

# C554A Cadmium Sulfide Flame Detector

PRODUCT DATA



## APPLICATION

The C554A Cadmium Sulfide Flame Detector (cad cell) is a photoconductive flame detector used with oil primary controls such as R4166, R4184, R8182, R8184, R8185, R8404 and R8991.

## FEATURES

- Cadmium sulfide sensing element provides faster response than bimetal sensors.
- On flame failure, the cad cell causes the oil primary control to shut down the main burner.
- Mounting brackets available to fit all applications.
- Entire cell is hermetically sealed (glass to metal) to reduce cell deterioration by humidity, soot, or oil fumes.
- Plug-in cell for easy replacement.
- Recessed cell provides more accurate flame sighting and prevents accumulation of dirt and soot on cell face.

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## SPECIFICATIONS

### **Important**

*The specifications given in this publication do not include normal manufacturing tolerances. Therefore, this unit might not exactly match the listed specifications. Also, this product is tested and calibrated under closely controlled conditions, and some minor differences in performance can be expected if those conditions are changed.*

### **Models:**

C554A Cadmium Sulfide Flame Detector two-wire, two-piece plug-in cell for use with oil primary controls such as R4166, R4184, R8182, R8184, R8185, R8404 and R8991.

### **The TRADELINE® Advantage:**

SUPER TRADELINE® and TRADELINE® models offer features not available on standard models and are designed to replace a wide range of controls. SUPER TRADELINE® and TRADELINE® model specifications are the same as standard models except as noted.

### **SUPER TRADELINE® Features:**

60 in. (1520 mm) leadwires.  
Interchangeable type A,B,E,J,P brackets.  
Oil line adapter bracket.  
SUPER TRADELINE® pack and special installation instructions.

### **TRADELINE® Features:**

60 in. (1520 mm) leadwires.  
Type E mounting bracket.  
Oil line adapter bracket.  
TRADELINE® pack and special installation instructions.

### **Electrical:**

Maximum voltage 60 Vdc or 60 Vac peak.

### **Ambient Temperature:**

140°F (60°C) at the cell.

### **Dimensions:**

See Fig. 1.

### **Mounting (see Fig. 1):**

SUPER TRADELINE®: Interchangeable A,B,E,J,P brackets.

TRADELINE®: Type E bracket.

Standard: Available in all bracket types; specify when ordering.

### **Leadwire:**

Yellow, single-molded, dual-cord, number 18 stranded wire. NEC Class 1. Varied lengths available on request.

### **Certifications:**

Underwriters Laboratories Inc. Listed: File Number MP268, Guide Number MCCZ.

Canadian Standards Association Component Listed: File Number LR1620, Guide Number 300-1-0.2.

### **Replacement Part:**

130367 Replacement Cad Cell.

## ORDERING INFORMATION

When purchasing replacement and modernization products from your TRADELINE® wholesaler or distributor, refer to the TRADELINE® Catalog or price sheets for complete ordering number, SUPER TRADELINE® or TRADELINE® if desired.

1. Model number
2. Type of mounting bracket on standard models (Fig. 1).
3. Leadwire length on standard models.

If you have additional questions, need further information, or would like to comment on our products or services, please write or phone:

1. Your local Home and Building Control Sales Office (check white pages of your phone directory).
2. Home and Building Control Customer Logistics  
Honeywell Inc., 1885 Douglas Drive North  
Minneapolis, Minnesota 55422-4386 (612) 951-1000

In Canada—Honeywell Limited/Honeywell Limitée, 155 Gordon Baker Road, North York, Ontario M2H 2C9.

International Sales and Service Offices in all principal cities of the world. Manufacturing in Australia, Canada, Finland, France, Germany, Japan, Mexico, Netherlands, Spain, Taiwan, United Kingdom, U.S.A.

