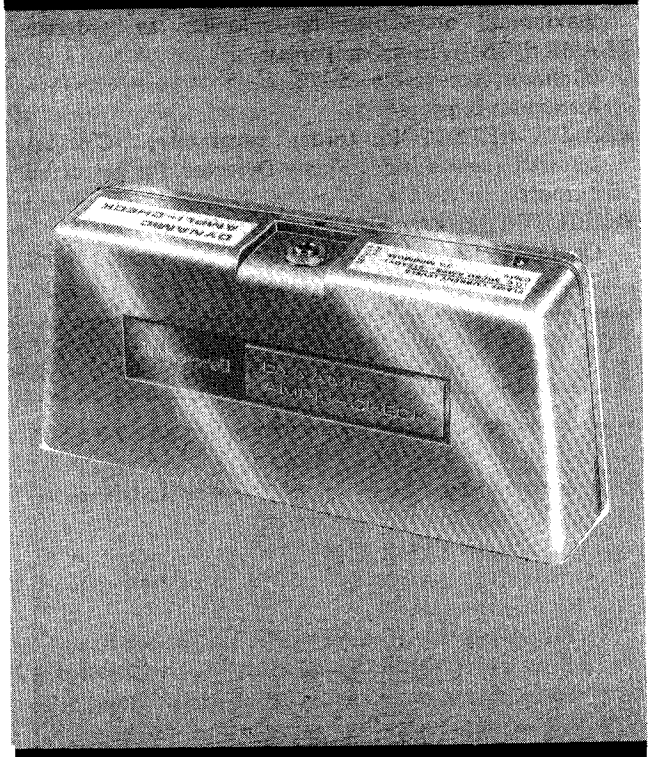
Honeywell

DYNAMIC AMPLI-CHECK INFRARED AMPLIFIER



R7248B

THE R7248B DYNAMIC AMPLI-CHECK INFRARED AMPLIFIER IS A SOLID STATE PLUG-IN UNIT WHICH RESPONDS TO A FLAME DETECTOR SIGNAL AND INDICATES THE PRESENCE OF A FLAME WHEN USED WITH A FLAME SAFEGUARD CONTROL AND A C7015A INFRARED FLAME DETECTOR.

- □ Dynamic Ampli-Check circuitry tests the flame signal amplifier during burner operation and shuts down the burner if the amplifier fails.
- □ Red flame indicating lamp blinks when flame detector "sees" a flickering flame.
- □ Flame failure response time is either 2 seconds maximum, or 2 to 4 seconds, as ordered.
- □ Used with C7015A Infrared (lead sulfide) Flame Detectors, for gas or oil burners.
- □ Field replaceable amplifier plugs into an edge connector on the flame safeguard control by means of a printed circuit board, keyed to ensure proper orientation.
- □ Meter jack for measuring flame signal with system in operation.
- □ Operates from the power supplied by the standard transformer in the flame safeguard control.
- □ Color-coded red plastic cover identifies the amplifier as an infrared type.

J.B.
12-75 (.012)

Residential Div. Form Number 60-2357-1

SPECIFICATIONS

MODELS:

R7248B Dynamic Ampli-Check Infrared Amplifier–solid state plug-in amplifier for use with flame safeguard controls and C7015A Infrared (lead sulfide) Flame Detectors.

ELECTRICAL RATINGS:

Voltage and Frequency–120V ac (102V to 132V), 50/60 Hz.

Power Consumption at 60 Hz (amplifier only)–

NO FLAME SIGNAL	WITH FLAME INDICATING LAMP BLINKING
0.7 watt	0.8 watt

FLAME FAILURE RESPONSE TIME: 2 seconds maximum, or 2 to 4 seconds, as ordered.

FLAME SIGNAL (microamperes):

Minimum Acceptable–3-1/2.

Maximum Expected–5.

FLAME DETECTOR (order separately): C7015A Infrared (lead sulfide) Flame Detector, for gas or oil burners.

AMBIENT TEMPERATURE RATINGS:

Operating–minus 40 F to plus 150 F [minus 40 C to plus 65 C].

Storage–minus 60 F to plus 150 F [minus 51 C to plus 65 C].

MOUNTING: Printed circuit board, keyed to edge connector on flame safeguard control to ensure proper orientation.

