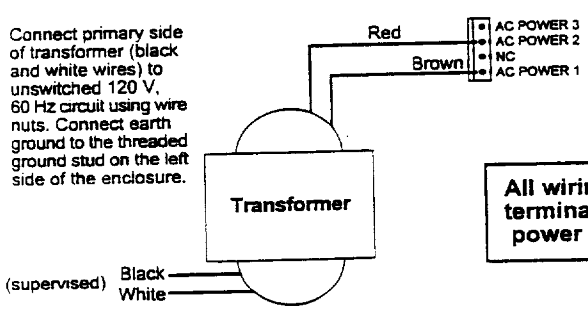
NOTE: Shared cable is not recommended for option bus, telephone, or NAC wiring.



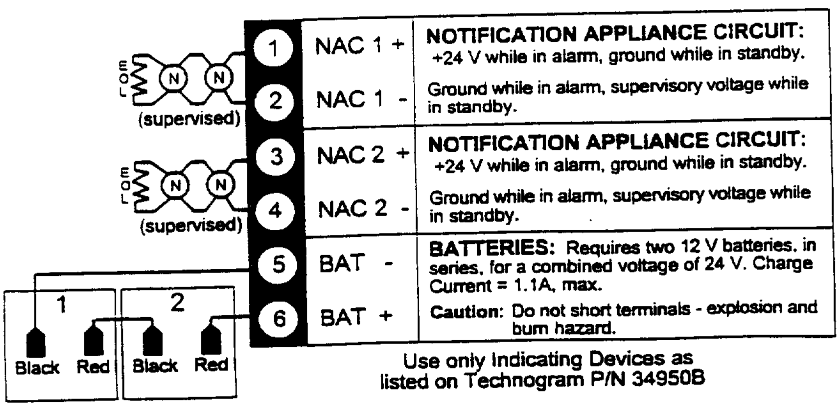
Typical 2-wire smoke detector wiring (supervised)
(for a list of compatible 2-wire smoke detectors, see Radionics Technogram P/N 34445B)

Typical 4-wire smoke detector wiring. For example: Radionics' D285 in a D292 base.

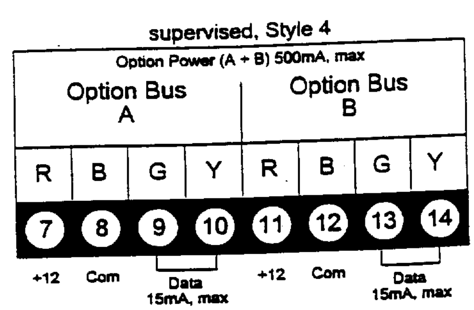




All wiring except battery terminal and primary AC power is power limited.



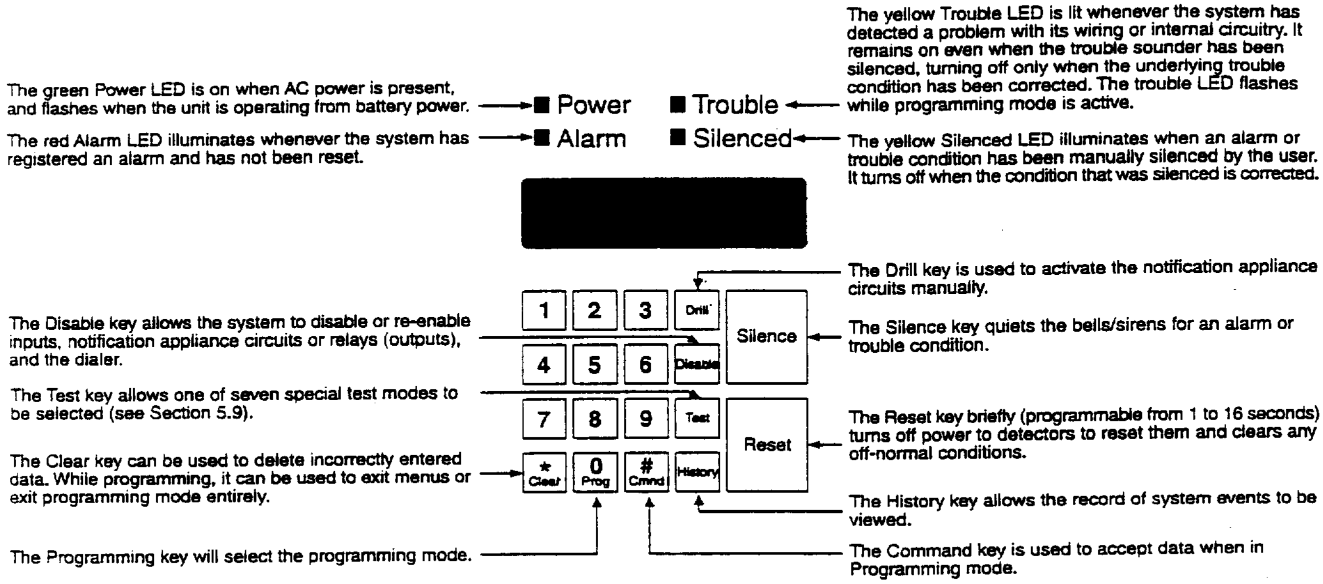
Use only Indicating Devices as listed on Technogram P/N 34950B



5.0 Operating Guide

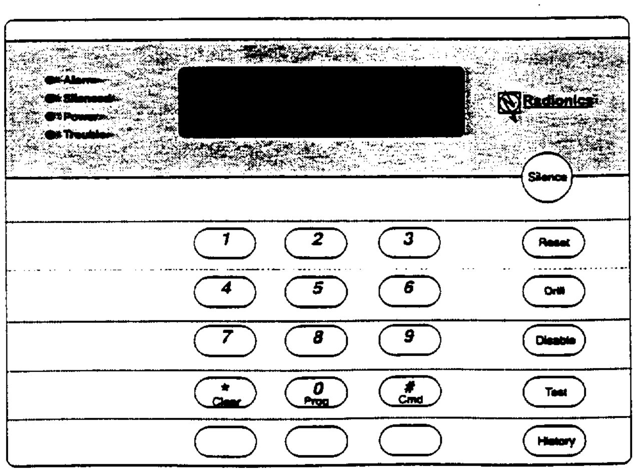
5.1 Understanding the Built-in Keypad

The keypad built-in to the control/communicator is an alpha-numeric LCD keypad. It has a two line by 16 character display to provide information on various control panel functions. In most instances, the top line of the display provides general system status information, while the second line describes specific devices that may be relevant to the current system status. When keys are being pressed, the display usually shows the current action on the top line, while displaying rotating menu choices on the second line. A built-in sounder is used to annunciate keystroke entries and as an interior warning device.



5.2 Understanding the D7033 Keypad

The D7033 keypad is an alpha-numeric LCD keypad. Up to four of these keypads can be mounted apart from the main control/communicator to provide additional locations for system status and control. The LCD display and keys operate identically to those of the built-in keypad on the control panel.



The volume and backlight intensity of the D7033 keypad can be changed in the following manner:

- Volume Control - The keypad sounder volume can be adjusted using the [1] and [4] keys along with the [*] key.
  - Hold the [*] key while pressing the [1] key to increase the volume or the [4] key to decrease the volume.
- Backlight Control - The display backlight intensity can be adjusted using the [3] and [6] keys along with the [*] key.
  - Hold the [*] key while pressing the [3] key to increase the brightness or the [6] key to decrease the brightness.

Installation Instructions
DS250 and DS250TH
Photoelectric Smoke Detectors

1.0 General Information

The DS250 and DS250TH are U.L. Listed, open-area photoelectric smoke detectors designed for use with commercial fire protective signaling systems and household fire warning systems (see NFPA 72, "The National Fire Alarm Code"). The detectors are available in two and four wire models with an optional 135°F (57°C) fixed-temperature heat sensor.

For commercial and industrial installations, 30 ft. (9.2 m) spacing between detectors is recommended (in accordance with NFPA 72).

The DS250 detectors employ the light scatter technique using a pulsed infrared source operating with a gated high-speed photodiode infrared sensor. The symmetry of the optical chamber allows uniform 360° smoke entry while it also increases immunity to external light. By utilizing low current electronic circuitry, the detectors can be connected to a wide range of power source circuits.

A highly visible LED indicator flashes every 3.5 seconds to verify that the detector has power and that the smoke sampling circuitry is functioning. The LED will latch ON in the event of an alarm, allowing the user easy verification of individual detector alarms. The detector can be reset, after the alarm condition has been cleared, by power interruption.

The DS250 and DS250TH feature a unique magnet operation/sensitivity test function. Sensitivity is tested by placing a magnet next to the detector which will activate an internal reed switch. If the detector is within its calibrated obscuration range, it will immediately signal an alarm. If it is outside of its calibrated obscuration range, the alarm LED will flash at different rates to indicate whether the unit is above or below proper sensitivity. A voltage output is also available which allows direct reading of the sensitivity level. If the detector is not operational, it will not signal an alarm.

In addition to advanced RFI and transient protection circuitry, the DS250 and DS250TH use pulsed infrared technology to reduce current required in the normal sensing (standby) condition to 80 micro-amps (μa) @ 12 VDC. This low current operation minimizes standby battery drain during primary power outages.

When properly installed using the MB2W/MB4W series bases, tamper protection is provided by IN/OUT wiring of the positive power line. This causes the control to initiate a trouble signal when a detector is removed from its base. Supervision of 2-wire systems is provided by the master control, and 4-wire system supervision is provided by an End-of-Line Power Supervision device such as an EOL200 or an MB4WE Power Supervision Base and an EOL resistor as specified by the control manufacturer.

2.0 Product Description

DS250	Detector only (requires base)
DS250TH	Detector w/integral 135°F heat sensor (requires base)
MB2W	Base only, 2-wire
MB2WL	Base only: 2-wire, wide diameter
MB4W	Base only, 4-wire
MB4WA	Base only, 4-wire, Form C Aux. relay
MB4WE	Base only for power supervision, 4-wire, EOL relay, Normally Closed Aux. relay.
MB4WS	Base only, 4 wire, with Sounder
EOL200	EOL supervision module for 4-wire systems

The U.L. Compatibility Identifier for the DS250 and DS250TH detectors is the letter A. To determine the U.L. Compatibility Identifier for use with the MB2W base, see the Technical Service Note P/N 26979.

