(re Control 00454).

1024

BAKER INDUSTRIES

Pyrotronics

8 Ridgedale Avenue, Cedar Knolls, New Jersey 07927
(201) 267-1300 Cable Address: Baker Pyro

May 26, 1981

RECEIVED
'81 MAY 29 A9:22

United States
Nuclear Regulatory Commission
Washington, D.C. 20555
Att: Mail Control #00454

Attention: Mr. Paul R. Guinn:

Re: License Number 29-08864-04E

Dear Mr. Guinn:

In response to your letter dated 5/14/81 and our discussions during my visit, the following is an up-date regarding our smoke detectors.

The following models noted on Page 5 of Attachment III are no longer in production or in stock and are obsolete. Please remove these model numbers from our renewal application.

DI-7
DIT-2
FBL-3
FBC

The F5B and DI-2 series are in the phase-out stage and will be discontinued late 1981.

Attached are the labels and specification sheets presently being used for the F5B, DI-2, DI-4 and FB-1 series. Please ignore any letter designations after series number. (Ex. DI-4 & DI-4A; Ignore the "A"). These letters refer to electronic circuits or mechanical mounting differences and do not effect the radiation source. I have also enclosed our master packaging label (P/N 575-081386).

Please note, a check for $500 was hand delivered and given to Mr. John Hickey during my visit on 5/21/81. This check should cover the charge for the amendments to our License No. 29-08864-03 and 29-08864-04E, which added the DI-3 and DI-1 series. A letter was sent to Mr. James A. Johnson/Radioisotopes Licensing Branch on May 14, 1981, regarding this matter.

Several new detectors are being added to our product line, they are the DU-3, DC-1, DI-3 and DI-1 series which are being covered under separate amendments.

A/103

If you have any further questions, please do not hesitate to contact me.

Yours truly,

Ralph J. Hiltebrand
Chief Radiation Protection Officer

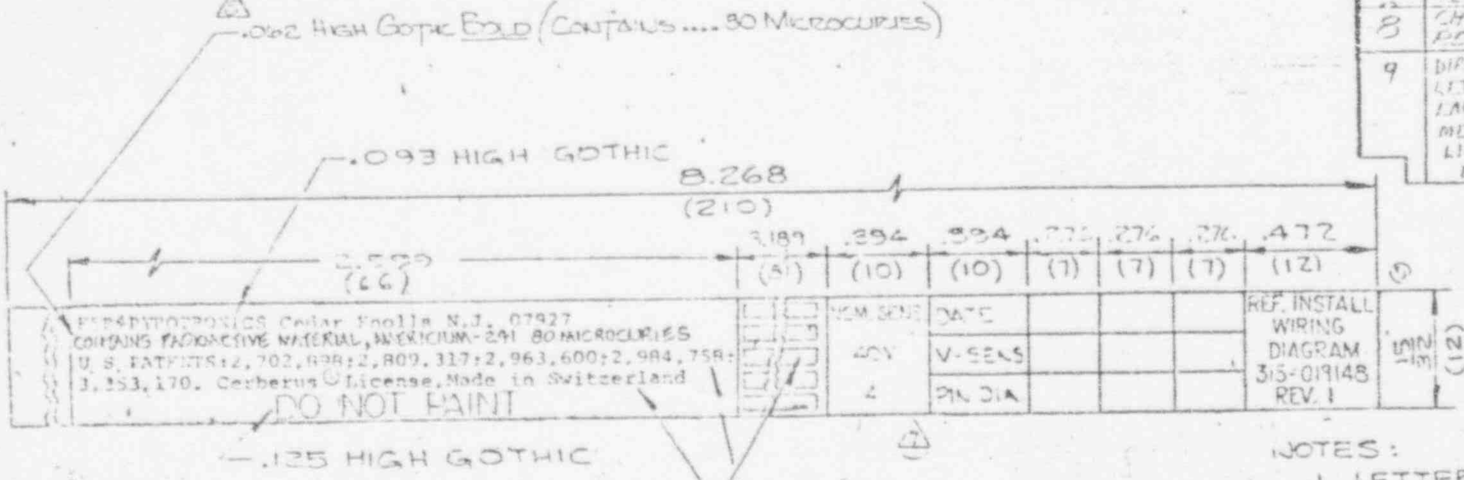
Irv Ellner

signed by
Irv Ellner
Radiation Protection Officer

RJH:IE:amf

Attachments

575-014757



1 LINE, 1/16" LETTERS, LINE TO CONTAIN STATEMENT BELOW. CENTER VERTICALLY AND HORIZONTALLY:

DISASSEMBLY OR REPAIR SHOULD BE PERFORMED BY TRAINED PERSONNEL ONLY.

