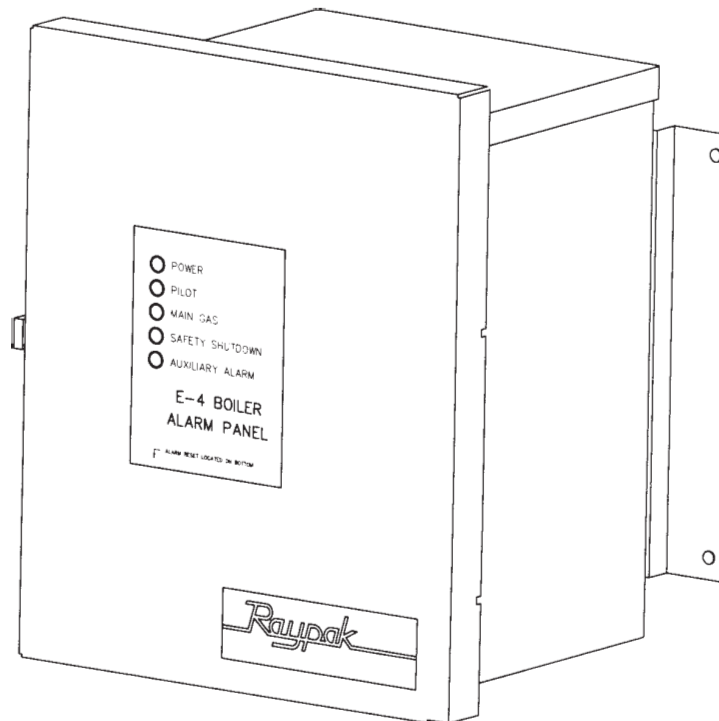


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E-4 BOILER ALARM ANNUNCIATOR



Installation and Operating Manual



PN 240691 Rev. 3

E-4 BOILER ALARM/ANNUNCIATOR

Installation and Operating Manual

Before operating this product, please read these instructions completely.

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E-4 BOILER ALARM/ANNUNCIATOR

Contents

Item	Quantity
E-4 Boiler Alarm/Annunciator, Installed on Boiler(s)	As Ordered
Optional Equipment	As Ordered

Check packaging for damaged or missing components.

IMPORTANT SAFETY INSTRUCTIONS

IMPORTANT NOTICE: These instructions are intended for use by qualified personnel who are specifically trained and experienced in the installation of this type of equipment and related system components. Installation and service personnel may be required by some states to be licensed. If your state requires certification, be sure your contractor bears the appropriate license. Only qualified persons shall attempt to repair this equipment. Repair must be according to these instructions.

WARNING: Improper installation, adjustment, alteration, service or maintenance may damage the equipment, create a hazard resulting in asphyxiation, explosion, fire, electric shock, personal injury or property damage, and will void the warranty.

CAUTION: MORE THAN ONE (1) SUPPLY SOURCE. THIS APPLIANCE HAS PROVISIONS TO BE CONNECTED TO MORE THAN ONE (1) SUPPLY SOURCE. TO REDUCE THE RISK OF ELECTRIC SHOCK, DISCONNECT ALL SUCH CONNECTIONS BEFORE SERVICING.

CAUTION: RISK OF ELECTRIC SHOCK. MORE THAN ONE (1) DISCONNECT SWITCH MAY BE REQUIRED TO DE-ENERGIZE THE EQUIPMENT BEFORE SERVICING.

NOTE: Minimum 18 AWG, 105°C, stranded wire must be used for all low voltage (less than 30 volts) external connections to the unit. Solid conductors should not be used because they can cause excessive tension on contact points. Install conduit as appropriate. All high voltage wires must be the same size (105°C, stranded wire) as the ones on the unit or larger.

PLEASE REGISTER

Before proceeding any further, please take a moment to complete the enclosed user registration form and mail it to Raypak, Inc. Department E-4, 2151 Eastman Avenue, Oxnard, CA 93030

GETTING STARTED

Thank you for selecting the Raypak E-4 Boiler Alarm. It is our sincere hope that you will enjoy its outstanding design and ease of use. To learn about the E-4 Boiler Alarm, simply install it as shown in these instructions, and then start using it. The following information will help familiarize you with the E-4 and will acquaint you with the installation procedure.