Operating Temperature: +32° to 100°F (0° to 38°C).
0 to 95% relative humidity (non-condensing).

Detector Power Requirements

Standby Voltage: 2-wire = 8.5 to 33.0 VDC
4-wire = 10.0 to 30.0 VDC

Maximum RMS Ripple: 25 percent of DC input.

Start-up Current: 120 micro-amps maximum @ 35 VDC

Standby Current: 80 micro-amps @ 12 VDC
90 micro-amps @ 24 VDC
100 micro-amps @ 33 VDC

Note: The MB4WE = 24 mA @12 & 24 VDC

Alarm Current:

2-wire = Dependent on control panel. Panel must limit the alarm current to 100 mA maximum.

4-wire = MB4W: 48 mA @ 12 VDC
51mA @ 24 VDC
(70 mA max. @ 30 VDC)

MB4WA: 56 mA @ 12 & 24 VDC
(75 mA max. @ 30 VDC)

MB4WE: 80 mA @ 12 and 24 VDC
(100 mA max. @ 30 VDC)

MB4WS: Smoke Detector 48 mA @ 12 VDC
Sounder 15 mA @ 12 VDC,
25 mA @ 24 VDC

Power-up Time: 22 seconds maximum.

Detection Systems International Inc.
12970 Earhart Avenue, Suite 200
Auburn, California 95602-9022
(916) 887-1100
Fax: (916) 887-3650

Detection Systems PTY Ltd.
Unit 21, 45 Gilby Road
Mount Waverly, Victoria 3149, Australia
61 3 9558 8088
Fax: 61 3 9558 8089

Detection Systems PTY Ltd.
Unit 2, The Riverside Centre
148 James Ruse Drive
Parramatta, NSW 2150, Australia
61 2 891 4944
Fax: 61 2 891 5844

Detection Systems Ltd.
19, Rue du 19 Mars-78130
Les Mureaux, France
Phone/Fax: 33 1 34 74 9576

Detection Systems Ltd.
Unit 13-18, 17/F New Commerce Centre
19 On Sum Street, Shatin, N.T.
Hong Kong
852 2635 2815
Fax: 852 2648 7986

Detection Systems, Inc., 130 Perinton Parkway, Fairport, New York 14450-9199
(716) 223-4060 • (800) 289-0096 • Fax: (716) 223-9180

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING DIVISION

LISTING SERVICE

LISTING EXPIRES
JUNE 30, 1999

LISTING No.	7165-0801:177
CATEGORY:	Control Unit (Non High-Rise)
LISTEE:	Radionics, 1800 Abbott Street, Salinas CA 93901 Contact: Mark Hanna (408) 757-8877
DESIGN:	Model D7024 fire alarm control unit. Power limited, local, automatic, manual, noncoded, remote station, central station, waterflow and sprinkler supervisory service. Refer to the listee's data sheet for additional components description. System components:

D7024	Control Unit
D7034	4-Zone Expander
D7033	Keypad
D7035	Expanded Relay Module
25899	End-of-line Resistor

RATING:	120 VAC primary; 24 VDC Secondary
INSTALLATION:	In accordance with the listee's printed installation instructions, NFPA 72, applicable codes & ordinances and in a manner acceptable to the authority having jurisdiction.
MARKING:	Listee's name, model number, electrical rating and UL label.
APPROVAL:	Listed as fire alarm control unit for use with separately listed compatible initiating and indicating devices. This control unit does not generate a temporal pattern signal. If the distinctive three-pulse Temporal Pattern Fire Alarm Evacuation Signal (for total evacuation) in accordance with NFPA 72, 1993 Edition is required, the control unit must be used with appliances that can generate the temporal pattern signal. Refer to manufacturer's Installation Manual for details.
NOTE:	For Fire Alarm Verification Feature, the maximum Retard/Reset/Restart period must be adjusted to 30 seconds or less.

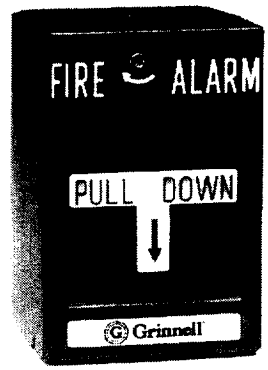
11-18-97

MANUAL STATIONS

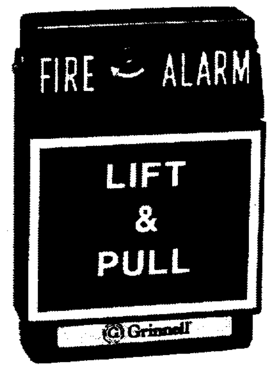
AUTOCALL RMS Series

Features
- **Die Cast Metal Construction**
- **Low Profile, Functional Design**

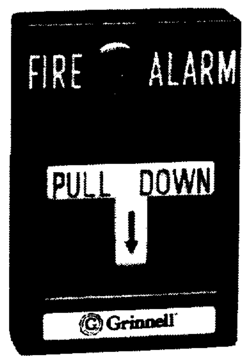
Optional Features
- **Dual Action**
- **Break Glass**
- **Institutional (Key-Operated)**
- **Weatherproof**
- **Explosionproof**
- **Hex Screw or Key Lock Reset**



RMS-1P (P/N 960672) Single Action



RMS-1T-LP (P/N 960675) Dual Action



RMS-1T-KL (P/N 960677) Key lock reset

RMS-1T-KO (P/N 960682) Institutional

RMS-1T-DAH (P/N 960683)
Break Glass

RMS-EX-WP-LP (P/N 960680)
Explosionproof

General Information

The AUTOCALL RMS series manual pull stations are of high quality, nontoxic, die cast construction.

Low profile and smooth edges offer an attractive yet functional design. All components are pre-painted or have plated surfaces to inhibit corrosion.

The RMS series manual pull stations have a 10 amp snap action switch. All stations, except the RMS-1T-KO and RMS-1T-KO-WP institutional manual stations, can be used with or without a break glass rod (included) for positive indication that the unit has been operated.

Hazardous Locations

The AUTOCALL RMS series explosionproof, weatherproof pull stations are constructed of high strength metal die cast alloy.

The UL rating of class I group B (hydrogen) C & D, class II groups E,F,G, class III and outdoor rating of type 4X, allows these stations to offer unmatched placement flexibility. The terminal block connections and contacts rated @ 10 amps meet most electrical requirements indoors or out.

Having a "conventional" pull station design, the RMS series stations offer easy identification.

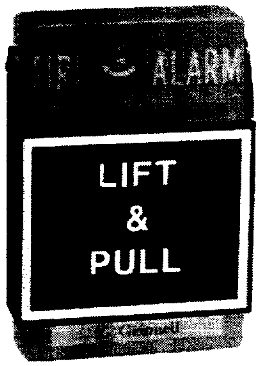
Listings & Approvals

- UL File Number S511
- CSFM No. 7150-0062:170

Grinnell®
FIRE PROTECTION SYSTEMS COMPANY

MANUAL STATIONS

AUTOCALL RMS Series



Optional LP Lift & Pull (P/N 976409)
Shown w/ RMS-1P (P/N 960672)

Specifications	
Contact	Single pole, single throw; double pole, single throw option
Wire AWG	12 to 22 AWG
Wiring	Terminal block connections (6-32 w/sem plate)
Switch	10 amp @ 125VAC
Key Switch (pre-signal)	3 amp @ 125VAC
Dimensions*	
Standard Station	4 3/4"H x 3 3/16"W x 7/8"D, single gang mount
RMS-1T-LP	4 3/4"H x 3 3/8"W x 1"D
RMS-1T-WP-LP, and RMS-2T-WP-LP	4 3/4"H x 3 3/8"W x 1 3/4"D
RMS-1T-KL	4 3/4"H x 3 3/16"W x 1 1/8"D
RMS-1T-KL-LP	4 3/4"H x 3 3/8"W x 1 1/8"D
RMS-1T-KO	4 3/4"H x 3 3/16"W x 1 1/8"D
RMS-1T-PS	4 3/4"H x 3 3/16"W x 15/16"D
RMS-1T-DAH (w/ rod)	5 5/8"H x 4"W x 1 9/16"D

* Depth does not include switch and/or terminal block.

Ordering Information

Part No.	Model	Switch Configuration	Pigtails (P) or Terminals (T)	Action	Additional Features
960672	RMS-1P	SPST	P	Single	
960673	RMS-1T	SPST	T	Single	
960674	RMS-2T	DPST	T	Single	
960675	RMS-1T-LP	SPST	T	Dual	
960678	RMS-1T-WP-LP	SPST	T	Dual	Weatherproof
960679	RMS-2T-WP-LP	DPST	T	Dual	Weatherproof
960680	RMS-EX-WP-LP	DPDT	T	Dual	Explosionproof, Weatherproof
960677	RMS-1T-KL	SPST	T	Single	Key lock reset
960681	RMS-1T-KL-LP	SPST	T	Dual	Key lock reset
960682	RMS-1T-KO	SPST	T	Single	Key operated, Institutional
976408	RMS-1T-KO-WP	SPST	T	Single	Key operated, Institutional, Weatherproof
960676	RMS-1T-PS	SPST	T	Single	Pre-signal station
960683	RMS-1T-DAH	SPST	T	Dual	Break glass

Accessories

Part No.	Model	Description
960687	BB	Indoor backbox, surface mount, 4.750"H x 3.325"W x 1.75"D
960684	GR	Glass rod
976409	LP	Lift and pull, used to convert single action stations to double action stations
960685	KY-15	Set of 2 keys, for key lock reset and institutional pull stations
960686	KY-PR	Set of 2 keys, for pre-signal keyswitch

NOTE: Key-reset units are keyed the same as AUTOCALL control panels (reset key only). It does not apply to the pre-signal keylock or the institutional station.
Please reference both the model and part numbers when ordering.