REVISIONS

REV NO.	DESCRIPTION		
7	[illegible]	[illegible]	[illegible]
8	CHANGED LABEL PER NRC REGULATIONS ECR 80292	[illegible]	[illegible]
9	DIRECTIONS WERE: 1 LINES, 1/16 LETTERS, .026 BETWEEN LINES. EACH LINE TO CONTAIN STATEMENT AS BELOW. JUSTIFY ALL LINES. EXTENDED ARROW. ECR # 80428	11-25-80	[illegible]

NOTES:

1. LETTERS: UNLESS OTHERWISE SPECIFIED, ALL LETTERS TO BE 1/16 HIGH, GOTHIC, CENTERED & SPACED EVENLY.
2. MATERIAL: LITHO (GRADE (R-221) ADHESIVE BACKED CONTACT PAPER, LIGHT GRAY, NON-GLOSS SURFACE, SUITABLE FOR WRITING ON.
3. INK: BLACK
4. DIMENSIONS IN BRACKETS ( ) ARE MM.

F5B SERIES
NRC 313 T
5/22/81

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: 2 PLACE DEC. ± .015 3 PLACE DEC. ± .005 FRACTIONS ± 1/64 ANGLES ± 1°	Pyrotronics Cedar Knolls New Jersey IDENTIFICATION LABEL IONIZATION DETECTOR TYPE F5B4
DWN [illegible] CHKD [illegible] APP [illegible]	B 575-014757
	SCALE [illegible] SHEET [illegible]

1034

MASTER PACKAGING LABEL

NRC 313 1
5/22/81

Pyrotronics Cedar Knolls, New Jersey

EARLY WARNING FIRE DETECTION AND ALARM SYSTEMS

MODEL NO. PART NO QTY. NO.

EACH IONIZATION DETECTOR CONTAINS
MICRO CURIES OF AMERICIUM 241 RADIOACTIVE MATERIAL AND HAS BEEN MANUFACTURED IN COMPLIANCE WITH U.S. NRC SAFETY CRITERIA IN 10 CFR 32.27. THE PURCHASER IS EXEMPT FROM ANY REGULATORY REQUIREMENTS.

NRC 313 1
5/22/81

Pyr-A-Larm®

Early Warning
Fire Detection and Alarm Systems
DI-2 SERIES

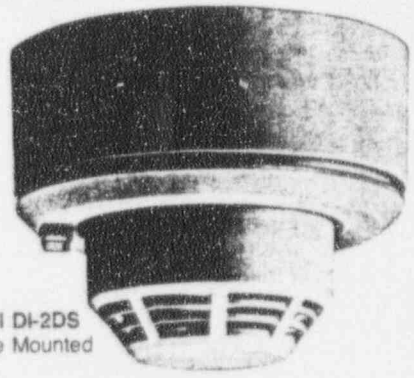
Ionization Fire Detectors

With Delay Option

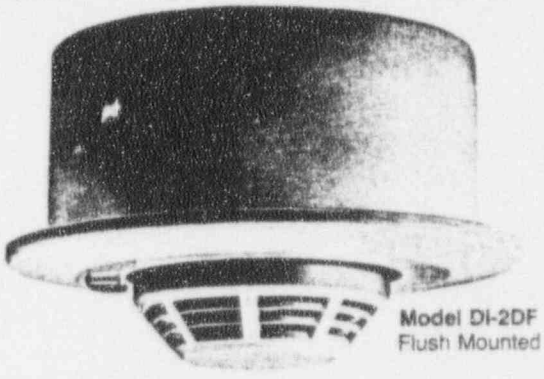
MODELS DI-2DS & DI-2DF

CATALOG NUMBER 6101

Engineer and Architect Specifications



Model DI-2DS
Surface Mounted



Model DI-2DF
Flush Mounted

Features

- **UL Listed**
- **Adjustable Sensitivity**
- **Built-In Delayed Option**
- **Visual Delay Indicator**
- **Flush or Surface Mounting**
- **Alarm Light**
- **Screw-type Terminals**