INTRODUCTION

The E-4 Boiler alarm is a solid state electronic boiler status indicator and alarm panel that has been engineered to enhance safety, simplify troubleshooting and minimize equipment down time. The E-4 Boiler Alarm is comprised of an alarm circuit board, a NEMA 3R rated rainproof enclosure, and the following components:

Standard Indicator Lights:

Power	Green, indicates that power is available to the alarm unit.
Pilot	Amber, indicates that the Pilot Valve circuit has been energized.
Main Gas	Green, indicates that the Main Gas Valve has been energized.
Safety Shutdown	Red, indicates a safety shutdown has occurred. Either the 24 or 120 VAC signal is missing from the safety circuit.
Auxiliary Alarm	Red, indicates a safety failure after a predetermined time delay has expired. (Activated by the optional Auxiliary Alarm).

Alarm and Bell:

Mechanical Alarm Bell	Standard bell: 3", optional bell: 4". Upon alarm activation, the mechanical bell rings until the alarm is acknowledged by pressing the alarm silence switch.
Electric Alarm Buzzer	Upon alarm activation, the buzzer sounds a steady tone for ten seconds and then pulses on and off at 2 cycles per second until acknowledged.

Alarm Silence Switch:

Located on the bottom of the enclosure, the alarm silence switch is a momentary switch used to silence the alarm bell and buzzer after an alarm condition occurs. Once acknowledged, the bell and buzzer will cease sounding until a new alarm condition occurs. The appropriate alarm indicator light (Safety Shutdown or Auxiliary Alarm) will remain lit until the alarm condition has been cleared.

Optional Remote Alarm Panel

The Optional Remote Alarm Panel provides a mounting panel and the necessary electrical components to monitor the E-4 Boiler alarm at a remote location. It includes the following:

Electric Alarm Buzzer	Provides an audible indication of a fault. See description above.
Indicator Light	Red, indicates that a boiler fault has occurred.
Silence Switch	Silences the electric alarm buzzers and the mechanical bell.

Optional Auxiliary Alarm Board

The Optional Auxiliary Alarm Board, when installed, activates the Auxiliary Alarm light on the standard boiler alarm circuit board upon a fault in the monitored circuit. The Optional Auxiliary Alarm provides a user adjustable time delay from 5 to 60 secs during which the Auxiliary Alarm verifies that the alarm condition is "locked in". The Optional Auxiliary Alarm can be used to monitor a flow switch, low water cutoff switch or any other circuit that is susceptible to spurious alarms due to transitory fault conditions.

DIMENSIONS AND WEIGHT

14" W 10 1/4 lbs.
10" H
7" D

INSTALLATION AND MOUNTING

If the E-4 Boiler Alarm was not mounted on the boiler by the factory, care should be taken to select a suitable mounting location. The Boiler Alarm should be mounted on a solid and permanent base. The Boiler alarm enclosure is NEMA 3R rated, rain proof/sleet resistant and can be mounted outdoors if required. The unit should be readily accessible for maintenance and installation purposes, and should be mounted so that the indicating lights are at a height and location convenient for viewing.

MECHANICAL INSTALLATION

Install the E-4 Boiler Alarm within 10 feet of the boiler. The E-4 Boiler Alarm must be mounted vertically with the conduit holes facing downward. The conduit holes are sized to accommodate standard conduit fittings. If additional or larger conduit fittings are required, the holes must be located on the bottom of the module.

Mount the E-4 Boiler Alarm using the mounting bracket and appropriate 3/8" or 1/4" diameter hardware in four (4) places.

A minimum of eighteen (18) inches clearance from the front, and six (6) inches clearance on all other sides is required for service access. The hinged right side of the box should be installed with sufficient clearance (minimum 3" from bolt hole on the right side) to open the cover.

An electrical distribution sub-panel containing the disconnect switches and surge suppressors is required at or near the equipment location(s).

To access the control board, remove the interior panel by unscrewing the two (2) decal panel fasteners.

INSTALL CONDUIT AS APPROPRIATE.