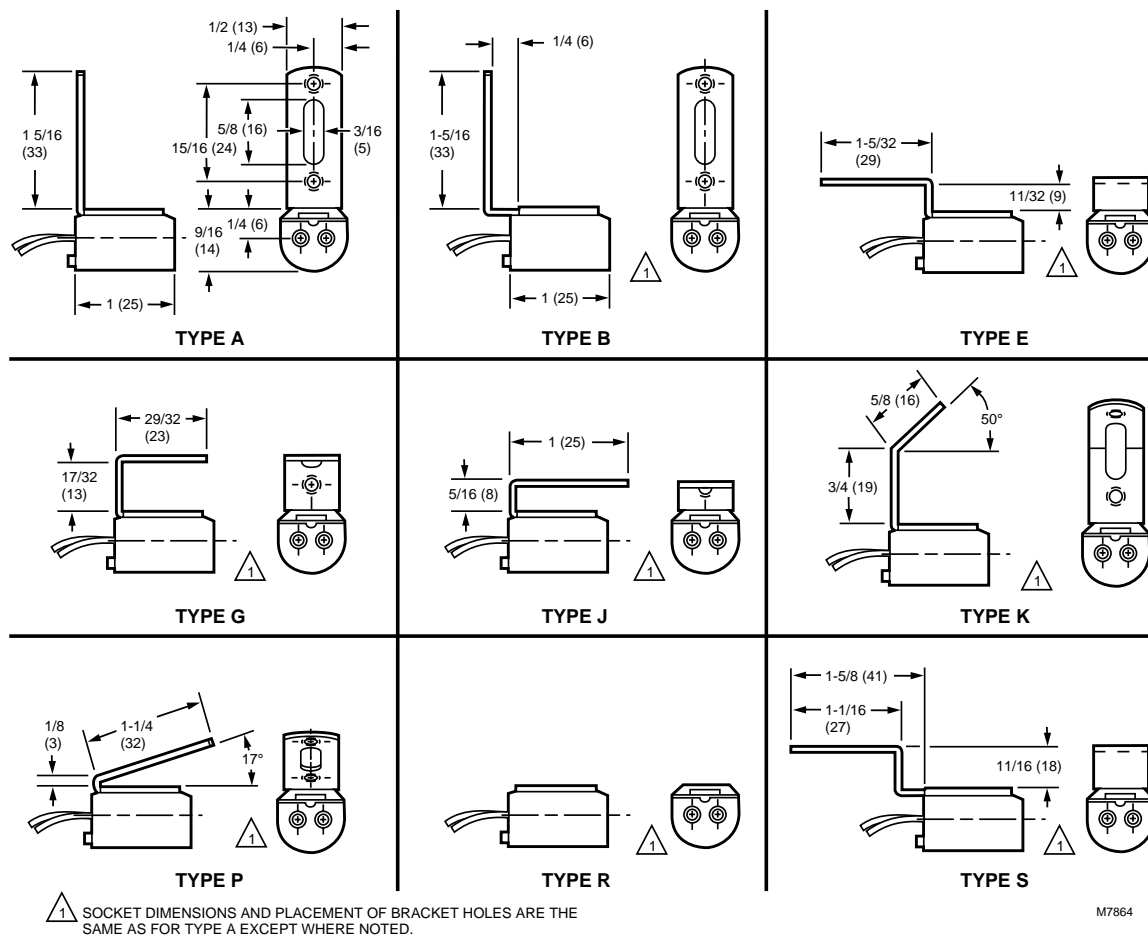


Fig. 1. Mounting bracket dimensions in in. (mm).

## INSTALLATION

### When Installing this Product . . .

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check the ratings given in the instructions and on the product to make sure the product is suitable for your application.
3. Installer must be a trained, experienced service technician.
4. After installation is complete, check out product operation as provided in these instructions.



### CAUTION

Disconnect power supply before beginning installation to prevent electrical shock or equipment damage.

### Location

The burner manufacturer determines the cad cell location (see Fig. 2). If an alternate location must be used, make sure that:

- 1 The cell has a clear view of the flame.
- 2 Ambient light does not reach the cell.

- 3 Ambient temperature at the cell location is below 140°F (60°C).
- 4 Movement, shielding, or radiation of metal surfaces located near the cell do not affect cell operation.

