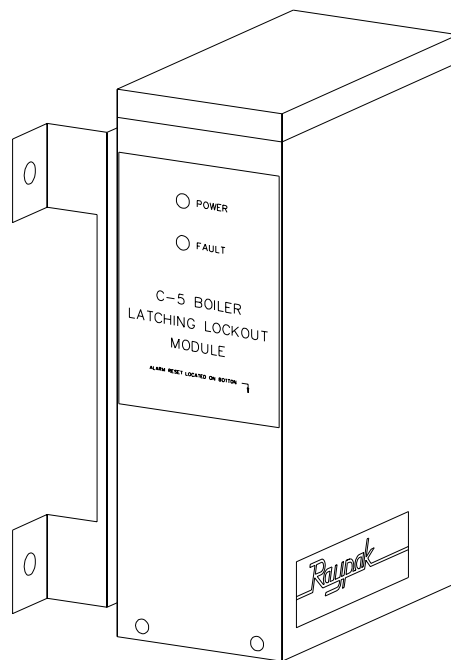


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C-5 LATCHING LOCKOUT MODULE



Installation and Operating Manual

Raypak[®]

A Rheem[®] Company

PN 240722 Rev. 2

C-5 LATCHING LOCKOUT MODULE

Installation and Operating Manual

Before operating this product, please read these instructions completely.

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LATCHING LOCKOUT MODULE

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 Now...

and receive the full privileges of a Raypak controls user. Simply complete and return the attached card. This information helps us to access ordering information in case of loss, damage or theft. We will contact you in the unlikely event that any adjustments or modifications are ever required for your unit.

LATCHING LOCKOUT MODULE

GETTING STARTED

Thank you for selecting the Raypak C-5 Latching Lockout Module (LLM). It is our sincere hope that you will enjoy it's outstanding design and ease of use.

INTRODUCTION

Latching Lockout Module is a solid state electronic ignition fault latching detector and indicator that has been engineered to enhance safety, simplify troubleshooting and minimize equipment down time.

CONCEPT OF OPERATION

The Latching Lockout Module is a control device that requires local (within physical sight and sound of the affected equipment) manual intervention by an operator or service technician to reset. It is designed to comply with the requirements of CSD-1.

NOTE: this latching Fault Detector module will not reset if power to the device and/or boiler is interrupted then restored.

Standard Indicator Lights:

Power	Green, indicates power is available to the Latching Lockout Module.
Fault	Red, (flashing) indicates a fault occurred and ignition is locked out.
Relay (internal)	Red, (on board near relay) indicates relay is actuated.

Reset of Fault condition:

Reset	A switch (closure) between Pins 1 and 2 of P2 can clear a fault, all fault indications, and allow the ignition process to resume. Without a reset the fault will be "remembered", even in a power down condition.
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Optional Remote Alarm and Indicators

External Fault Indicator	An LED can be installed between Pins 3 and 4 of Terminal P2 and illuminate (flash) at another location when a fault occurs.
Contact Closure On Fault	Provides dry contacts, between Pins 1 and 2 of P5, that close when a fault has occurred.

INSTALLATION AND MOUNTING

If the C-5 Latching Lockout Module was not installed on the boiler by the factory, care should be taken to select a suitable mounting location for the enclosure. The C-5 Latching Lockout Module should be mounted on a solid and permanent base on the side of the boiler.

MECHANICAL INSTALLATION

Install the Latching Lockout Module (LLM) on the side of the boiler(s). The Latching Lockout Module Fault Detector 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 should be located on the bottom of the module.

Mount the Latching Fault Detector Module with the appropriate 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.

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

INSTALL CONDUIT AS APPROPRIATE

Any wiring harnesses must be protected by conduit.

ELECTRICAL CHARACTERISTICS

C-5 Latching Lockout Module
Control Module - 24 VAC, 0.5A; 60Hz

ELECTRICAL INSTALLATION

24 VAC FEEDER CIRCUITS

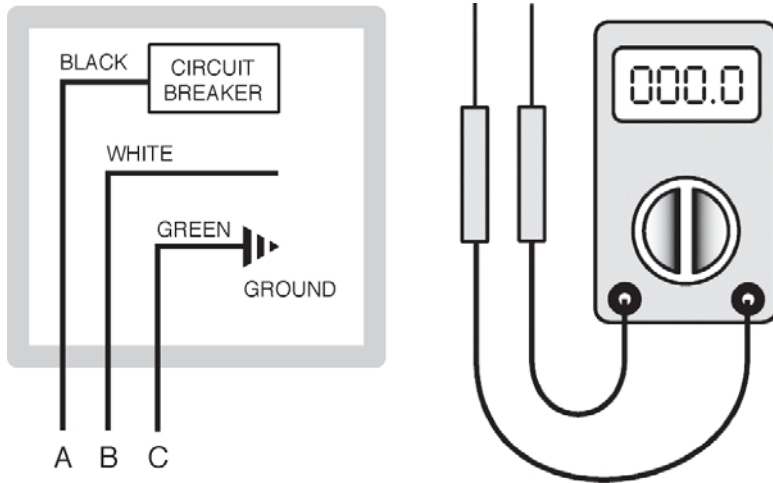
Apply 24 VAC to Pins 1 and 3 of Terminal P1 to power Latching Lockout Module.