ELECTRICAL CHARACTERISTICS

Alarm Module - 120 VAC, 0.25A, 60 Hz
Monitors - 120 or 24 VAC

ELECTRICAL INSTALLATION

120 VAC FEEDER CIRCUITS

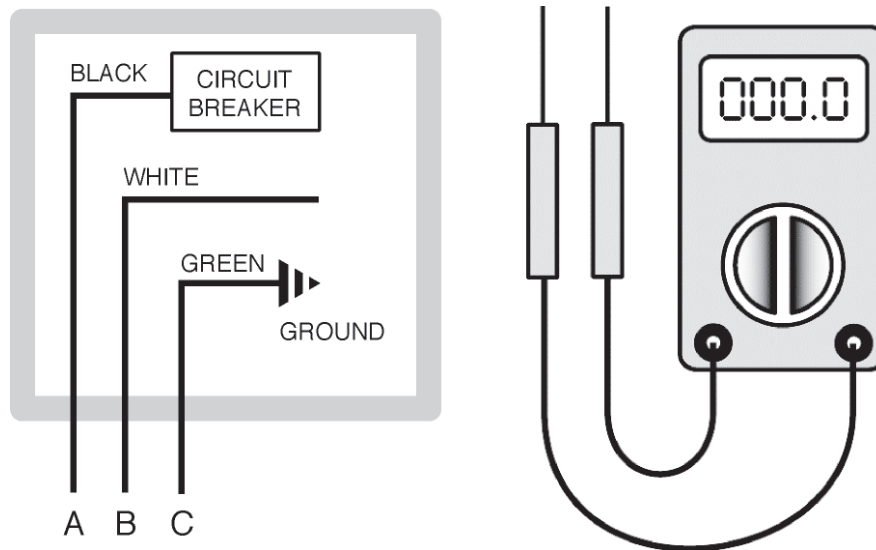
Install a surge protection device sized appropriately for your installation at each module.

Install a separate disconnect means for each load. Use appropriately sized wire for equipment as defined by NEC and/or local code. All primary wiring should be 125% of minimum rating.

It is strongly recommended that the E-4 Boiler Alarm and the boiler be supplied from the same source power.

CHECK YOUR POWER SOURCE

CIRCUIT BREAKER PANEL



AC = 108 Volts AC Minimum, 132 Volts MAX
AB = 108 Volts AC Minimum, 132 Volts MAX
BC = Must be less than 1.0 Volts AC

WIRING POWER TO THE E-4 BOILER ALARM

- Observe Polarity
- Observe proper wire colors while making electrical connections.
- Provide an external surge suppressor capable of maintaining system integrity.
- Provide overload protection and a disconnect means for equipment serviceability as required by local and state code.
- Conduit cannot be used as the ground. **(There must be a “WIRED” ground.)**
- **Very Important:** A grounding electrode conductor shall be used to connect the equipment grounding conductors, the equipment enclosures, and where the system is grounded, the grounded service conductor to the grounding electrode.

POWER TEST

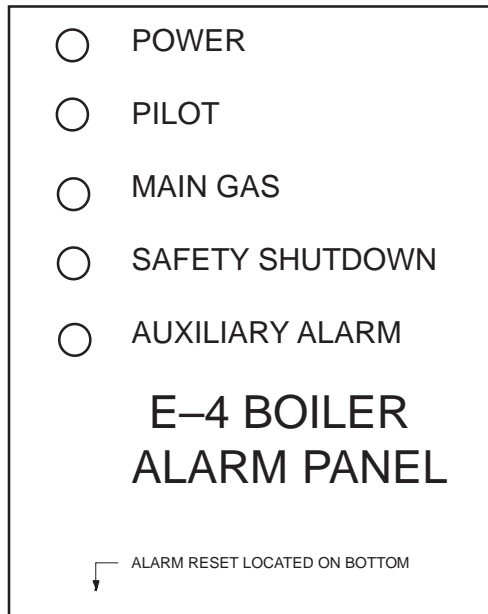
CHECK POWER

Utilizing a Volt-Ohm-Meter (VOM), monitor the following on the E-4 Boiler Alarm for proper voltage levels. Check at connector P1 and single point ground (SPG).