Introduction

The Pyr-A-Larm Models DI-2DS and DI-2DF fire detectors, with adjustable sensitivity and delay option, operate on a patented ionization principle. They respond to the first traces of fire in the form of visible smoke or invisible products of combustion. Heat or flame is not required to activate the detector.

Technical Description

The detector contains two ionization chambers and a highly sensitive semiconductor amplifier-switching circuit. One chamber detects the presence of combustion products. The second chamber serves as a reference, to stabilize the detector's sensitivity for changes in environmental temperature, humidity and pressure. The detector has provision for measuring its sensitivity (using a Pyr-A-Larm Sensitivity Test Set), as well as provision for changing sensitivity.

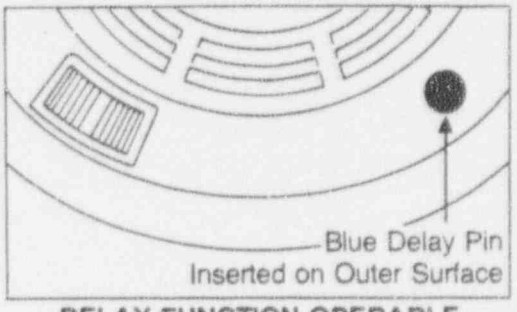
Built into the detector is a circuit that automatically delays operation of the unit for a period having a range of 15 to 30 seconds. (This feature is designed for special applications where momentary but harmless products of combustion may be present). To utilize this circuit a blue "Delay Pin", normally stored on the inner surface of the detector can be inserted into an accommodating recess hole on the outer surface of the detector. (See illustration). When in this mode the delay function will be constantly operable.

The Models DI-2DS and DI-2DF can be manually adjusted to three different sensitivity settings: Low, Normal and High. This is easily done by changing the sensitivity adjustment, located on the underside of the detector housing, with a small screwdriver. Position 1 is low sensitivity, position 2 is normal sensitivity and position 3 is high sensitivity.

The Model DI-2DS is designed for surface mounting while the DI-2DF is designed for flush mounting. Both models have an indicator lamp to indicate an alarm. A remote indicator lamp may be connected when the detector is concealed from view. The detector operates from a 22 Vdc source, provided by the Pyr-A-Larm control panel. The detector requires a very small standby current (less than 100 microamperes), which permits the use of a 2-wire detector circuit of #18 AWG wire affording reduced installation costs.

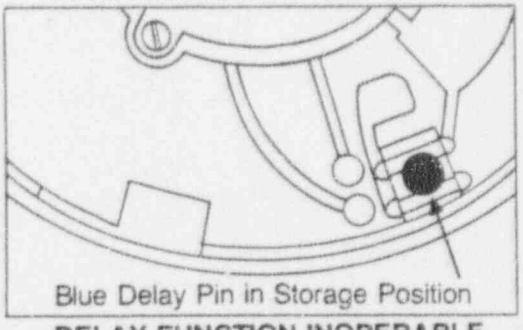
The detector shell and base are fabricated of rugged polycarbonate material, which eliminates any corrosion problem. The unit is of an off-white color and attractively styled to be unobtrusive and match most interiors. The DI-2DF flush mounting unit protrudes only 1-15/16" from the ceiling surface.

OUTER SURFACE OF DETECTOR



DELAY FUNCTION OPERABLE

INNER SURFACE OF DETECTOR



DELAY FUNCTION INOPERABLE

Pyrotronics
A Baker Industries Company
Cedar Knolls, New Jersey 07927

Pyrotronics 16P PROTECTIVE SYSTEMS

November 1978
Supersedes sheet
Dated 10/74

Both models are Underwriters Laboratories, Inc., listed.