Grinnell®
FIRE PROTECTION SYSTEMS COMPANY

835 Sharon Drive, Westlake, Ohio 44145
Phone: (440) 899-5445; FAX (440) 871-2301
http://www.grinnellfire.com
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CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING DIVISION

LISTING SERVICE

LISTING EXPIRES
JUNE 30, 1999

LISTING No. 7150-1493:156

CATEGORY: Pull Station/Boxes

LISTEE: Grinnell Fire Protection Systems, 835 Sharon Drive, Westlake, OH 44145
Contact: R.D. McDonnell (216) 871-9900

DESIGN: Model RMS-1P, RMS-1T, RMS-2T with or without suffixes PS, DAH, LP, KL, WP, KO*; Models IXA-RMS* and IXA-RMS-KL* non-coded manual pull stations. Refer to listee's data sheet for additional detailed product description and operational considerations.

INSTALLATION: In accordance with listee's printed installation instructions, applicable codes and ordinances and in a manner acceptable to the authority having jurisdiction.

MARKING: Listee's name, model number, electrical rating and UL label.

APPROVAL: Listed as fire alarm manual pull stations for use with separately listed compatible control units. Models with suffix -WP are suitable for outdoor use.

NOTE: Formerly 7170-0062:170

*Rev. 02-05-98

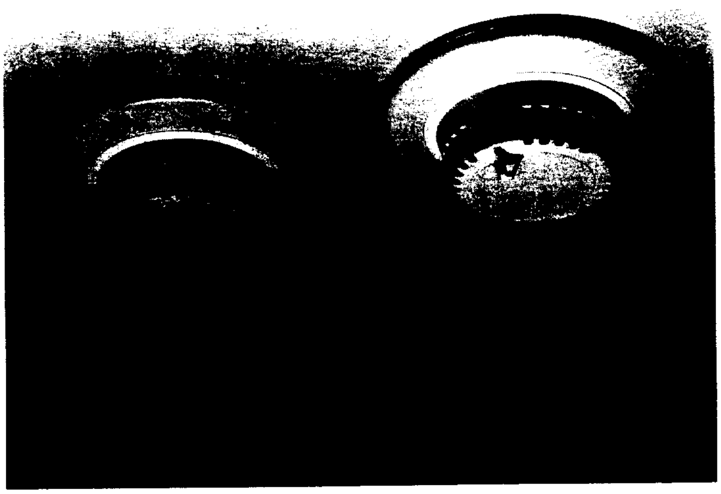
DATE ISSUED: MAY 1, 1998
EFFECTIVE ISSUE DATE TO EXPIRATION DATE

APPROVED BY:

DEPUTY BEN HO
PROGRAM COORDINATOR

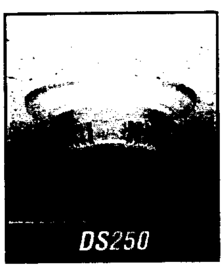
DS250 Series

Photoelectric Smoke Detector



FEATURING...

- Diagnostic/Sensitivity Test Features
- Easy Disassembly for Cleaning
- Sensitivity Voltage Output
- Interchangeable 2- and 4-Wire Bases
- 12 or 24 VDC Operation
- 135°F Heat Sensor Option



DS250

DS250TH

Description

The DS250 series are low profile, Photoelectric system type smoke detectors. They incorporate a separate detector/ base design that permits use with both 2-wire and 4-wire bases. A magnet activated test feature and a voltage output provide the ability to confirm sensitivity within factory calibration limits. A unit with a 135° heat sensing thermistor is also available.

Operation

The detector has an Alarm reset with power interruption of 1 second. Factory calibrated for nominal 3.2%/ft. gray smoke obscuration.

Mounting

Compatible with 2-wire or 4-wire bases. Bases may be mounted directly to 4-inch octagonal electrical boxes, single gang switch boxes, and wiremold surface box #5738. Large diameter bases also allow 4" square box mounting. Different diameter bases and several different output configurations provide application flexibility. See Base Selection Guide on next page.

Power Requirements

2-wire: 8.5 to 33VDC; 4-wire: 10 to 30VDC

Standby Current

80 micro-amps @ 12VDC.
90 micro-amps @ 24VDC.

Alarm Current

2-wire: Dependent on control panel. Panel must limit the Alarm current to 100mA maximum.

4-wire:
MB4W: 48mA @ 12VDC
MB4WA: 56mA @ 12 & 24VDC
MB4WE: 80mA @ 12 & 24VDC
MB4WS: Smoke detector: 48mA @ 12VDC
Sounder: 15mA @ 12VDC, 25mA @ 24VDC

Heat Sensor Temperature

135°F (57°C)

Alarm Output

The Alarm/Test LED flashes briefly every seven seconds to indicate that the detector has power and that the smoke sampling circuitry is functioning. The LED latches ON in the event of an alarm.

Signal output is dependent on base selection. See base selection guide on pg 2.

DS250 SERIES SPECIFICATIONS

For 2-wire installation, it is vital that UL compatibility be verified by consulting the MB Series installation instructions #25258.

Storage and Operating Temperature
+32° to 100°F (0° to 38°C). 0 to 95% relative humidity (non-condensing).

Enclosure Design
High impact fire retardant ABS plastic enclosure and separate twist-lock bases.

Test Features
To meet the NFPA 72 testing recommendations, the DS250 series feature a unique magnet operation/sensitivity test function and a direct voltage measurement test of the sensitivity. The detector operation is tested by placing a magnet next to the unit which activates an internal reed switch. If the detector is within its calibrated obscuration range, it will immediately signal an alarm. If the detector is outside of its calibrated obscuration range, the alarm LED will flash at different rates to indicate whether the unit is above or below the proper calibration. A voltage output is also available, which allows direct reading of the sensitivity level using a standard DVM.

Radio Frequency Interference (RFI) Immunity
No alarm or set-up on critical frequencies in the range from 26 to 950 Megahertz using a 50 watt transmitter located 1 ft. (.3m) from the unit or attached wiring.

Ordering Information

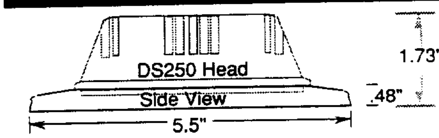
DS250	Detector only (requires a base)
DS250TH	Detector w/135°F heat sensing thermistor (requires a base)
DT-1	Removal/Test tool. It provides a means of accessing the detector w/out the use of a ladder. Connects to 1/2" EMT or standard broom handle.
EOL200	End-of-Line Supervision Module for use with 4-wire systems
TC2000	Test Cable

Protected under one or more of the following patents: #339,079; Other patents pending.

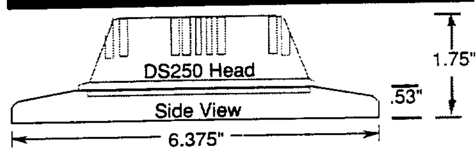
Listings and Approvals

	DS250 & DS250TH	MB2 & MB4 Series
U.L. & c-U.L.	S3019	S3019
NY City MEA	Acceptance# MEA274-93-E Vol. II	Acceptance# MEA274-93-E Vol. II
CSFM	#727-1062:108	#7300-1062:107
FM	Job# 0X8A6.AY	Job# 0X8A6.AY

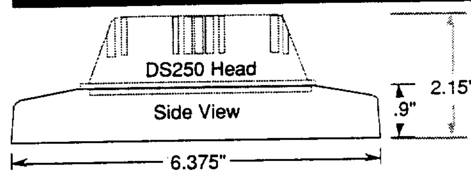
DS250 in MB2W Base



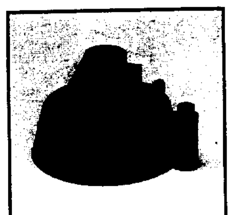
DS250 in MB2WL Base



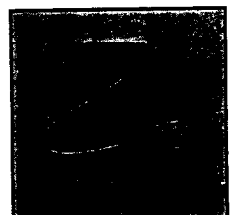
DS250 in MB4W Base



OPTIONAL ACCESSORIES



DT-1 Test/Removal Tool



EOL200 Supervision Module

BASE SELECTION GUIDE

Base	Description	Output	Diameter	Mounts to: 4" octagon	single gang	wiremold #5738	4" square
MB2W	2-wire	2-wire	5.5"	•	•	•	
MB2WL	2-wire with large diameter	2-wire	6.375"	•	•	•	•
MB4W	4-wire	Normally open alarm contact. Rated 10 Watts, 0.5 Amps @ 100VDC.	6.375"	•	•	•	•
MB4WA	4-wire with aux relay	Normally open alarm contact and Form "C" (NO/C/NC) auxiliary contact. Contacts rated 62.5 VA, 0.5A @ 125VAC, 30W, 1.0A @ 30VDC for resistive loads.	6.375"	•	•	•	•
MB4WE	4-wire with N/O auxiliary relay and power supervision	Normally open alarm contact and normally open auxiliary contact. Contacts rated 62.5VA, 0.5A @ 125VAC, 30W, 1.0A @ 30VDC for resistive loads. Built-in N/C power supervision relay opens on power loss.	6.375"	•	•	•	•
MB4WS	4- wire with externally powered 85dB sounder	Normally open alarm contact. Rated 10 Watts, 0.5 Amps @ 100VDC.	6.375"	•	•	•	•

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING DIVISION

LISTING SERVICE

LISTING EXPIRES
JUNE 30, 1999

LISTING No. 7272-1062:108

CATEGORY: Photoelectric Smoke Detectors

LISTEE: Detection Systems, Inc., 130 Perinton Parkway, Fairport, NY 14450
Contact: Frank Mioduszewski (716) 223-4060

DESIGN: Photoelectric type smoke detectors. Models are listed below:

DS250, DS250TH

DS282, DS282TH, DS282THS*, DS282S*

DS284, DS284TH, DS284THC*, DS284THR*, DS284THS*, DS284THCS*, DS284THSR*, DS284IS*, DS284THE*, DS284ES*, DS284THES*

Model DS250TH, DS282TH and DS284THxx employ an integral 135° fixed temperature heat detector. This heat sensor is intended for use only as a supplemental device to assist the smoke detector. Refer to listee's data sheet for additional detailed product description and operational considerations.