Note: 18 AWG - Stranded wire must be used for all connections to Printed Circuit Board (PCB).

Solid conductors should not be used because solid wire conductors can cause excessive tension on contact points.

CHECK YOUR POWER SOURCE

Using a volt-ohm meter, check the following voltages at the circuit breaker panel:

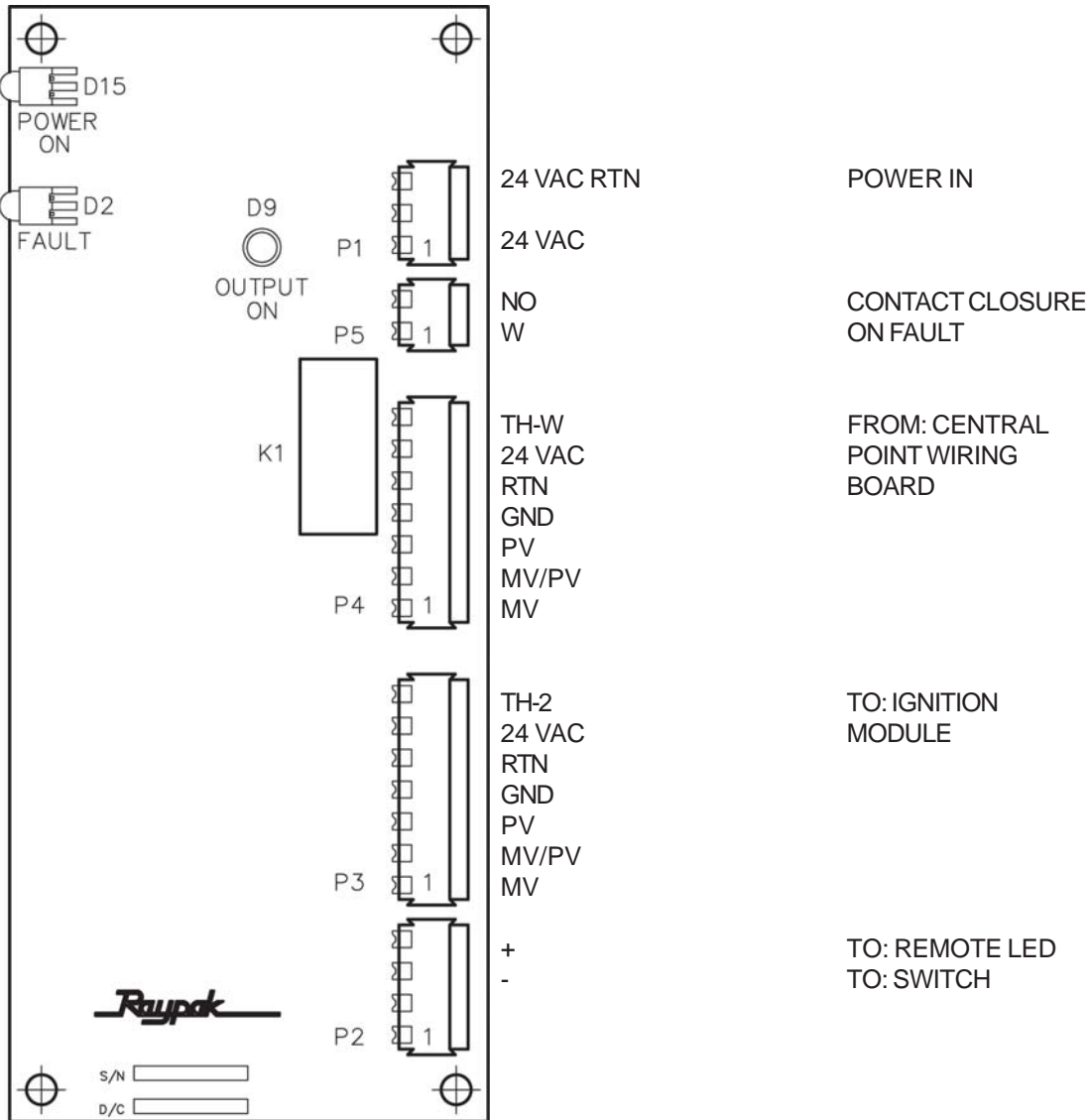


AC = 108 Volts AC Minimum, 132 Volts MAX
Hot to Ground (Black to Green)

AB = 108 Volts AC Minimum, 132 Volts MAX
Hot to Neutral (Black to White)

BC = Must be less than 1.0 Volts AC
Neutral to Ground (White to Green)

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 AWG stranded copper conductors only.