DIMENSIONS:

Inches–5-13/16 long, 2-13/16 wide, 1-1/4 thick.

Millimeters–148 long, 71 wide, 32 thick.

WEIGHT: 8 ounces [227 grams].

APPROVALS:

UNDERWRITERS LABORATORIES INC. LISTED SECTION OF PRIMARY SAFETY CONTROL (for use with R4140 Flame Safeguard Controls): File No. MP268, Guide No. MCCZ.

CANADIAN STANDARDS ASSOCIATION CERTIFIED (for use with R4140 Flame Safeguard Controls): File No. LR1620, Guide Nos. 140-A-2 (gas) and 300-I-0.2 (oil).

FACTORY MUTUAL APPROVED.

ACCESSORIES:

1. W136A Test Meter (includes 117053 Meter Connector Plug).

2. 117053 Meter Connector Plug (for older W136A models).

INSTALLATION

CAUTION

1. Installer must be a trained, experienced flame safeguard control serviceman.
2. Disconnect power supply before beginning installation to prevent electrical shock and equipment damage.
3. All wiring must comply with applicable local electrical codes, ordinances, and regulations.
4. Perform all required checkout tests after installation is complete.

MOUNTING THE AMPLIFIER ON THE FLAME SAFEGUARD CONTROL (FIG. 1)

IMPORTANT

DO NOT remove the amplifier cover.

1. Remove the relay/timer cover (on programmers).

2. Align the circuit board with the receptacle on the flame safeguard control. Make sure the amplifier nameplate is on the outside.

ORDERING INFORMATION

WHEN ORDERING, REFER TO THE FLAME SAFEGUARD CATALOG OR PRICE SHEETS FOR COMPLETE ORDERING SPECIFICATION NUMBER, OR . . .

SPECIFY–

1. MODEL NUMBER.
2. FLAME FAILURE RESPONSE TIME (2 SEC MAX., OR 2 TO 4 SEC).

ORDER SEPARATELY–

1. C7015A INFRARED (LEAD SULFIDE) FLAME DETECTOR.
2. ACCESSORIES, IF DESIRED.

ORDER FROM–

1. YOUR USUAL SOURCE, OR
2. HONEYWELL
   1885 DOUGLAS DRIVE NORTH
   MINNEAPOLIS, MINNESOTA 55422
   (IN CANADA–HONEYWELL CONTROLS LIMITED
   740 ELLESMERE ROAD
   SCARBOROUGH, ONTARIO)
   INTERNATIONAL SALES AND SERVICE OFFICES IN ALL PRINCIPAL CITIES OF THE WORLD.

IMPORTANT

The receptacle is keyed to the circuit board to prevent insertion if the amplifier is not aligned properly.

3. Push in the amplifier until the circuit board is fully inserted into the receptacle.

4. Make sure the amplifier is firmly in place; then replace the relay/timer cover.

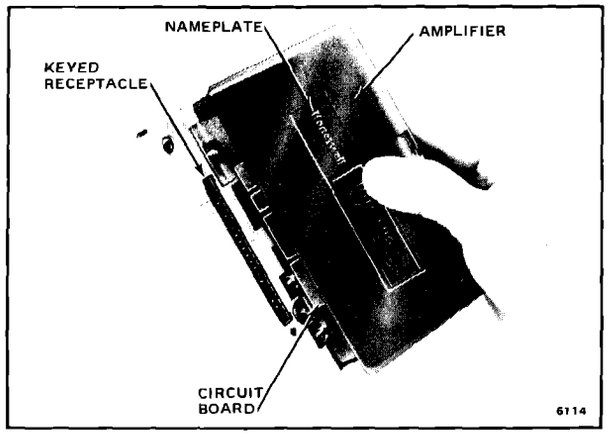


FIG. 1—INSTALLING AN R7248B DYNAMIC AMPLI-CHECK INFRARED AMPLIFIER.

INSTALLING THE FLAME DETECTOR

Proper flame detector installation is the basis of a good flame safeguard installation. Refer to the instructions packed with the flame detector and to the burner manufacturer's instructions. Follow instructions carefully to make the best possible application of the flame detector. Keep the flame signal leadwires as short as possible.