Application Data

These detectors are listed by UL and although UL gives no specific spacing recommendation, the test spacing of 30 ft. (900 sq. ft.) may be used, if practicable, but only as a guide or starting point in a detector installation layout. The test fires conducted by UL were based on only one set of conditions, namely, a 15 ft. 9 in. high smooth ceiling, no air movement, and no physical obstructions between the fire source and detector. It should be realized that these are fairly ideal conditions for a symmetrical detector layout.

For conditions other than the above, it is mandatory that engineering judgment be applied regarding detector location and spacing.

Architect's Specifications

The fire detector shall be a Pyr-A-Larm Model (specify DI-2DS or DI-2DF) with adjustable sensitivity and optional delay. It shall operate on the ionization principle and shall be activated by the presence of combustion products. The detector shall be listed by Underwriters Laboratories, Inc.

The detector head shall be a plug-in unit containing two ionization chambers, amplifier-switching circuit and indicator lamp. The unit shall contain no moving parts. One chamber shall be for fire detection and the second chamber shall function as a reference, to stabilize the detector for changes in environmental temperature, humidity and pressure.

When desired, the unit shall be capable of operating in a "delay function" mode without any additional electrical components.

In addition, it shall be possible to electrically check the detector's sensitivity, using a Pyr-A-Larm Sensitivity Test Set, or equivalent, and change the detector's sensitivity, as required from "normal" to either "low" or "high".

The amplifier-switching circuit in the detector head shall be entirely solid-state. It shall operate with a detector line voltage of 22 Vdc. When operating in the "delay function" mode, the detector lamp shall light after a delay of approximately 15 to 30 seconds. It shall be possible to connect a remote lamp to the detector.

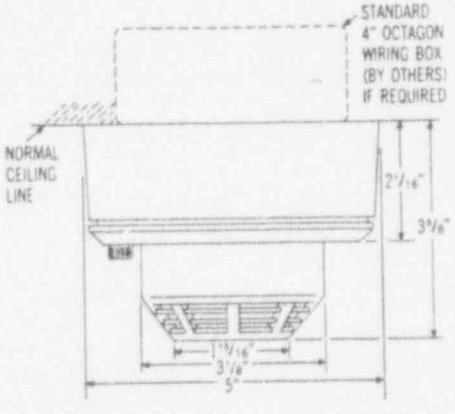
The detector base shall have terminals for making all connections; no soldering shall be required. It shall be possible to secure the detector in the base with a concealed locking mechanism to prevent unauthorized tampering. Under this condition, removal shall require a special unlocking tool.

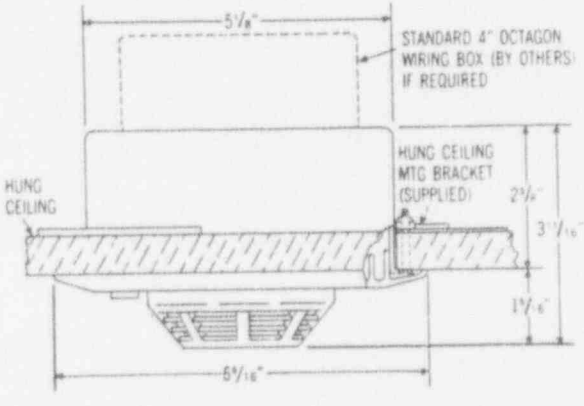
The detector, or group of detectors, shall require a two wire circuit of #18 AWG thermoplastic fixture wire enclosed in conduit or #18 AWG limited-energy shielded cable without conduit, if permitted by local building codes.