RATING: 8.5 - 33.0 VDC

INSTALLATION: In accordance with listee's printed installation instructions, applicable codes & ordinances and in a manner acceptable to the authority having jurisdiction.

MARKING: Listee's name, model number, electrical rating and UL label.

APPROVAL: Listed as photoelectric smoke detectors for use with separately listed compatible fire alarm control unit. Models DS250 and DS250TH are intended for use with separately listed bases model MB2W, MB2WL, MB4W, MB4WA or MB4WE.

*Rev. 01-05-98

DATE ISSUED: JUNE 8, 1998
EFFECTIVE ISSUE DATE TO EXPIRATION DATE

APPROVED BY:

DEPUTY BEN HO
PROGRAM COORDINATOR

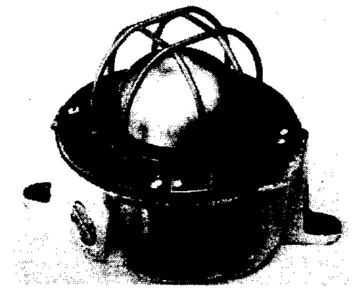
Chemetronics®

Effective: January 1996

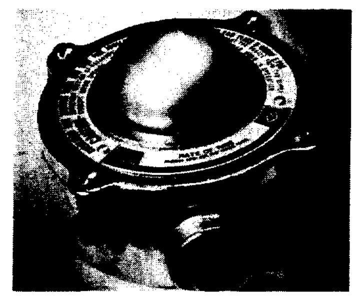
Series 500 Special Assembly Heat Detectors

The Series 500 Special Assembly Heat Detectors are supplied with the following standard features:

- Weather/Moisture Proof
- Explosion Proof
- Explosion/Moisture Proof
- Rate-of-Rise and/or Fixed Temperature Detection
- One Circuit, Normally Open



Weather/Moisture Proof (WPB/MPB)



Explosion Proof (EPB)
Explosion/Moisture Proof (EPB/MPB)

Description

Series 500 Special Assembly Heat detectors are designed for use in applications requiring protection against weather, moisture (internal condensation), and explosive atmospheres.

A Series 500 Unit is a dual-action, ultra-sensitive, electric fire detection thermostat.

It employs two independent methods of detection: rate-of-rise and fixed temperature.

The rate-of-rise method detects fires that rapidly grow in intensity. This method responds to abnormally fast temperature increases.

The fixed temperature method detects fires that build temperatures to a high level at a slow rate. This method responds to a specific temperature setting.

The Series 500 is an "open circuit" device designed to close an electrical circuit upon activation. The compact, simply designed unit is rugged and unaffected by vibration. All metal parts are brass or aluminum, mounted on a durable, mineral-filled, phenolic base.

No exposed metal parts carry current. Electrical contacts are all silver clad and of ample size.

Large line terminals and wire ways are provided in the base for easy installation in either open wiring or concealed wiring systems.

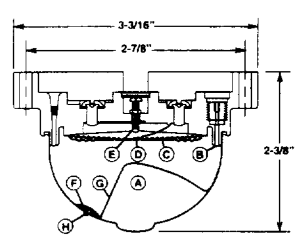
There are two dual action models with different fixed temperature element settings. Two other models are available with the same fixed temperature settings, but without the rate-of-rise element.

Available in a variety of models as described on table, back page.

Principles of Operation

The rate-of-rise element consists of an air chamber, flexible metal diaphragm, and restricted orifice vent that can be closely calibrated to control air flow rate in and out of the chamber.

Air chamber (A) expands and contracts as ambient room temperature changes.



Under normal temperature fluctuations, the unit "breathes" through calibrated vent (B). Under rapid temperature rise conditions, air expands faster than it can be vented, building up enough pressure to move thin metal diaphragm (C) until flexible silver contact (D) closes the electrical circuit against stationary contact (E).

If heat is subsequently removed, pressure is relieved through the vent, and contacts restore to normal.

The fixed temperature element is entirely independent of rate-of-rise. It consists of a phosphor-bronze spring held under tension by standard fusible solder.

Spring (G) is held under tension by a spot of fusible eutectic alloy (F). When heated to its rated temperature, the alloy melts which releases the spring (G) and closes the contacts.

Series 500 Special Assemblies

Weather/Moisture Proof Models (WPB/MPB)

Cast metal box, gasket and special steel cover plate with attached standard mechanism. Crossed wire guard. Four wire entrances threaded for 1/2 inch rigid conduit.

Combined protection against weather and condensation within the conduit system. Emerging wire points are sealed with epoxy.

Explosion Proof Models (EPB)

Cast metal back box, cover plate, and modified mechanism. Back box has two opposing wire entrances, threaded for 1/2 inch rigid conduit. Box, cover and base precision-machined for extremely close-tolerance fit.

Explosion proof models are UL and FM listed for the following classifications:

Class I, Group C - Atmospheres containing ethyl-ether vapors ethylene, or cyclo-propane.

Class I, Group D - Atmospheres containing gasoline, hexane, naphtha, benzine, butane, propane, alcohols, acetone, benzol, lacquer solvent vapors, natural gas.

(Continued on reverse)

Chemetronics®

Effective: January 1996

Model 501	*Model 502*	*Model 503*	*Model 504*
No Marking *Model WPB/MPB 501* *Model EPB 501* *Model EPB/MPB 501*	*White Dot* *Model WPB/MPB 502* *Model EPB 502* *Model EPB/MPB 502*	*Black Dot* *Model WPB/MPB 503* *Model EPB 503* *Model EPB/MPB 503*	*Black Dot on White* *Model WPB/MPB 504* *Model EPB 504* *Model EPB/MPB 504*
Rate-of-rise and Fixed Temperature, 136°F (58°C)	*Rate-of-rise and Fixed Temperature, 190°F (88°C)*	*Fixed Temperature only, 136°F (58°C)*	*Fixed Temperature only, 190°F (88°C)*
Application: Normal temperature fluctuations and ceiling temperatures not exceeding 100°F (38°C)	*Application: Normal temperature fluctuations and ceiling temperatures exceeding 100°F (38°C) but not 150°F (66°C)*	*Application: Unusually violent temperature fluctuations and ceiling temperatures not not exceeding 100°F (38°C)*	*Application: Unusually violent temperature fluctuations and ceiling temperatures exceeding 100°F (38°C) but not 150°F (66°C)*
*Maximum Spacing allowance** *50 ft x 50 ft - UL* *30 ft x 30 ft - FM*	*Maximum Spacing allowance** *50 ft x 50 ft - UL* *30 ft x 30 ft - FM*	*Maximum Spacing allowance** *15 ft x 15 ft - UL & FM*	*Maximum Spacing allowance** *15 ft x 15 ft - UL & FM*

* Refer to National Fire Alarm Code Standard NFPA 72 for application requirements.

Class II, Group E - Atmospheres containing metal dust of aluminum, magnesium, or their commercial alloys.

Class II, Group F - Atmospheres containing carbon black, Coal or coke dust.

Class II, Group G - Atmospheres containing flour, starch, or grain dust.

Explosion Proof Models and Moisture Proof Models (EPB/MPB)

Combined features of Moisture proof models and explosion proof Models.

Series 500 Testing Methods

Models 501 and 502 can be tested by the application of a quick heat from any convenient source. A common portable hair dryer is recommended. However, do not apply heat that exceeds the fixed temperature rating of the detector.

Models 503 and 504 cannot be tested. However, the fusible alloy element is generally considered so reliable that testing is not necessary.

Important Special Notes

Application: Heat detectors should be used for property protection. Reliance should not be placed solely on heat detectors for life safety. **Where life safety is involved, smoke detectors MUST also be used. Detectors must not be painted.**

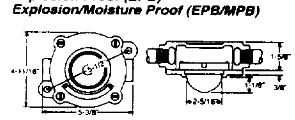
Battery Back-Up: heat detectors should be electrically supervised with battery back-up at the panel.

Testing: The rate-of-rise mechanism may be subject to reduced sensitivity over time. Annual testing of the rate-of-rise operation is recommended.

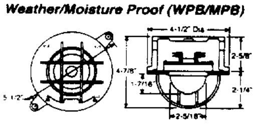
Replacements: When a special assembly model requires replacement, the entire assembly must be replaced as a unit, including box, plate, and head (shell).

Dimensions

Explosion Proof (EPB)
Explosion/Moisture Proof (EPB/MPB)



Weather/Moisture Proof (WPB/MPB)



Electrical Ratings

All detectors are one circuit, normally open. In all circuits, current flow through Series 500 should be limited not to exceed the following values:

6-125 Volts A.C., 3.0 Amp.
6-28 Volts D.C., 1.0 Amp.
125 Volts D.C., 0.3 Amp.
250 Volts D.C., 0.1 Amp.

Listings/Approvals

- Listed by Underwriters Laboratories (UL)
- Factory Mutual Approved (FM)
- California State Fire Marshal Approval (CFSM)
- City of New York (MEA) Listing No. 188-94-E

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CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING DIVISION

LISTING SERVICE

LISTING EXPIRES
JUNE 30, 1999

LISTING NO: 7270-0061:002

CATEGORY: Heat Detector

LISTEE: Chemetron, 4801 Southwick Drive, 3rd Floor, Matteson, IL 60443
Contact: Gary Kimble (708) 283-4447

DESIGN: Models 501, 502, 503 and 504 heat detectors. Models with suffix WPB-M are suitable for outdoor use. Models with suffix EPB are equipped with explosion proof box. Refer to listee's data sheet for detailed product description and operational considerations.

RATING: 136° F and 190° F

INSTALLATION: In accordance with listee's printed installation instructions, applicable codes and ordinances and in a manner acceptable to the authority having jurisdiction.

MARKING: Listee's name, model number, temperature rating and UL label.

APPROVAL: Listed as heat detectors for use with separately listed compatible fire alarm control units.