WIRING THE FLAME DETECTOR

CAUTION

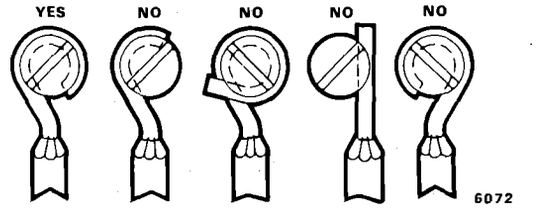
Disconnect power supply before making wiring connections to prevent electrical shock and equipment damage.

All wiring must be NEC Class 1 and conform to local codes and ordinances. If the leadwires aren't long enough to reach the wiring subbase, splices must be made in a junction box.

The printed circuit board on the amplifier mates with the receptacle on the flame safeguard control to provide power and flame detector connections to the R7248B. The flame detector wiring diagram is shown in Fig. 2. For complete details, refer to the instruction sheets for the C7015A Infrared Flame Detector (form 60-2306) and for the appropriate flame safeguard control.

IMPORTANT

When connecting wires to the screw terminals of a terminal strip, wrap the wire at least 3/4 of the distance around the screw without overlapping. With an appropriately sized screwdriver, tighten the screw until the wire is snugly in contact with the underside of the screw and the contact plate. Tighten the screw an additional 1/2 turn. Do not use a push-type ratchet screwdriver.



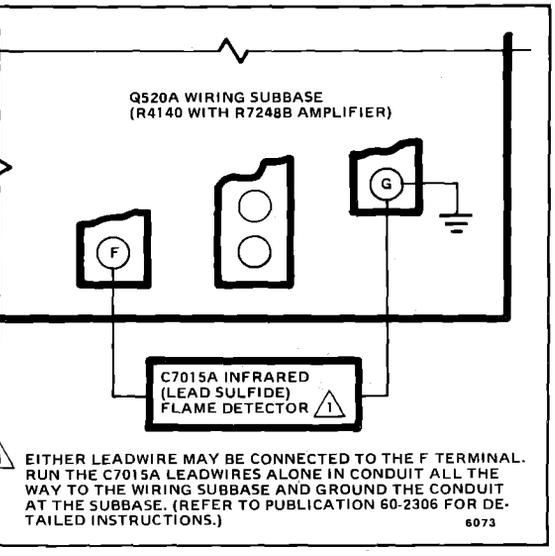


FIG. 2—WIRING DIAGRAM FOR A C7015A INFRARED FLAME DETECTOR WITH AN R4140 PROGRAMMER AND AN R7248B AMPLIFIER.

CHECKOUT

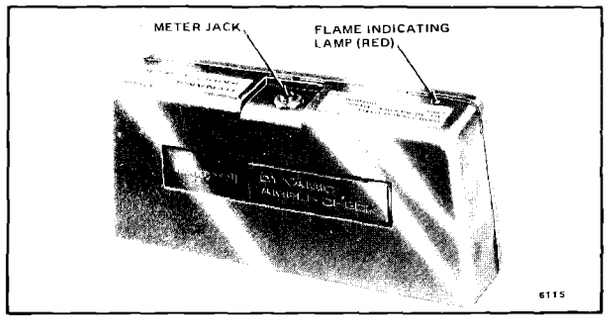


FIG. 3—R7248B AMPLIFIER COMPONENTS.

PRELIMINARY INSPECTION

Make certain that:

1. Wiring connections are correct and all terminal screws are tight.

2. Amplifier is securely mounted on the flame safeguard control.

3. C7015A flame detector is clean, and it is installed and positioned properly. Consult instruction sheet, form 60-2306.

4. Ambient temperature at the C7015A lead sulfide cell does not exceed 125 F [52 C]. *(continued on page 4)*

5. Correct combination of amplifier and flame detector is used–R7248B Dynamic Ampli-Check Infrared Amplifier (color-coded red) with C7015A Infrared (lead suflide) Flame Detector.

6. Voltage rating of the flame detector matches the power supply of the flame safeguard control (120 volts only).

FLAME SIGNAL MEASUREMENT (FIG. 4)

CAUTION

Follow the applicable instructions in the instruction sheet for the appropriate flame safeguard control.

Using this procedure, measure the flame signal at the appropriate times defined in the CHECKOUT tests in the instruction sheet for the flame safeguard control. Consult instruction sheet 60-2306 for the complete C7015A Infrared Flame Detector checkout procedure.