Ordering Information

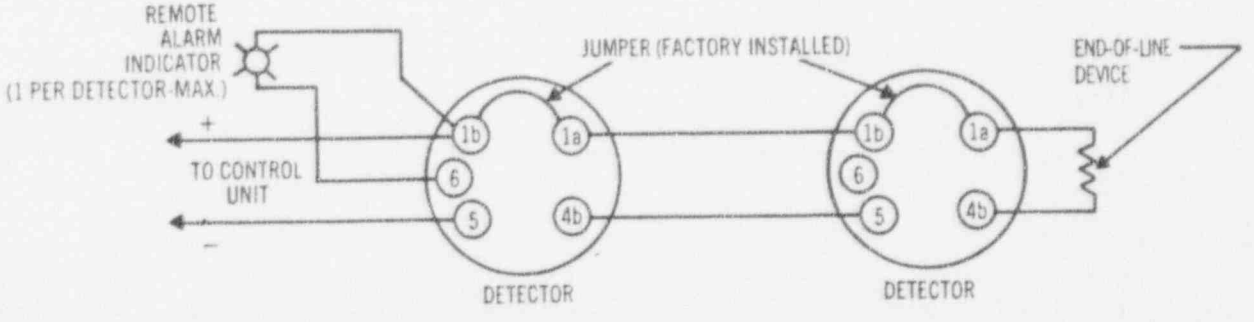
Model No.	Description	Shipping Weight Lbs.
DI-2DS	Detector, Ionization, with Automatic Delay, Surface Mtg. (includes detector head and base)	1 lb. (.45 kg.)
DI-2DF	Detector, Ionization, with Automatic Delay, Flush Mtg. (includes detector head, base, decorator ring and mounting plate)	1 lb. (.45 kg.)
465-514391	Limited—energy type shielded cable (for use where building codes permit detector wiring without conduit), 2-conductor.	