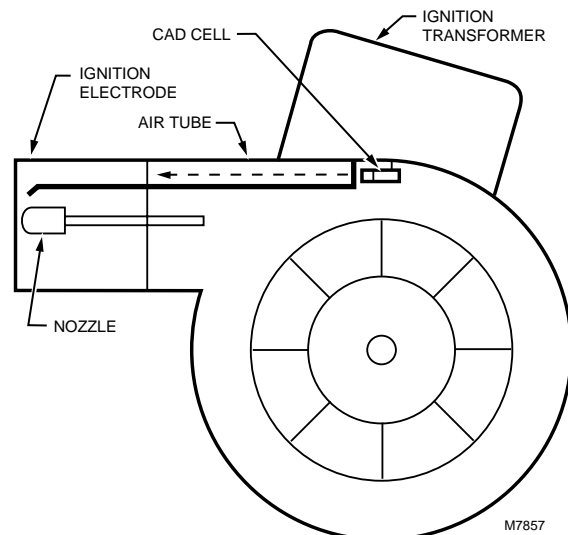


Fig. 2. Cad cell location.

## Mounting

### Direct Replacement for Standard Models

Mount the C554A at the rear of the burner. The mounting bracket can be bent to fit, if necessary.

### Direct Replacement for SUPER TRADELINE® and TRADELINE® Models

- ❶ Select the mounting bracket that most closely matches the existing mounting bracket (SUPER TRADELINE®) or use the bracket provided (TRADELINE®).
- ❷ Remove the cell from the socket.
- ❸ Insert the mounting bracket into the socket slot (Fig. 3) as far as it will go.

NOTE: Bend the mounting bracket to fit, if necessary.

- ❹ While holding the mounting bracket in the slot, insert the screwdriver in the other end of the slot (Fig. 3). Bend the screwdriver, first to the left and then to the right, to crimp the end of the mounting bracket and hold it in position.
- ❺ Remove the screwdriver and replace the cell.
- ❻ Mount the new cell and bracket assembly in the location of the old assembly.

### Oil Line Mounting for SUPER TRADELINE® and TRADELINE® Models

If desired, mount the C554A on the oil line using the oil line adapter bracket and the mounting bracket that give the C554A the best view of the flame (SUPER TRADELINE®) or use the mounting bracket provided (TRADELINE®).

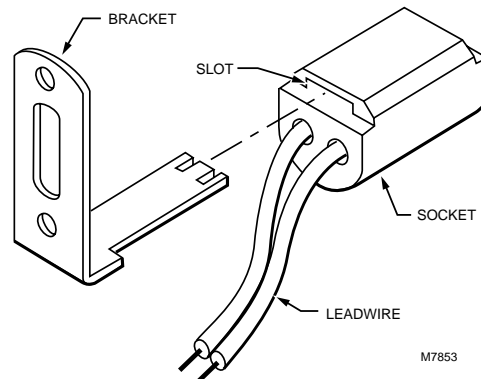


Fig. 3. Insert mounting bracket into socket slot.

- ❶ Remove the cell from the socket.
- ❷ Insert the mounting bracket into the slot on the socket (Fig. 4) as far as it will go.

NOTE: Bend the mounting bracket to fit, if necessary.