DATE ISSUED: **MAY 19, 1998**
EFFECTIVE ISSUE DATE TO EXPIRATION DATE

APPROVED BY:

DEPUTY BEN HO
PROGRAM COORDINATOR

CHEMETRON Fire Systems™

Chemetronics®
Heat Detectors Series 600

Technical Data Bulletin
No. 1013

The Heat Detectors Series 600 are supplied with the following standard features:

- Rate-of-Rise and Fixed Temperature
- One or Two-Circuit, Normally Open
- Easy Installation
- Low Profile
- Visual Indication
- Operation Testing

Description

The Series 600 Heat Detector is attractive and durable, and features combination rate-of-rise and fixed-temperature detectors. Heat detectors are available in 135°F and 200°F temperature ratings

Rate-of-rise detects heat by quickly responding to rapid temperature increase. Rate-of-rise units have wide spacing allowance of 50-foot centers. See Specification Table for details.

Fixed temperature reacts to heat by responding to a specific temperature setting.

Series 600 Detectors use the same reliable pneumatic rate-of-rise element used in former models, but offer added aesthetic appeal.

The pneumatic rate-of-rise element responds to a rapid rise in temperature, approximately 15°F. (8°C) per minute, by expansion of air within the sealed chamber faster than it can escape through a calibrated vent. The resultant increase in pressure depresses the diaphragm, causing the electrical contact to close the circuit.

The fixed temperature element uses a fusible alloy. When activated, the external heat collector drops away to provide quick visual confirmation that the element has operated.

The units protrude only 1⅜ inch from the ceiling surface with a junction box mounting. They have pleasing contours and an all-white finish that conforms to ceiling aesthetics.

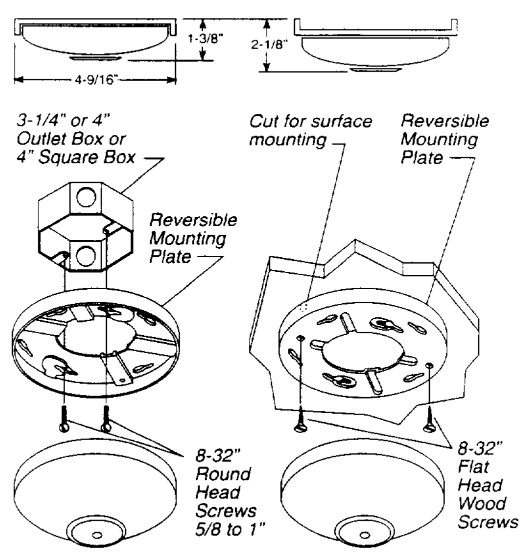
Installation

Each detector includes a patented reversible mounting plate. In one position, it easily attaches to 4" junction box, 3¼" octagon box or plaster ring.

In reverse, the plate can be used for open wiring without a junction box. A ¼" space between detector and mounting surface allows for wire connections. All mounting screws are concealed.

The detector simply attaches to the mounting plate with a push and twist motion. No tools required.

Mounting plate is molded of white self-extinguishing thermoplastic rated at 105°C. The plate is extremely strong yet adapts to uneven mounting surfaces.



Series 600 Testing Methods

Models 601/621 and 602/622 can be tested by the application of quick heat from any convenient source. A portable hair dryer is recommended. However, do not apply heat that exceeds the fixed temperature rating of the detector.

Models 603/623 and 604/624 cannot be tested. However, the fusible alloy element is generally considered so reliable that testing is not necessary.

CHEMETRON Fire Systems™ **Chemetronics**®

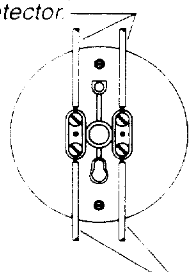
Model 601 and 621	Model 602 and 622	Model 603 and 623	Model 604 and 624
No Marking Model 601 (1 circuit) Model 621 (dual circuit)	Gray Ring Model 602 (1 circuit) Model 622 (dual circuit)	Gray Spot Model 603 (1 circuit) Model 623 (dual circuit)	Black Dot on White Model 604 (1 circuit) Model 624 (dual circuit)
Rate-of-rise and Fixed Temperature. 135°F (57°C)	Rate-of-rise and Fixed Temperature. 200°F (94°C)	Fixed Temperature only, 135°F (57°C)	Fixed Temperature only, 200°F (94°C)
Application. Normal temperature fluctuations and ceiling temperatures not exceeding 100°F (38°C)	Application: Normal temperature fluctuations and ceiling temperatures exceeding 100°F (38°C) but not 150°F (66°C)	Application: Unusually violent temperature fluctuations and ceiling temperatures not exceeding 100°F (38°C)	Application: Unusually violent temperature fluctuations and ceiling temperatures exceeding 100°F (38°C)but not 150°F (66°C)
Maximum Spacing allowance* 50 ft x 50 ft - UL 30 ft x 30 ft - FM	Maximum Spacing allowance* 50 ft x 50 ft - UL 30 ft x 30 ft - FM	Maximum Spacing allowance* 25 ft x 25 ft - UL 20 ft x 20 ft - FM	Maximum Spacing allowance* 15 ft x 15 ft - UL & FM

* Refer to NFPA Standard 72E for application requirements

Screw Terminals

Standard Single Circuit Detector

Wire from alarm panel or previous detector



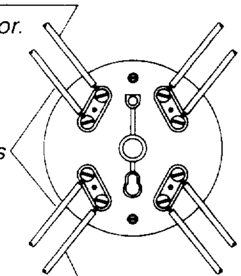
Wire connected to next detector or end of line resistor.

NOTE: All single circuit models come with one (1) normally open dry contact.

Dual Circuit Detector
Used to send two Independent signals.

Wire connected to next detector or end of line resistor.

Wire from alarm panel or previous detector.



Wire connected to next detector or end of line resistor.

NOTE: All dual circuit models come with one (2) normally open dry contacts.

Important Special Notes

Application: Heat detectors should be used for property protection. Reliance should not be placed solely on heat detectors for life safety. When life safety is involved, smoke detectors must also be used.

Battery Back-Up: Heat detectors should be electronically supervised with battery back-up at the panel.

The rate-of-rise mechanism may be subject to reduce sensitivity over time. Annual testing of the rate-of-rise operation is recommended.

Electrical Ratings

6-125 Volts A.C., 3.0 Amp.
6-28 Volts D.C., 1.0 Amp.
125 Volts D.C., 0.3 Amp.
250 Volts D.C., 1 Amp.

Listings Approvals

- U.L. Listed
- F.M. Approved
- Approved Board of Standards and Appeals, N.Y.C.
- Approved Fire Marshal, State of California
- Designed in accordance with NFPA Standard 72

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The seller makes no warranties, express or implied including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose, except as expressly stated in seller's sales contract or sales acknowledgment form.

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FIRE PROTECTION SYSTEMS

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CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING DIVISION

LISTING SERVICE

LISTING EXPIRES
JUNE 30, 1999

LISTING NO: 7270-0061:005

CATEGORY: Heat Detector

LISTEE: Chemetron, 4801 Southwick Drive, 3rd Floor, Matteson, IL 60443
Contact: Gary Kimble (708) 283-4447

DESIGN: Models 601, 602, 603, 604, 621, 622, 623 and 624 heat detectors. Refer to listee's data sheet for detailed product description and operational considerations.

INSTALLATION: In accordance with listee's printed installation instructions, applicable codes and ordinances and in a manner acceptable to the authority having jurisdiction.

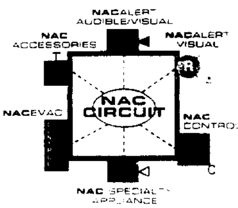
MARKING: Listee's name, model number, temperature rating and UL label.

APPROVAL: Listed as heat detectors for use with separately listed compatible fire alarm control units.

DATE ISSUED: **MAY 19, 1998**
EFFECTIVE ISSUE DATE TO EXPIRATION DATE

APPROVED BY:

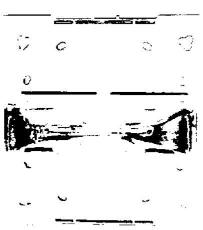
DEPUTY BEN HO
PROGRAM COORDINATOR



Series RS Strobes and RSS Non-Sync/Sync Strobes

New Features Enhancements

Wheelock's Series RS Strobes and Series RSS Non-Sync/Sync Strobes have been enhanced with **Lower Current Draw** and the Series RSS has **ZERO Inrush** while maintaining their outstanding performance, reliability and cost-effectiveness in meeting or exceeding the latest requirements of NFPA 72 (National Fire Alarm Code) 1996, ANSI 117.1 (American National Standard for Accessible and Usable Building and Facilities), and UL Standard 1971 (Signaling Devices for the Hearing Impaired). RS/RSS Strobe Appliances, when properly specified and installed in accordance with NFPA/ANSI Standards, can provide the ***Equivalent Facilitation*** allowed under ADA Accessibility Guidelines (ADAAG General Section 2.2) by meeting or exceeding the illumination which results from ADA's strobe intensity guidelines of 75 candela at 50 feet. This is an illumination of 0.030 lumens per square foot.



Series RS/RSS Strobe Mounting Plate (Shown w/o cover plate)

Wheelock's Series RS/RSS Strobes employ an integral ***Patented Strobe Mounting Plate*** that makes it easy to mount to a variety of backboxes. ***The strobes can be mounted to single-gang, double-gang, 4" square, 100 mm European backboxes, or the SHBB backbox (Order Code 7254) for surface mounting.*** An attractive cover plate is provided for a clean, finished appearance on all models.

Wheelock's Series RS Strobes are available with 15 and 15/75 candela intensities for **Wall mount only** and non-sync applications.

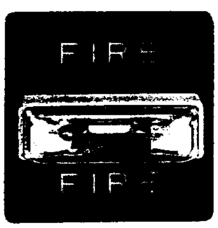
The **Series RSS Strobes** NOW **include Non-Sync** and **Sync** in **ONE** appliance. The SM or DSM Sync Module must be used to achieve *Sychronizatio*n of the strobe. Synchronized strobes can eliminate possible restrictions on the number of strobes in the field of view. **Wheelock's synchronized strobes offer an easy way to comply with ADA recommendations concerning photosensitive epilepsy.** The strobe options for the Series RSS are 15, 15/75, 30, 75 and 110 candela intensities for **Wall** mount and 15, 30, 75 and 100 candela intensities for **Ceiling** mount applications.