Mounting Data



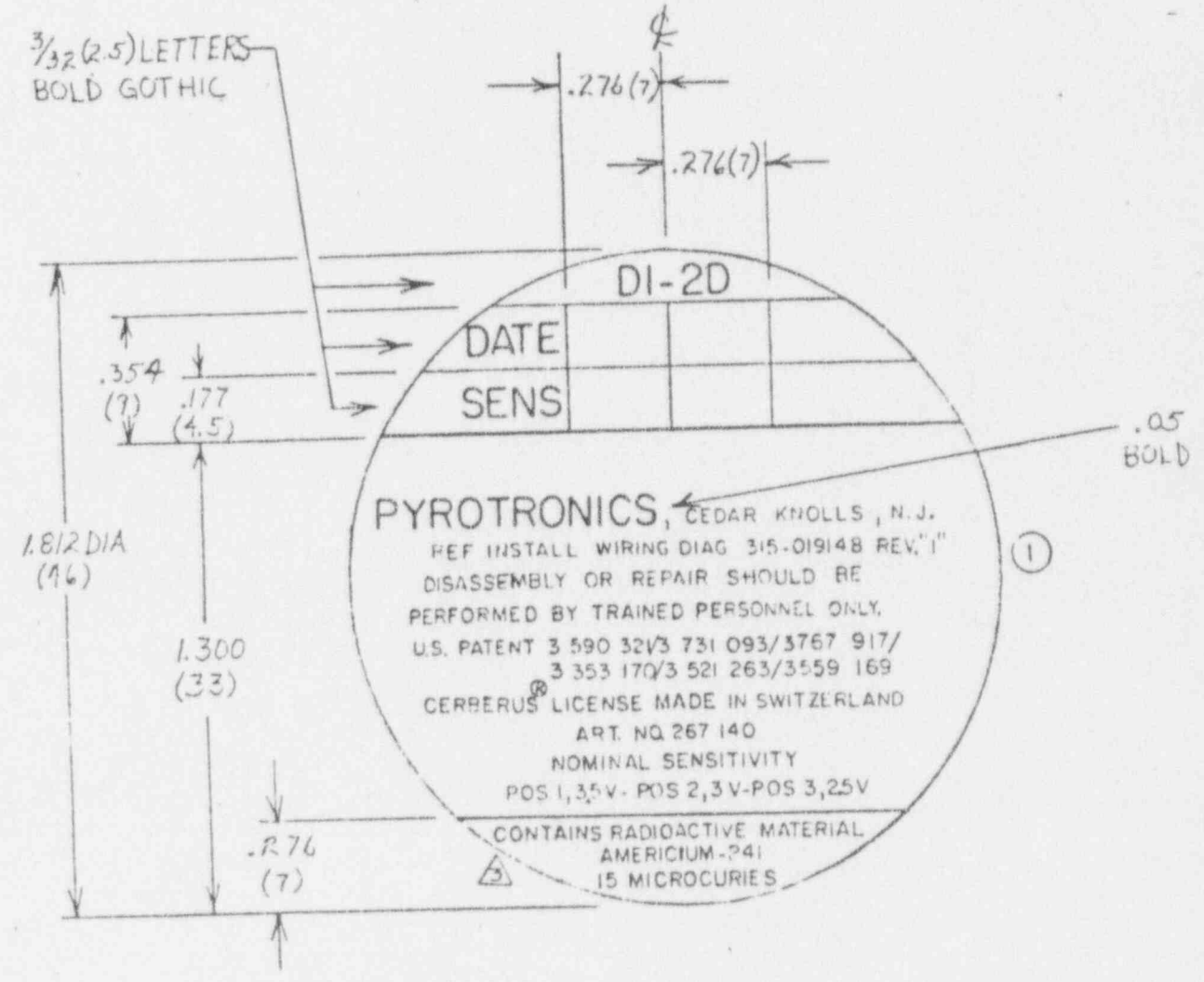


Typical Wiring



Printed in U.S.A.