POWER TEST

<u>From:</u>	<u>INDICATION</u>
Pin 1	<u>To:</u> Pin 2 108 VAC to 132 VAC
Pin 1	SPG 108 VAC to 132 VAC
Pin 2	SPG less than 1 VAC

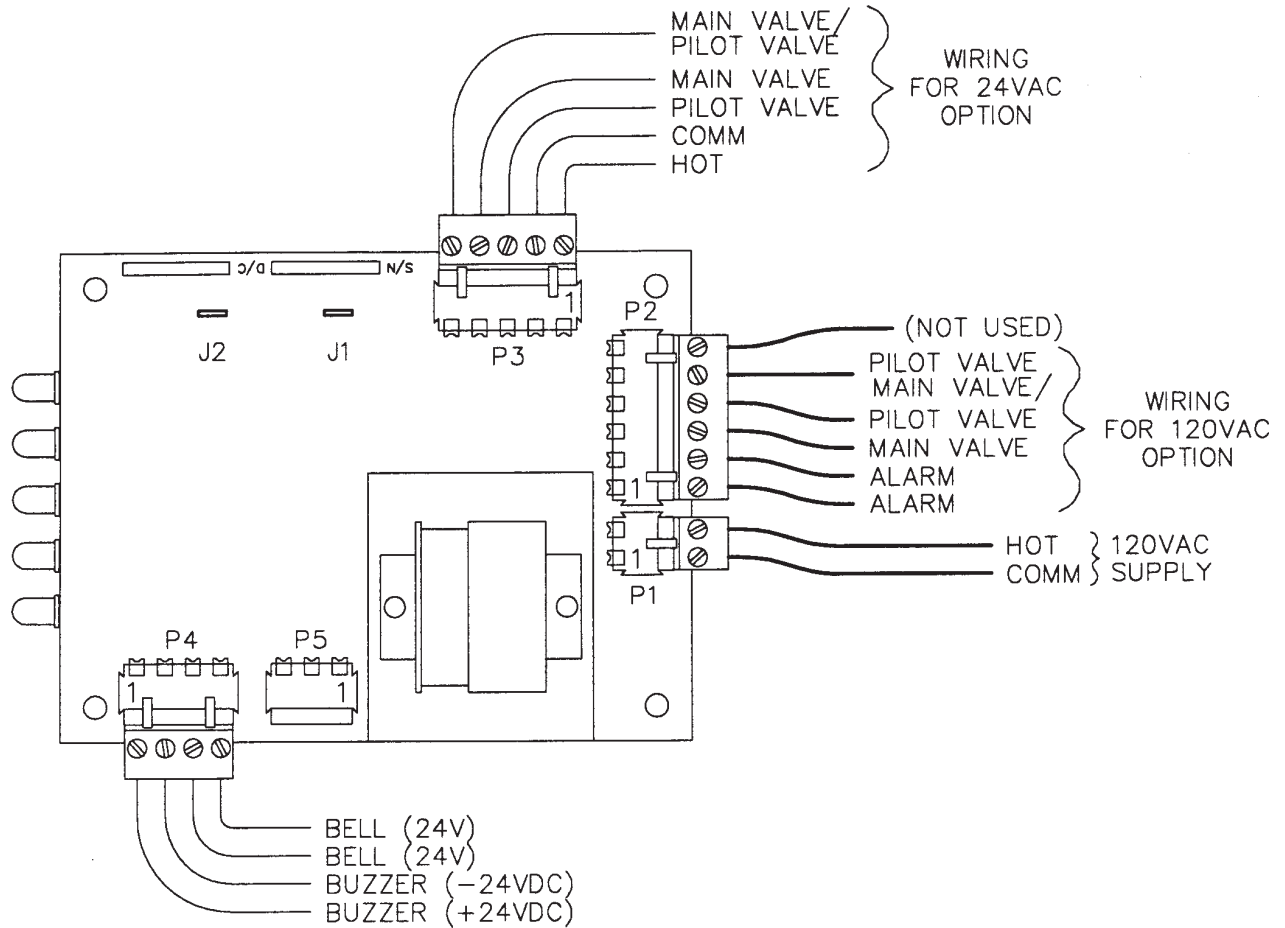
E-4 Boiler Alarm Indicator Lights



INDICATOR LIGHTS

- POWER (Green) Indicates that 120 VAC is being supplied to the E-4 Boiler Alarm Board.
- PILOT (Amber) Indicates that the pilot valve circuit has been energized.
- MAIN GAS (Green) Indicates that the main gas valve has been energized.
- SAFETY SHUTDOWN (Red) Indicates that a safety shutdown has occurred. Either the 24 or 120 VAC signal from the safety circuit that is being monitored by the Boiler alarm is missing. The Boiler Alarm does not indicate what component in the safety chain has been disrupted. Standard troubleshooting techniques must be applied to determine the cause of the fault.
- AUXILIARY ALARM (Red) Indicates that either a safety failure of the boiler or failure in the monitored circuit has occurred (depending on wiring configuration). The Auxiliary Alarm light is energized by the Optional Auxiliary Alarm Board after a user adjustable time delay has expired. The Auxiliary Alarm may be wired to monitor the low water cutoff, flow switch or any other component susceptible to spurious alarms.