Series RS/RSS Wall Cover Plate (Included w/strobe)

Features

Series RS/RSS Strobes:

- **Approvals Include:** Underwriters Laboratories UL 1971, European Community (CE), FCC Part 15. Submitted for New York City (MEA), California State Fire Marshal (CFM), Chicago (BFP) and Factory Mutual (FM) approvals on all models.
- ADA/NFPA/ANSI compliant. Meets OSHA 29, Part 1910.165.
- **LOWER CURRENT.**
- **Patented Strobe Mounting Plate** for single gang, double gang, 4" square, 100 mm European backboxes or Wheelock's SHBB backbox for surface mounting.
- Low current draw with temperature compensation to reduce power consumption and wiring costs.
- Polarized 12 and 24 VDC models with wide listed voltage ranges using filtered DC or unfiltered FWR input voltage.
- Fast installation with IN/OUT screw terminals using #12 to #18 AWG wires.



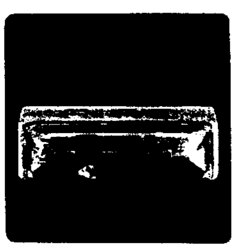
Wall Strobe

Series RS: ***Low Current***

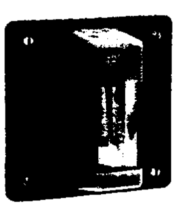
- 24 Volt only.
- **Wall mount** only.
- Available only in 15 and 15/75 candela intensity.

Series RSS Strobes: ***Low Current***

- **ZERO INRUSH.**
- Both **Non-Sync and Sync** in **ONE** appliance. To achieve Synchronization, a **SM or DSM Sync Module must be used.**
- 12 or 24 volt models.
- **Wall mount RSS available in** 15, 15/75, 30, 75 and 110 candela intensity.
- **Ceiling mount RSS available in** 15, 30, 75 and 100 candela intensity.



Ceiling Strobe



WM3T

Since the inception of UL 1971, strobes cannot be Listed for outdoor use, Wheelock offers WM3T strobes for outdoor installation requiring weatherproof devices and private mode operation where UL 1971 strobes are not required. They are UL 1638 Listed at 117 cd and are designed for surface mounting indoors or outdoors.

"NOT TO BE USED AS IN INDOOR VISUAL EVACUATION SIGNAL OR FOR THE HEARING IMPAIRED"

ONLY 88 MILLIAMPS

20-31 VDC

wheelock

Specifications and Ordering Information

WALL MOUNT STROBES – SERIES RS/RSS					
Model Number*	**Order Code**	**Input Voltage (VDC)**	**Strobe Candela**	**Average** Current (AMPS) @ 24 VDC**	**Mounting Options*****
RS-2415W-FR	7465	24	15	.050	B,D,F,G,X
RS-241575W-FR	7466	24	15/75	.065	B,D,F,G,X
RSS-2415W-FR	7470	24	15	.050	B,D,F,G,X
RSS-241575W-FR	7471	24	15/75	.065	B,D,F,G,X
RSS-2430W-FR	7472	24	30	.081	B,D,F,G,X
RSS-2475W-FR	7473	24	75	.133	B,D,F,G,X
RSS-24110W-FR	7474	24	110	.161	B,D,F,G,X
RSS-2415W-FW	7787	24	15	.050	B,D,F,G,X
RSS-241575W-FW	7788	24	15/75	.065	B,D,F,G,X
RSS-1215W-FR	7475	12	15	.126	B,D,F,G,X
RSS-121575W-FR	7476	12	15/75	.161	B,D,F,G,X
CEILING MOUNT STROBES – SERIES RSS					
RSS-2415C-FW	7482	24	15	.067	B,D,F,G,X
RSS-2430C-FW	7483	24	30	.102	B,D,F,G,X
RSS-2475C-FW	7484	24	75	.204	B,D,F,G,X
RSS-24100C-FW	7485	24	100	.238	B,D,F,G,X
SYNC MODULE					
SM-12/24-R	6369	12	—	.014	E,N
		24	—	.025	E,N
DSM-12/24-R	6374	12	—	.020	W
		24	—	.038	W

SM Sync Module is rated for 3.0 amperes at 12 or 24 VDC; DSM Sync Module is rated for 3.0 amperes per circuit. The maximum number of interconnected DSM modules is twenty (20). Refer to Data Sheet S3000 or installation instructions (refer to Fax-On-Demand list in this catalog). Use the Series RSS appliances for synchronization.

* Series RS-Wall, RSS-Wall and RSS-Ceiling are available in either Red or White. Please contact Customer Service for order codes (if not stated above) and delivery information.

Model code suffix: W = wall or C = ceiling; F = fire lettering or call Customer Service if other lettering is required (Ex.: Feugo).
R at end = red plate; W at end = white plate;

Example: RSS-2415W-FR ← Red, Wall, Fire   RSS-2415W-FW ← White, Wall, Fire   RSS2415C-FW ← White, Ceiling, Fire

** Average current per actual Wheelock Product Testing @ 10.5, 12, 15.6, 20, 24 & 31 VDC Nominal Voltage. For rated average and peak current across the UL Listed voltage range for both filtered DC and unfiltered (VRMS). Use **Table E** for Series RS or **Table F** for Series RSS wall or **Table G** for RSS ceiling when calculating current requirements located on **page 61** of this catalog and/or most current installation instructions. (refer to Fax-On-Demand Listing in this catalog).

*** **Refer to Data Sheet S7000 for Mounting Options or page 56 of this catalog.**

Note: WM3T-24-VFR – UL 1638 only.   Refer to installation instructions (P82037).

117 cd STROBE INDOOR OR OUTDOOR (must use WBB box for outdoor)					
Model Number	**Order Code**	**Input Voltage (VDC)**	**Strobe Candela**	**Average Current (AMPS)**	**Mounting Options**
WM3T-24-VFR	4911	24	117	.088	J,K

SERIES RS and SERIES QUICK REFERENCE GUIDE

Model Number	Wall Mount	Ceiling Mount	Non-Sync	Sync's w/ SM or DSM	Strobe Candela	24 VDC	12 VDC	*Model # Color RED	**Model # Color WHITE
RS-2415W-FR	X		X		15	X		X	
RS-241575W-FR	X		X		15/75	X		X	
RSS-2415W-FR	X		X	X	15	X		X	
RSS-241575W-FR	X		X	X	15/75	X		X	
RSS-2430W-FR	X		X	X	30	X		X	
RSS-2475W-FR	X		X	X	75	X		X	
RSS-24110W-FR	X		X	X	110	X		X	
RSS-1215W-FR	X		X	X	15		X	X	
RSS-121575W-FR	X		X	X	15/75		X	X	
RSS-2415C-FW		X	X	X	15	X			X
RSS-2430C-FW		X	X	X	30	X			X
RSS-2475C-FW		X	X	X	75	X			X
RSS-24100-FW		X	X	X	100	X			X

* Model # Color is Red, can be ordered in White, Call Customer Service for order code & Delivery.
** Model # Color is White, can be ordered in Red, Call Customer Service for order code & Delivery.

SEE PAGE 3 FOR GENERAL AND TECHNICAL NOTES.

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING DIVISION

LISTING SERVICE

LISTING EXPIRES
JUNE 30, 1999

LISTING No. 7125-0785:141

CATEGORY: Fire Alarm Devices for the Hearing Impaired

LISTEE: Wheelock Inc., 273 Branchport Avenue, Long Branch, NJ 07740
Contact: Luy Nguyen (732) 222-6880 Fax (732) 222-8707

DESIGN: Models RS-2415W, RS-241575W, RSP-2415W, RSP-241575W Strobe Light; Models RSS-2415W, RSS-2475W, RSS-241575W, RSS-2430W, RSS-24110W, RSSP-2415W, RSSP-2475W, RSSP-241575W, RSSP-2430W, RSSP-24110W, RSS-1215W*, RSSP-1215W*, RSS-121575W*, RSSP-121575W*, RSS-2415C*, RSSP-2415C*, RSS-2430C*, RSSP-2430C*, RSS-2475C*, RSSP-2475C*, RSS-24100C*, and RSSP-24100C* synchronized or non-synchronized Strobe Lights. Model number may be followed by any two alpha/numeric characters indicating lens orientation, lettering and color. Refer to listee's data sheet for additional detailed product description and operational considerations.

RATING:

Electrical	20-31 VDC/FWR
Candela	15=15cd, 1575=15/75cd on axis, 30=30cd, 75=75cd, 110=110cd (Wall)
Flash rate	60 Flashes/minute

INSTALLATION: In accordance with listee's printed installation instructions, applicable codes & ordinances and in a manner acceptable to the authority having jurisdiction. Models with AW≅ are intended for wall mount only. Models with AC≅ are intended for ceiling mount only.

MARKING: Listee's name, model number, electrical/candela rating and UL label.

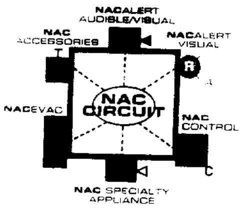
APPROVAL: Listed as strobe light suitable for the hearing impaired when used in conjunction with separately listed electrically compatible fire alarm control units. For indoor use only. For synchronization strobes, Models SM-12/24, SMX-12/24, DSM-12/24 or DSMX-12/24 Sync Control Module (CSFM Listing No. 7300-0785:132) must be used.