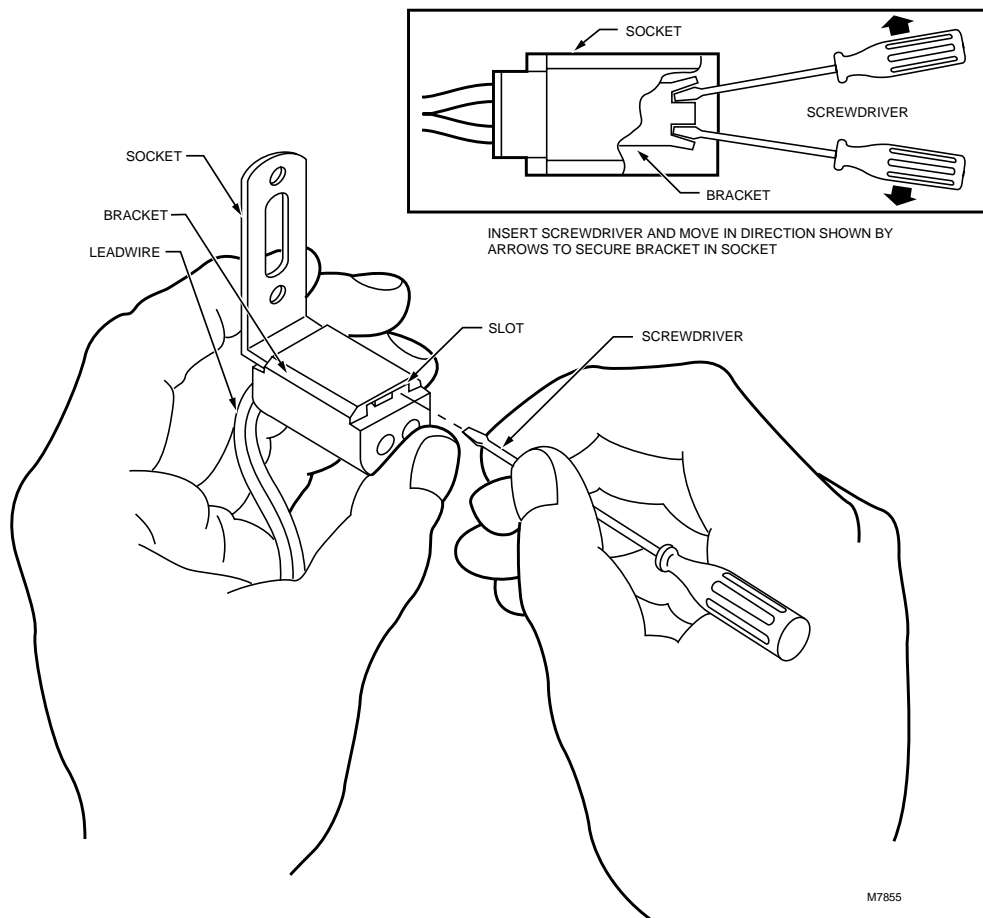
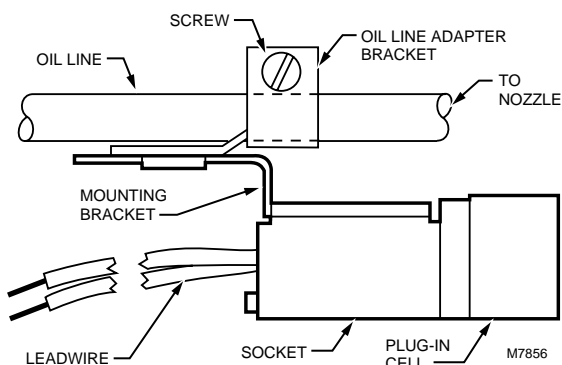


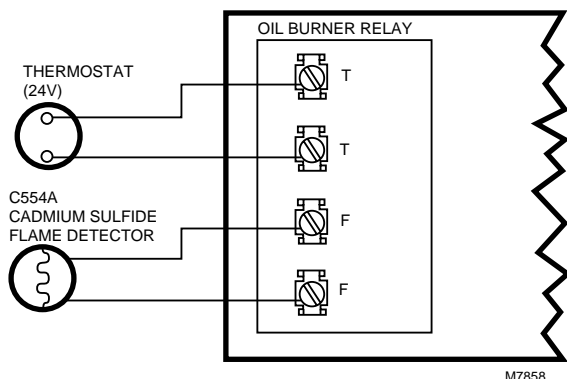
Fig. 4. Insert screwdriver to secure bracket in socket.

- ③ While holding the mounting bracket in the slot, insert the screwdriver in the other end of the slot (Fig. 4). Bend the screwdriver, first to the left and then to the right, to crimp the end of the mounting bracket and hold it in position.