3 | 575-025017



DI-2 SERIES
NRC 313 1
5/22/81

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES

TOLERANCES ARE:
2 PLACE DEC. ± .01
3 PLACE DEC. ± .005
FRACTIONS ± 1/64
ANGLES ± 1°

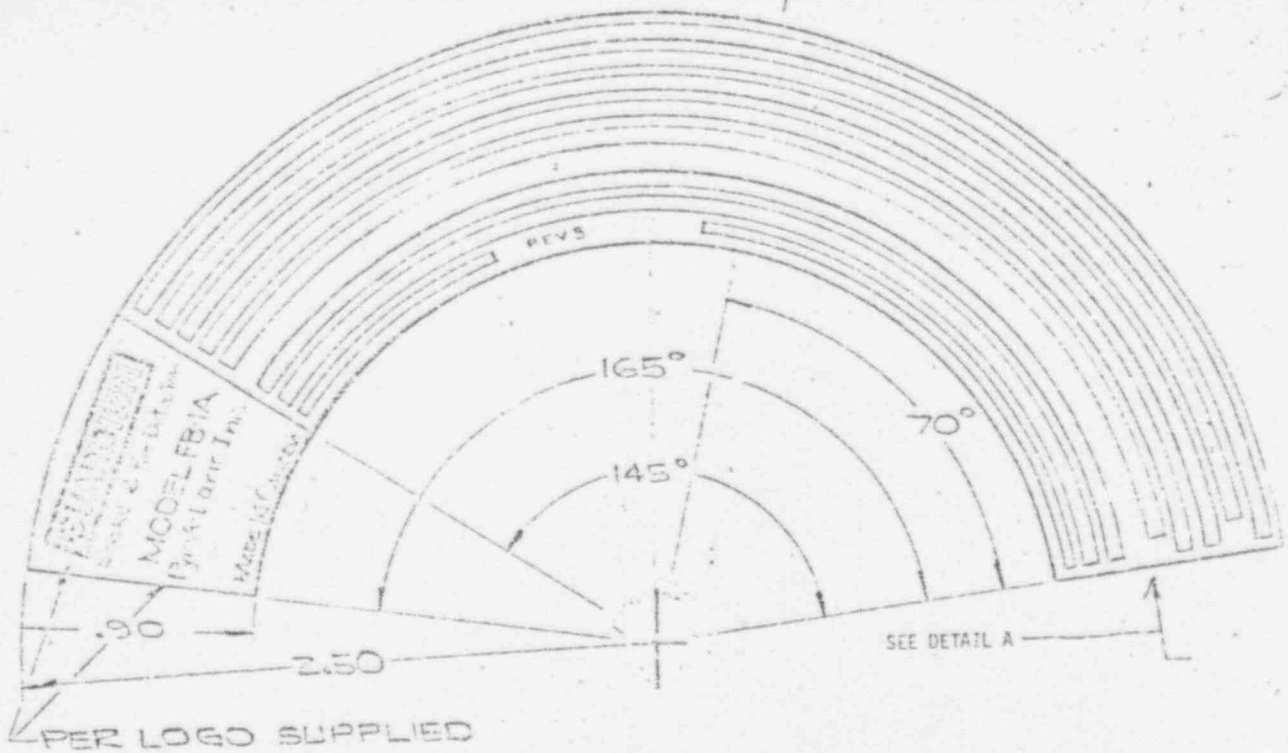
DWN J. Hanis 4-22-81
CHKD
APP'D
APP'D

Pyrotronics Cedar Knolls, New Jersey

IDENTIFICATION LABEL
IONIZATION DETECTOR
MODEL DI-2D

B	575-025017	3
DWG SIZE	DWG. NO.	REV. NO.

SCALE 2:1 SH 1 OF 1



DETAIL A

CONTINUOUS HORN INDICATES ALARM. REPLACE BATTERY WHEN DETECTOR EMITS A CHIRPING EVEREADY 522, LAFAYETTE 32-47533, RADIO SHACK 23-553. CLEAN DETECTOR PERIODICALLY TO REMOVE EXPOSURE OF DETECTOR TO HIGH TEMPERATURE OR HUMIDITY MAY SHORTEN BATTERY LIFE. IT IS RECOMM ONCE A WEEK TO TEST UNIT PRESS TEST BUTTON UNTIL HORN SOUNDS CONTINUOUSLY. INSTALL DETECTOR AS MODEL NO.) AND NFPA STD. 74 (AVAILABLE AT 470 ATLANTIC AVE., BOSTON MASS. 02210)

CONTAINS RADIOACTIVE MATERIAL, AMERICIUM-241, 0.8 MICROCURIES MAXIMUM.

Pyr-A-Larm Inc., 8 RIDGEDALE AVE, CEDAR KNOLLS NJ 07927.

CERBERUS® LICENSED

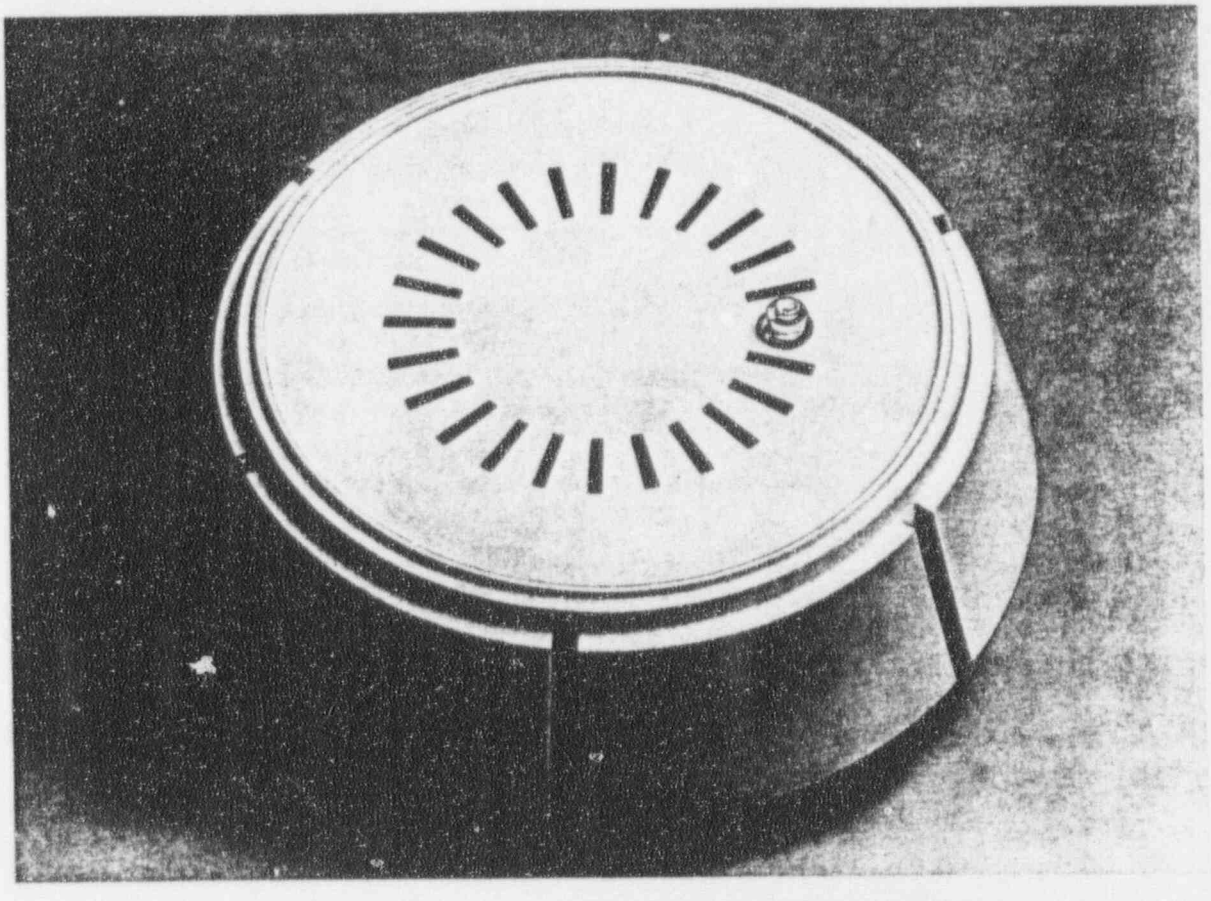
U.S. PATENTS: 3,353,170; 3,521,263; 3,681,603;