*Rev. 11-20-97

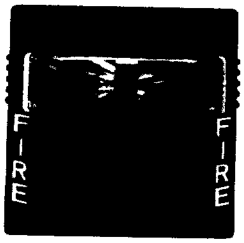
DATE ISSUED: **MAY 21, 1998**
EFFECTIVE ISSUE DATE TO EXPIRATION DATE

APPROVED BY:

DEPUTY BEN HO
PROGRAM COORDINATOR

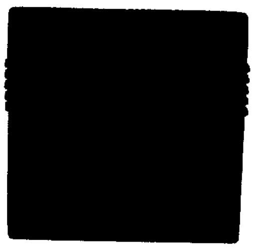


NEW WALL APPLIANCE (available Sept '97)
Series NS/NS4/NH Horn Strobe and Horn Appliances



SERIES NS/NS4

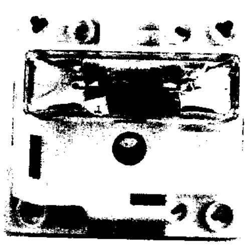
Wheelock's Newest Horn Strobe and Horn Appliances are the **Series NS/NS4 Horn Strobe** appliances and the **Series NH Horns.** Both the **Series NS/NS4** and **NH** are **LOW CURRENT** designs with **ZERO INRUSH.** The horn appliances provide a *Selectable continuous* horn tone or *temporal pattern (Code 3) tone* when constant voltage from a Fire Alarm Control Panel (FACP) is applied. Each tone has two dBA settings to choose from. All models (horn only or horn with strobe) may be **Synchronized** when used in conjunction with the SM or DSM Sync Modules. Additionally, the *horn may be silenced while maintaining strobe activation* of the Series NS/NS4 Horn Strobe appliances. All of these features are achievable with either **Wheelock's Patented 2 Wire Series NS** or with the 4 wire Series NS4.



SERIES NH

Features

- **Approvals Include: Underwriters Laboratories UL 1971 and UL 464 Listings, FCC Part 15, Pending: Factory Mutual (FM), European Community (CE), California State Fire Marshal (CSFM), New York City (MEA) and Chicago (BFP) approvals on all models.**
- ADA/NFPA/ANSI compliant.
- Meets OSHA 29 Part 1910.165.
- **Low Current.**
- **Zero Inrush.**
- Wall mount only.
- 2 Selectable tones and dBA levels.
  - Continuous tone: 90 or 95 dBA anechoic; 82 or 88 dBA reverberant.
  - Temporal Code 3 tone: 92 or 97 dBA anechoic; 76 or 82 dBA reverberant.
- **Patent Pending Universal Mounting Plate** for single gang, double gang, 4" square, 100 mm European Backboxes or Wheelock's SHBB surface backbox.
- No additional trim plates required.
- Available with 15, 15/75, 30, 75 and 110 cd strobe intensities.
- 2 versions available.
  - 2-wire for both horn and strobe.
  - 4-wire model.
- Non-Sync and Sync in one (synchronization requires a SM or DSM Sync Module).
- Matching horn in 12/24 V (Selectable).
- Fast installation with in/out screw terminals using #12 to #18 AWG wire size.
- Strobes flash at 1 flash per second.
- Compatible with all standard FACP's.



SERIES NS/NS4
Universal Mounting

SERIES NS/NS4
Cover

Specifications and Ordering Information

WALL MOUNT ONLY

Model Number*	Order Code	Input Voltage	Strobe Candela	Mounting Options**
NS-2415W-FR	7805	24	15	B,D,F,G,X
NS-241575W-FR	7806	24	15/75	B,D,F,G,X
NS-2430W-FR	7807	24	30	B,D,F,G,X
NS-2475W-FR	7808	24	75	B,D,F,G,X
NS-24110W-FR	7809	24	110	B,D,F,G,X
NS-1215W-FR	7815	12	15	B,D,F,G,X
NS-121575W-FR	7816	12	15/75	B,D,F,G,X
NS4-2415W-FR	7900	24	15	B,D,F,G,X
NS4-241575W-FR	7901	24	15/75	B,D,F,G,X
NS4-2430W-FR	7902	24	30	B,D,F,G,X
NS4-2475W-FR	7903	24	75	B,D,F,G,X
NS4-24110W-FR	7904	24	110	B,D,F,G,X
NS4-1215W-FR	7910	12	15	B,D,F,G,X
NS4-121575W-FR	7911	12	15/75	B,D,F,G,X
NH-12/24-R	7449	12/24	—	B,D,F,G,X
SYNC MODULE* **			**Average Current**	
SM-12/24-R	6369	12	.014	E,N
		24	.025	E,N
DSM-12/24-R	6374	12	.020	W
		24	.038	W

NOTES:

* Model # Color is Red, can be ordered in White, Call Customer Service for order code & delivery.

Model Code Suffix: W = wall, F = fire lettering or call Customer Service if other lettering is required (Ex. Feugo), R = red, W at end = white, 4 = 4 wire

Example: NS-2415W-FR ← Red (Wall, Fire) NS4-2415W-FR ← Red (4-Wire, Wall, Fire) NS-2475W-FW ← White (Wall, Fire)

** **Refer to Data Sheet S7000 for Mounting Options or page 56 of this catalog.**

*** SM Sync Modules are rated for 3.0 amperes at 12 or 24 VDC; DSM Dual Sync Modules are rated for 3.0 amperes per circuit. The maximum number of interconnected DSM modules is twenty (20). Refer to Data Sheet S3000 and installation instructions (Refer to Fax-On-Demand List located in this catalog).

WHEELOCK AVERAGE CURRENT

Average Current (Amperes) @ 24 or 12 VDC Anechoic/Reverberant dBA levels for Continuous & Temporal (Code 3) Tones
Chart Key: Settings Low & High

Model Number	Low	High
NS-2415W-FR	.071	.077
NS-241575W-FR	.086	.091
NS-2430W-FR	.102	.107
NS-2475W-FR	.154	.160
NS-24110W-FR	.181	.187
NS-1215W-FR	.137	.140
NS-121575W-FR	.172	.175
Model Number	**Low Horn/Strobe**	**High Horn/Strobe**
NS4-2415W-FR	.021/.054	.027/.054
NS4-241575W-FR	.021/.068	.027/.068
NS4-2430W-FR	.021/.081	.027/.081
NS4-2475W-FR	.021/.133	.027/.135
NS4-24110W-FR	.021/.161	.027/.161
NS4-1215W-FR	.010/.126	.013/.126
NS4-121575W-FR	.010/.162	.013/.162
NH-12/24-R	.010/.020	.013/.027

Average current per actual Wheelock Production Testing at 10.5, 12, 15.6, 20, 24 & 31 VDC. For rated average and peak current across the UL listed voltage range for both filtered DC and unfiltered VRMS, see **Table A** on **page 59** of this catalog or see installation instructions. (Refer to Fax-On-Demand List located in this catalog.)

SERIES NS/NH QUICK REFERENCE GUIDE

Model Number*	Wall Mount	Non-Sync	Sync's w/ SM or DSM	Strobe Candela	24 VDC	12 VDC	2 Terminal	4 Terminal
NS-2415W-FR	X	X	X	15	X		X	
NS-241575W-FR	X	X	X	15/75	X		X	
NS-2430W-FR	X	X	X	30	X		X	
NS-2475W-FR	X	X	X	75	X		X	
NS-24110W-FR	X	X	X	110	X		X	
NS-1215W-FR	X	X	X	15		X	X	
NS-121575W-FR	X	X	X	15/75		X	X	
NS4-2415W-FR	X	X	X	15	X			X
NS4-241575W-FR	X	X	X	15/75	X			X
NS4-2430W-FR	X	X	X	30	X			X
NS4-2475W-FR	X	X	X	75	X			X
NS4-24110W-FR	X	X	X	110	X			X
NS4-1215W-FR	X	X	X	15		X		X
NS4-121575W-FR	X	X	X	15/75		X		X
NH-12/24-R**	X	X	X	—	X	X	X	

* Model # Color is Red, can be ordered in White, Call Customer Service for order code & delivery.
** NH-12/24 can also be ceiling mounted.

SEE PAGE 3 FOR GENERAL AND TECHNICAL NOTES.

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING DIVISION

LISTING SERVICE

LISTING EXPIRES
JUNE 30, 1999

LISTING No. 7125-0785:142

CATEGORY: Fire Alarm Devices for the Hearing Impaired

LISTEE: Wheelock Inc., 273 Branchport Avenue, Long Branch, NJ 07740
Contact: Luy Nguyen (732) 222-6880 Fax (732) 222-8707

DESIGN: Model NH-12/24 horn and Models NS-1215W*, NS-121575W*, NS-2415W, NS-241575W, NS-2430W, NS-2475W and NS-24110W; NS4-1215W*, NS4-121575W*, NS4-2415W, NS4-241575W, NS4-2430W, NS4-2475W and NS4-24110W horn strobes. Model number may be followed by any two-alpha/numeric characters indicating lens, lettering and color. Units are synchronized or non-synchronized strobes. Refer to listee's data sheet for additional detailed product description and operational considerations.

RATING:

Electrical	10.5-31 VDC
Candela	15=15cd, 1575=15/75cd on axis, 30=30cd, 75=75cd, 110=110cd (Wall)
Flash rate	60 Flashes/minute

INSTALLATION: In accordance with listee's printed installation instructions, applicable codes & ordinances and in a manner acceptable to the authority having jurisdiction. Horn strobes are for wall mount only.

MARKING: Listee's name, model number, electrical/candela rating and UL label.

APPROVAL: Listed as audible and audible/visual signaling devices for use with separately listed electrically compatible fire alarm control units. Models with strobe lights are suitable for the hearing impaired. For indoor use only except for Model NH-12/24 is suitable for outdoor. For synchronization strobes, Models SM-12/24, SMX-12/24, DSM-12/24 or DSMX-12/24 Sync Control Module (CSFM Listing No. 7300-0785:132) must be used.

NOTE: These appliances can produce a distinctive three-pulse Temporal Pattern Fire Alarm Evacuation Signal (for total evacuation) in accordance with NFPA 72, 1993 Edition.

*Rev. 05-06-98

DATE ISSUED: MAY 21, 1998
EFFECTIVE ISSUE DATE TO EXPIRATION DATE

APPROVED BY:

DEPUTY BEN HO
PROGRAM COORDINATOR

Technical Information

AWG Conductor Chart

COPPER CONDUCTOR DATA

The conductors used by General Cable meet the applicable requirements of ASTM specifications B-3, B-33, B-172, B-173, B-174 and B-286 and Federal Specification QQ-W-343.