**Fig. 5. Use oil line adapter bracket to mount C554A on to oil line.**

- ④ Remove the screwdriver and replace the cell.
- ⑤ Slide the mounting bracket into the sleeve on the oil line adapter bracket. Push firmly to lock the cell and the bracket assembly in position.
- ⑥ Mount the oil line adapter bracket on the oil line using the screw and nut provided (Fig. 5).



**Fig. 6. Typical hookup for C554A to oil burner primary control.**

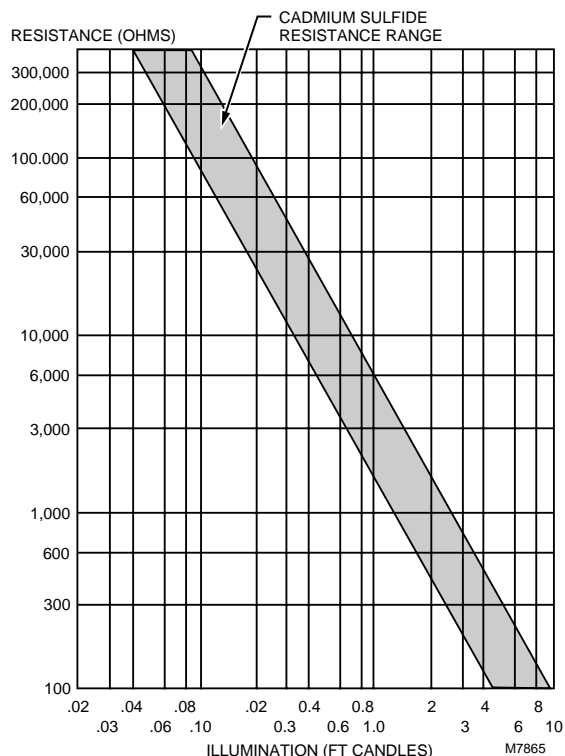
## Wiring

Disconnect power supply before beginning wiring to prevent electrical shock or equipment damage.

All wiring must comply with local electrical codes and ordinances. See Fig. 6 for a typical C554A hookup to the oil burner primary control.

## OPERATION

The C554A Cadmium Sulfide Flame Detector consists of a plug-in, light-sensitive cell and a socket with leadwire. The photocell is a ceramic disk, coated with cadmium sulfide and overlaid with a conductive grid. The entire cell is hermetically sealed (glass to metal) to prevent cell deterioration. Electrodes attached to the ceramic disk transmit an electrical signal to the primary control, which operates the main burner. In darkness, cadmium sulfide has a very high resistance to the passage of electrical current. In visible light, its resistance is very low and current is allowed to pass to the primary control. Flame failure causes the cell to stop conducting electricity, resulting in the primary control shutting off the burner. Fig. 7 shows the sensitivity range of the cad cell.



**Fig. 7. Light response tolerance for C554A cad cell.**

## CHECKOUT

To check cad cell operation, use the following procedure:

- ❶ Disconnect the cad cell leadwires; then start the burner. Shortly after the burner starts, place a temporary jumper between terminals F-F. Connect an ohmmeter across cad cell leadwires; resistance should be less than 1600 ohms.
- ❷ Stop the burner and remove the temporary jumper.
- ❸ With the burner off, check the dark cell resistance across cad cell leadwires. Resistance should be greater than 20,000 ohms.

NOTE: If cell resistances are different than specified, recheck the wiring and the location of the cell. If necessary, replace the plug-in part of cell, Honeywell part no. 130367 Replacement Cad Cell.

- ❹ Reconnect cad cell leadwires. Check the Protectorelay® Burner Sequencing Relay control according to the instructions packed with the control.

## SERVICE AND REPLACEMENT

In normal operating conditions, the C554A does not require cleaning. If a badly adjusted burner causes heavy accumulation of dirt and soot on the cell surface, carefully wipe the cell surface to restore full view of the oil flame.

If the C554A is damaged, replace the plug-in part of the cell. Order Honeywell part no. 130367 Replacement Cad Cell.



**Honeywell**

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