Field Wiring Connection Points



Note: Tighten terminal strip clamping screws to 4 in-lbs. Breakage from over torquing is not covered under warranty.

Use 18 GA stranded copper conductors only.

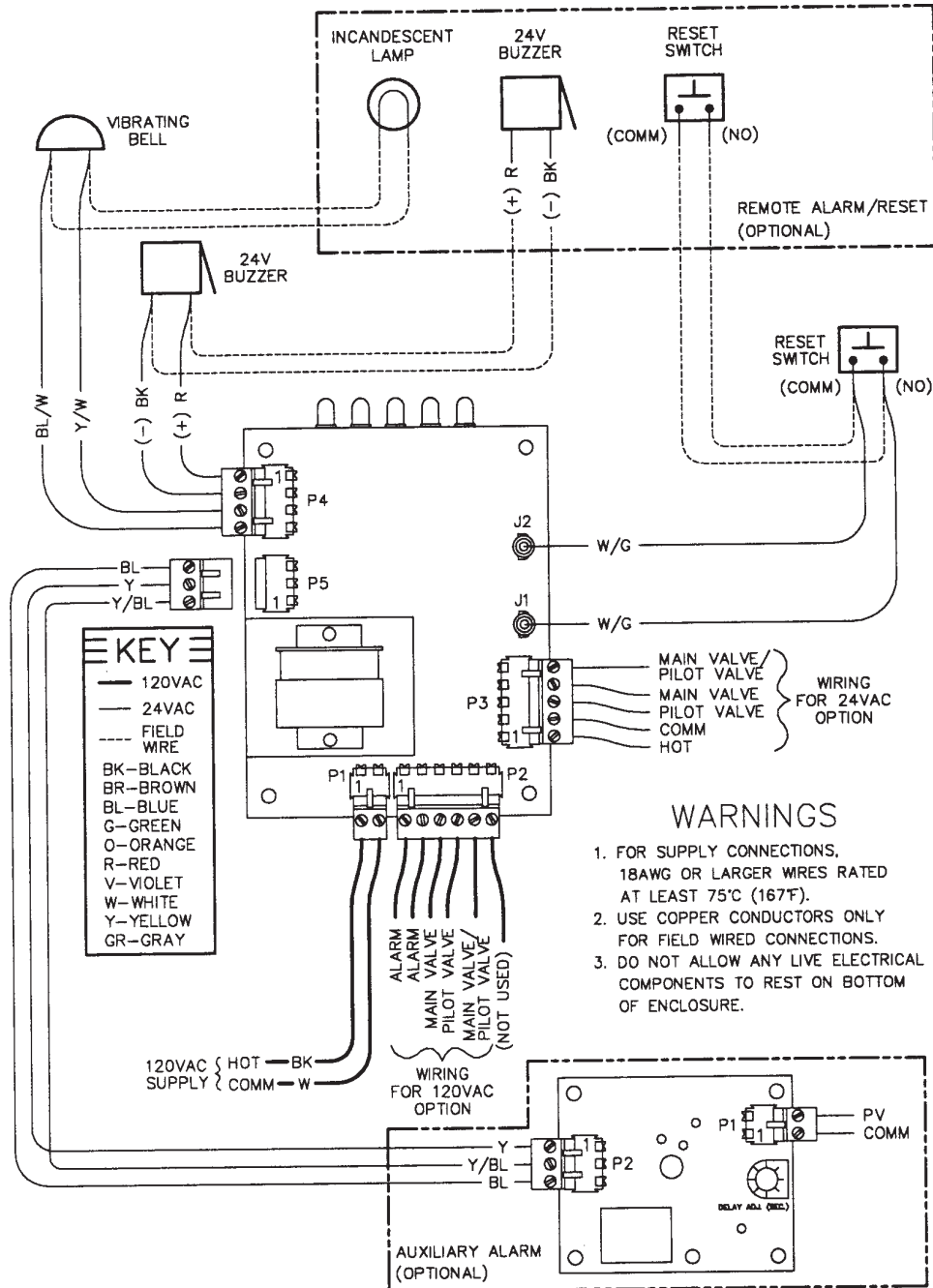
For supply connections, use wires sized on the basis of 60°C ampacity and rated a min. 90°C (194°F).