Read the flame signal in microamps at the meter jack on the plug-in flame signal amplifier. Use a microammeter with a 0 to 25 microamp dc range, such as a Honeywell W136A, which has a plug for inserting into the meter jack. (A 117053 Meter Connector Plug may be ordered separately if needed.) Connect the plus (red) meter lead to the red spade tip and the minus (black) meter lead to the black spade tip before inserting the plug into the meter jack.

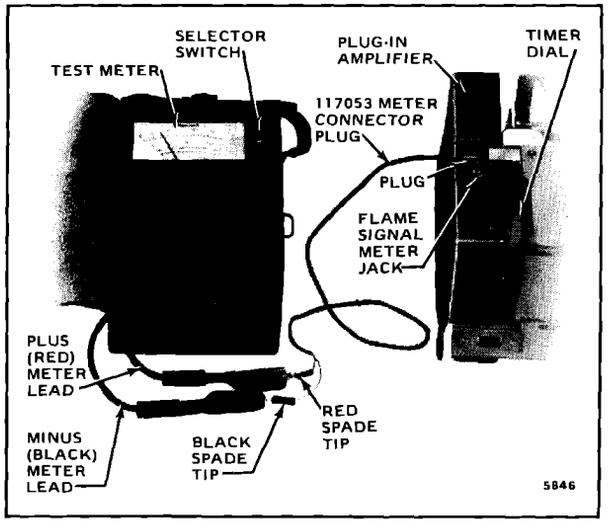


FIG. 4–MEASURING THE FLAME SIGNAL.

The R7248B Dynamic Ampli-Check Infrared Amplifier responds *only* to a *flickering* flame signal. The flame indicating lamp (red) gives a visual indication of the flame signal that the amplifier is receiving from the flame detector. The lamp blinks at a rate corresponding directly to the flickering of the flame. A continuous, rhythmic blinking indicates that the flame has the required flickering characteristic. If the blinking becomes erratic, adjust the flame.

The flame signal for the pilot alone, the main burner flame alone, and both together (unless monitoring only the pilot flame when using an intermittent pilot, or only the main oil flame when using direct spark ignition) must be steady and in the following range.

Minimum Acceptable Signal–3-1/2 microamperes.
Maximum Signal Expected–5 microamperes.

If the signal is unsteady, or less than the minimum acceptable current, check the flame detector installation and circuitry as follows:

1. Check the supply voltage at the wiring subbase (L1 to L2 should be 102V to 132V ac).
2. Check the detector wiring for defects, including–
   - –wrong type or size of wire (see instruction sheet, *form* 60-2306).
   - –deteriorated wire.
   - –open circuits.
   - –short circuits.
   - –leakage paths caused by moisture, soot, or accumulated dirt.
3. Clean the detector lens, sighting pipe, and viewing window.
4. Check that the temperature at the C7015A lead sulfide cell is not greater than 125 F [52 C].
5. Make sure that the flame adjustment is not too lean.
6. Make sure the detector is sighting the flame properly. Viewing near the tip of the flame usually results in the maximum signal.
7. If necessary, resight or reposition the detector.
8. If the signal is still too small, try a different lead sulfide cell. They are available in 4 ranges of sensitivity: 104662A (red dot), lowest; 104662B (yellow dot), middle; 104662C (green dot), high; and 104662D (white dot), highest sensitivity.

If you cannot obtain proper operation, replace the plug-in amplifier. If you still cannot obtain proper operation, replace the flame detector.

IMPORTANT

If you make any changes in the flame detection system, repeat ALL required tests in the CHECKOUT section of the instruction sheet for the flame safeguard control.

FLAME INDICATING LAMP (RED)

After obtaining a proper flame signal, complete the amplifier checkout. With the master switch closed (power applied to the amplifier), observe the flame indicating lamp for these conditions.

1. *No flame*–lamp should not glow. Replace the amplifier if the lamp is ON (bright) continuously or blinking excessively. (The lamp may blink occasionally due to electrical noise pulses on the signal leads. These occasional noise pulses are rejected by the amplifier and do not affect normal operation.)

2. *Flame present*–lamp should blink at the same rate that the flame is flickering. Replace the amplifier if the lamp does not blink.

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