The following data covers the more commonly used conductor constructions in the electrical and electronics industry. Special constructions, not shown, are available or can be designed to meet specific requirements. It is suggested that the General Cable Product Engineering Department be contacted before a specification is finalized.

AWG	Stranding	Type Stranding[1]	Diameter[2] in.	Diameter[2] mm	Area circ. mils	Area sq. mm	Weight lb/M ft†	Weight kg/km	D.C. Resistance 20°C[2] Tin Coating[3] ohm/M ft†	Tin Coating ohm/km	Bare or Silver Coating ohm/M ft†	Bare or Silver Coating ohm/km	Break Str. lbs.
32	7/40	Co or Bu	.0080	.254	100	.051	.21	.31	176	577	-	-	
30	Solid	-	.010	.254	100	.051	.30	.46	113	371	104	340	[illegible]
	7/38	Bu	.011	.305	112	.057	.35	.52	108	348	92.6	303	2.157
28	Solid	-	.01264	.321	[illegible]	.067	.48	.72	78.8	232	66.8	214	
	7/36	Co	.015	.381	175	.089	.55	.82	67.5	221	59.3	194	5.020
27	Solid	-	.0142	.361	202	.102	.61	.91	66.6	182	61.4	188	
	7/35	Co or Bu	.017	.432	220	.111	.69	1.04	60.6	178	-	-	6.331
26	Solid	-	.016	.404	253	.128	.77	1.14	44.5	146	41.0	135	
	7/34	Co or Bu	.018	.457	278	.141	.87	1.29	40.8	139	37.3	122	
	10/36	Bu	.0180	.480	250	.127	.78	1.15	47.3	155	40.4	133	7.983
	19/38	Bu or Co	.021	.533	304	.154	.97	1.44	38.9	128	34.1	112	
24	Solid	-	.0201	.511	404	.205	1.22	1.82	27.2	89.2	26.7	84.2	
	7/32	Co or Bu	.024	.610	448	.227	1.38	2.05	25.7	84.2	23.1	75.9	
	16/40	Bu	.024	.610	480	.201	1.35	1.84	28.5	88.8	27.5	90.2	
	19/36	Co or Bu	.025	.635	475	.241	1.48	2.20	24.9	81.7	21.8	71.6	12.80
22	Solid	-	.025	.643	640	.324	1.94	2.89	18.7	54.8	16.2	53.2	
	7/30	Co or Bu	.030	.762	700	.355	2.19	3.26	16.6	54.4	14.8	48.6	
	19/34	Bu or Eq	.0315	.800	754	.382	2.35	3.50	15.5	50.8	13.8	45.1	
20	Solid	-	.032	.813	1,020	.519	3.10	4.61	10.5	34.4	10.1	33.2	19.49
	7/28	Co or Bu	.036	.965	1,111	.563	3.40	5.19	10.3	33.8	9.80	30.8	
	10/30	Bu	.037	.940	1,000	.507	3.14	4.67	11.4	37.4	10.4	34.0	
	19/32	Co, Bu or Eq	.040	1.02	1,216	.616	3.84	5.71	9.48	31.1	8.93	28.0	30.80
	26/34	Bu	.039	.940	1,092	.553	3.28	4.88	11.3	37.1	-	-	
19	Solid	-	[illegible]	.912	1,290	.653	3.80	5.80	-	-	8.05	26.4	
18	Solid	-	.0403	1.024	1,620	.823	4.92	7.32	6.77	22.2	6.59	21.8	
	7/26	Co or Bu	.046	1.22	1,770	.897	4.65	6.90	6.46	21.2	5.85	19.2	38.86
	16/30	Bu	.0475	1.207	1,900	.910	5.01	7.45	7.15	23.4	6.46	21.3	48.12
	19/30	Co, Bu or Eq	.050	1.27	1,900	.963	5.85	8.65	6.10	20.0	5.46	17.9	
	41/34	Bu	.048	1.244	1,627	.824	5.08	7.08	7.08	23.2	6.60	21.6	
16	Solid	-	.0508	1.29	2,580	1.31	7.81	11.8	4.47	14.7	4.10	13.8	
	10/29*	Bu or Eq	.057	1.45	2,426	1.23	7.52	11.2	4.82	15.8	4.27	14.0	
	19/.0117	Bu	.0585	1.50	2,601	1.32	8.08	11.8	4.38	14.4	4.13	13.5	78.10
	26/30	Bu	.0600	1.54	2,600	1.32	8.15	12.1	4.39	14.4	3.88	13.1	
	65/34	Bu	.060	1.52	2,581	1.31	8.20	11.9	4.47	14.7	4.18	13.6	
14	Solid	-	.0641	1.63	4,110	2.08	12.4	18.5	2.88	8.79	2.92	8.28	
	7/.0242	Bu	.073	1.85	4,160	2.08	12.7	18.9	-	-	2.61	8.56	
	19/27*	Co, Eq or Un	.071	1.80	3,831	1.94	12.1	18.0	3.05	10.0	2.71	8.80	124.20
	19/.0147	Cu	.074	1.88	4,106	2.08	12.7	18.9	-	-	2.61	8.56	
	41/30	Bu	.077	1.96	4,100	2.08	12.8	19.2	2.81	9.22	2.53	8.30	
12	Solid	-	.0808	2.05	6,530	3.31	19.8	29.5	1.80	5.54	1.80	5.21	
	7/.0305	Co	.092	2.34	6,512	3.30	20.2	30.1	-	-	1.64	5.38	
	19/25*	Co, Eq or Un	.0905	2.290	6,088	3.08	19.4	28.9	1.87	6.13	1.70	5.58	197.50
	19/.0185	Bu	.0925	2.35	6,503	3.30	20.2	30.1	-	-	1.64	5.25	
	65/30	Bu	.094	2.388	6,500	3.29	20.8	31.1	1.82	5.97	1.64	5.25	
10	Solid	-	.1019	2.588	10,380	5.26	31.4	48.0	-	-	1.00	3.28	
	7/.0385	Co	.116	2.95	10,376	5.25	32.0	47.6	-	-	1.00	3.28	
	19/.0234	Bu	.117	2.97	10,404	5.27	32.0	47.6	-	-	.88	3.21	
	37/.0169	Co	.112	2.84	9,381	4.74	29.2	43.4	-	-	1.25	4.10	314.90
	105/30	Bu	.126	3.20	10,500	5.32	33.8	49.2	1.10	3.61	.88	3.24	
8	7/.0486	Co	.146	3.71	16,534	8.38	50.1	74.5	-	-	.65	2.13	
	19/.0285	Bu or Eq	.144	3.66	16,538	8.38	50.0	74.4	-	-	.65	2.13	
	133/29	Ro 19x7/29	.160	[illegible]	16,800	8.51	54.0	80.4	.71	2.38	-	-	
	168/30	Ro 7x24/30	.174	4.42	16,800	8.51	59.4	79.0	.70	2.30	-	-	
6	19/.0374	Bu	.188	4.775	26,576	13.39	81.1	121	-	-	.40	1.30	
	133/27	Ro 19x7/27	.213	5.41	26,818	13.60	84.1	125	.43	1.41	-	-	
	266/30	Ro 7x38/30	.222	5.64	26,600	13.48	82.2	124	.44	1.44	-	-	
4	133/25	Ro 19x7/25	.257	6.53	42,016	21.81	135	201	.28	.95	-	-	
	420/30	Ro 7x60/30	.270	6.860	42,000	21.28	140	208	.28	.92	-	-	
2	665/30	Ro 19x35/30	.338	8.59	66,500	33.72	213	317	.18	.59	-	-	

[1] Bu - Bunched; Co - Concentric; Eq - Equilay; Ro - Rope; Un - Unilay
[2] Typical D.C. Resistance values for uninsulated wires. Multiply by 1.04 for typical values after insulation
[3] Values are for tinned, heavy tinned, prefused, overcoated or topcoated conductors
* ~~Does not meet~~ UL conductor stranding requirements

General Cable
ELECTRONIC PRODUCTS CAROL BRAND

To: Mark - 638-0893
From: Gene at Vasko Electric
Re: 918 R St for Marketone Builders

PANEL A 120/208 V. 3 PH. 4 W. 200 AMP ISC ☐ FLUSH ☒ SURFACE

DESCRIPTION	KVA	BKR			BKR	KVA	DESCRIPTION
(E) GFI Recept	.1	20/1	1	2	20/1	1.8	(E) Lights
Bathroom	1.0		3	4		1.8	(E) Lights
Instahot	1.1		5	6		1.2	(E) Lights
HP-1	7.4	45/2	7	8		1.5	Ded Recept
			9	10		.9	Recept
Fire Alarm	.1	20/1	11	12		.9	Recept
Space			13	14			Space
			15	16			
			17	18			
			19	20			
			21	22			
			23	24			
			25	26			
			27	28			
			29	30			
			31	32			
			33	34			
			35	36			
			37	38			
			39	40			
			41	42			

17.7 kw connected load
1.3 kw 25% largest motor
1.2 kw 25% lighting
20.2 ÷ .36 = 56 Amps

MAIN: ☒ LUGS ☐ C/B

(E) (3) 3" C.W/ IN EACH

EXIST. UNDE SECONDA

RECEIVED
JUL 24 1998
Building Inspection Division
6282

MEMORANDUM

Sacramento Fire Department

To: BUILDING DEPARTMENT

Date: 9-25-98

From: Gordon Duncan,
Fire Marshal

Subject: **FIRE SYSTEM INSPECTION**

A final inspection of the newly installed fire system at:

918 R. ST

has been conducted by Inspector C. Pack

on 9-24-98.

98-07019-C	8000	FIRE ALARM
Permit Number	Square Footage	Type Inspection

The system is acceptable by this department.

By: Ross L. Woodman,
Fire Prevention Officer II

98-204
F. D. Reference Number

SFD 68 (7/98)