Optional Auxiliary Alarm Wiring (E-6)

The Auxiliary Alarm is available as an option for piggy back mounting on the standard board. It provides the Auxiliary Alarm contacts with an adjustable time delay from 5 to 60 seconds and is designed for local code compliance.

Refer to Catalog number 5000.64 for installation instructions.

WIRING DIAGRAM



INSTALLATION VERIFICATION PROCEDURE

REGISTER

Before proceeding any further, please verify that the user registration form has been completed and mailed.

MECHANICAL INSTALLATION

Verify that the mechanical installation has been completed in accordance with the instructions.

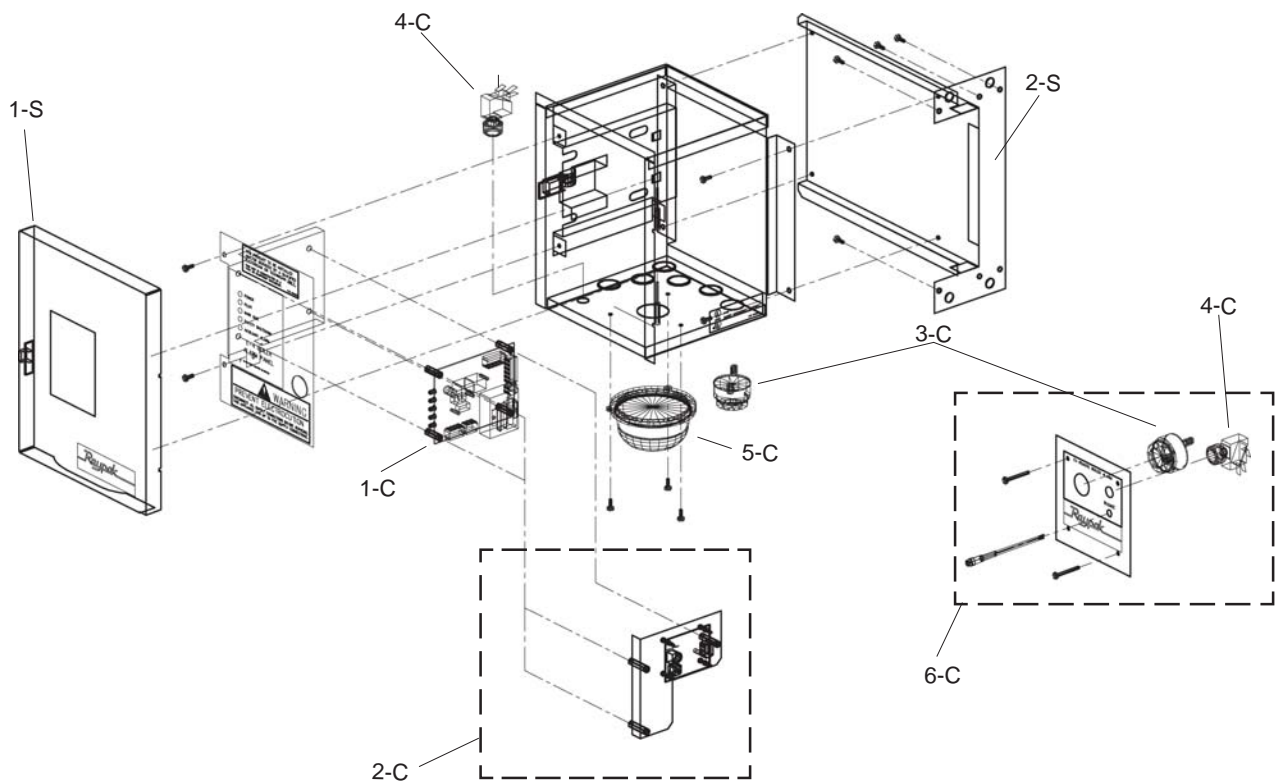
SYSTEM MODULE INSTALLATION

Verify electrical power wiring connections.