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

FIELD WIRING INSTALLATION

The C-5 Latching Lockout Module is installed in series between the Boiler Control and the ignition module.

Use Field Wiring Connection Point diagram to aid in installation.

Remove the ignition connection pins below, cut off the female spade lugs, strip back the wire 1/4 inch, and install in connector P3 of the LLM board.

<u>From:</u>	<u>Color</u>	<u>Name</u>	<u>To:</u>
<u>Ignition Pin</u>			<u>C-5, P3 Pin</u>
1	Violet/Black	MV	1
2	Yellow/Black	MV/PV	2
3	Red/Black	PV	3
4		GND	4
5	Yellow	24 VAC (GND)	5
6	Blue	24 VAC (HOT)	6

Install wires (cut to appropriate length) between connector P4 of the Universal Wiring Module (U-1) and connector P4 of the LLM board.

<u>From:</u>	<u>Color</u>	<u>Name</u>	<u>To:</u>
<u>P4, Pin</u>			<u>C-5, P4 Pin</u>
1	Violet/Black	MV	1
2	Yellow/Black	MV/PV	2
3	Red/Black	PV	3
4		GND	4
5	Yellow	24 VAC (GND)	5
6	Blue	24 VAC (Hot)	6

Connect 24 VAC power to LLM board:

<u>From:</u>	<u>Color</u>	<u>Name</u>	<u>To:</u>
<u>boiler power</u>			<u>C-5, P1 Pin</u>
24 Hot	Blue	24 Hot	1
24 Return	Yellow	24 Return	3

Connect reset switch (N/O):

<u>From:</u>	<u>Color</u>	<u>To:</u>
<u>Switch</u>		<u>C-5 LLM, P2 Pin</u>
Wiper	Yellow/Red	1
N/O	Yellow/Red	2

Remote LED: -Option

Connect remote LED

<u>From:</u>	<u>Color</u>	<u>To:</u>
<u>LED</u>		<u>LLM, P2 Pin</u>
-	Green/Yellow	3
+	Yellow/Red	4

Factory Installed Jumper

Remote LED: -Option

Connect remote device to contact closure on fault, these dry contacts close on fault

<u>From:</u>	<u>Color</u>	<u>To:</u>
<u>LED</u>		<u>C-5, P5 Pin</u>

Field Installation	1
Field Installation	2

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.

POWER TEST

CHECK POWER

Utilizing a Volt-Ohm-Meter (VOM) monitor the following on the Boiler for proper voltage levels.

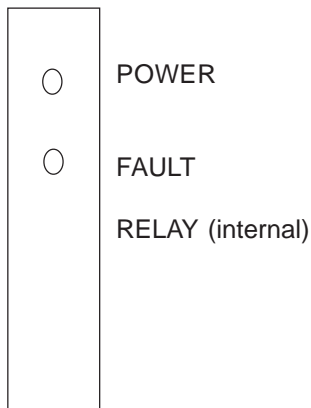
<u>POWER TEST TABLE</u>		
<u>From:</u>	<u>To:</u>	<u>Indication:</u>
120 VAC HOT (BLACK)	120 VAC NEUTRAL (WHITE)	108 VAC TO 132 VAC
120 VAC HOT (BLACK)	SINGLE POINT GROUND (SPG)	108 VAC TO 132 VAC
120 VAC NEUTRAL (WHITE)	SINGLE POINT GROUND (SPG)	less than 1 VAC

LATCHING FAULT DETECTOR

MANUAL OVERRIDE

Internal Switch (S5) Output Override (reset switch) can be used to manually override the Micro-controller control as long as the Electronic Boiler Control circuit board has 24 VAC power. See Reset of Fault condition.

Latching Fault Detector Lights



INDICATOR LIGHTS

(Green) indicates that 24 VAC is being supplied to Latching Fault Detector.

(Red) indicates a fault has occurred and ignition is locked out.

(Red, on board, inside) indicates relay is energized.

CALL OUT	DESCRIPTION	PART NO.
A	Kit Alarm Reset Switch	005641F
B	Kit PC Board C5 Latching Lockout	006203F

LIMITED WARRANTY
Latching Fault Detector & 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 Ave, Oxnard, California 93030
Telephone: (805) 278-5300 FAX (805) 278-5489

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 _____



Registered Quality Management System

www.raypak.com

Raypak, Inc., 2151 Eastman Ave., Oxnard, CA 93030 (805) 278-5300- Fax (805) 278-5489
Litho in U.S.A.