Verify electrical connection torque requirements.

Verify Power Test has been completed successfully.

CALL OUT	DESCRIPTION	PART NO.
1-C	Control P. C. Board	005639F
2-C	Second Alarm Kit	005635
3-C	Buzzer	005640F
4-C	Reset Switch	005641F
5-C	3" Bell	005642F
	4" Bell	005643F
6-C	Remote Alarm & Reset Switch Kit	005632
1-S	Door Assy. w/Window	005636F
2-S	Side Mount Bracket	005644F



**LIMITED WARRANTY
E-4 & Accessories**

SCOPE OF WARRANTY:

Raypak, Inc. ("Raypak") warrants to the original owner the Control System to be free from defects in materials and workmanship under normal use and service for the applicable warranty period. In accordance with the terms of this Limited Warranty, RAYPAK will furnish a replacement or repair, at our option, any defective part which fails in normal use and service during the applicable warranty period. The replacement or repair will be warranted for only the unexpired portion of the original Warranty Period.

APPLICABLE WARRANTY PERIOD

The effective date of warranty coverage is the date of original installation, of the Control System, by a qualified electrician or by a RAYPAK authorized service technician. The Applicable Warranty Period is one (1) year from the effective date.

WARRANTY EXCLUSIONS

This Limited Warranty does not apply:

1. if the control system is not properly installed by a qualified technician in accordance with manufacturer's installation instructions, applicable codes, ordinances and good trade practices,
2. to damage or malfunctions resulting from failure to properly install, operate or maintain the system in accordance with the manufacturer's instructions;
3. if the rating plate(s) or serial number(s) are altered, defaced or removed;
4. if the System is modified in any way or used with any non-factory authorized accessories or components;
5. to damage or failure from abuse, accident, act of nature, fire, flood, freezing or the like;
6. to accessories, rubber or plastic parts, light bulbs or glass parts;
7. if the System is moved from its original installation site; or if the original owner no longer owns the site or the System.

LABOR AND SHIPPING COSTS

This Limited Warranty does not cover labor costs for service, removal or reinstallation of any part nor shipping charges to or from RAYPAK'S designated repair center or to or from the installation site. All such costs are your responsibility.

HOW TO MAKE A WARRANTY CLAIM

To make a warranty claim, promptly ship (postage prepaid) or carry the defective part to a designated RAYPAK Service Dealer or Service Station in the United States, supplying proof of purchase and date of installation and the model and serial numbers. If you cannot locate a dealer, contact RAYPAK'S Service Department at the address/telephone listed below. Raypak reserves the right at all times to inspect the claimed defect and verify warranty coverage at its factory.

EXCLUSIVE WARRANTY - LIMITATION OF LIABILITY

This is the only warranty given by RAYPAK. No one is authorized to make any other warranties on Raypak's behalf. **ANY IMPLIED WARRANTIES, INCLUDING MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, SHALL NOT EXTEND BEYOND THE APPLICABLE WARRANTY PERIOD SPECIFIED ABOVE. RAYPAK'S SOLE LIABILITY WITH RESPECT TO ANY DEFECT SHALL BE AS SET FORTH IN THIS LIMITED WARRANTY. ANY CLAIMS FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING DAMAGE FROM WATER LEAKAGE) ARE EXCLUDED.** Some states do not allow limitations on how long an implied warranty lasts, or for the exclusion of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

THIS LIMITED WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE.

We suggest you immediately complete the information below and retain this Limited Warranty Certificate in case warranty service is needed.

RAYPAK, INC. SERVICE DEPARTMENT
2151 Eastman Avenue, Oxnard, CA 93030
Telephone: (805) 278-5300 FAX (800) 872-9725

The following information must be provided when you write or call:

Original Owner	Daytime Telephone Number		
Complete Mailing Address			
City	State	Zip Code	Installation Site
Model Number	Contractor/Installer		
Date of Installation	Serial Number		

Raypak, Inc., 2151 Eastman Avenue, Oxnard, CA 93030 (805) 278-5300- Fax (800) 872-9725
Litho in U.S.A.



Registered Quality Management System

www.raypak.com