TOLERANCES ARE: 2 PLACE DEC. ± .01, 3 PLACE DEC. ± .005, FRACTIONS ± 1/64, ANGLES ± 1°	Pyr-A-Larm Inc. Cedar Knolls, New Jersey	
	LABEL FB-1A (MFG. IN CAN. FOR U.S.)	A
	C 575-223149	4
	SCALE 2:1 SH 1 OF 1	

FB-1 Series
NRC 313 1
5/22/81

1034

Cordless convenience plus dynamic test button with this new smoke alarm from Pyrotronics Canada Limited.



MODEL
FB-1A

GUARDIØN™

SMOKE ALARM

BATTERY OPERATED

FB-1 SERIES
NRC 313 1
5/22/81

Everything an early warning smoke alarm ought to have... including a test button.

MODEL
FB-1A

GUARDIØN™

Check these features:

- Ionization type smoke alarm for early response to all types of fires.
- Dynamic test button automatically checks reliability of complete electronic circuitry.
- Cordless installation convenience.
- Replacement battery readily available. Uses 9-volt alkaline battery with one year battery life.
- Loud 85 decibel alarm can be heard even through closed doors.
- 30 day low battery warning signal.
- High impact plastic case.
- Pleasing design matches any decor.

The GUARDION Model FB-1A has all the design and operating features that a cordless smoke alarm should have, plus a dynamic test button for automatic reliability. Superior ionization-type detection using a readily-available, low cost 9V transistor battery. Includes a superior battery supervision circuit that continually monitors the battery under simulated alarm conditions and gives low battery signal for up to 30 days.

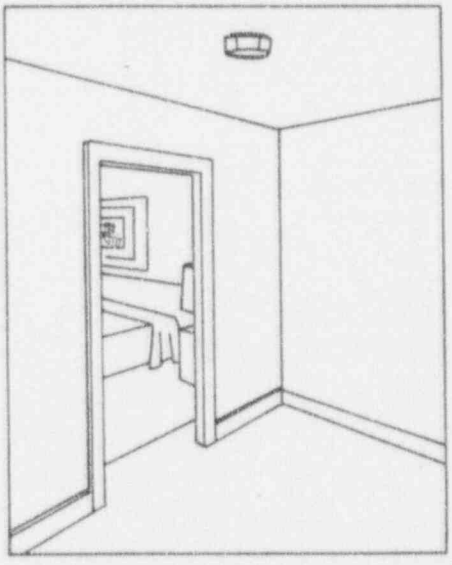
Superior ionization-type detection.

The GUARDION Model FB-1A can respond in all four stages of a fire, including the earliest incipient stage before there is visible smoke or flame or noticeable heat.

The FB-1A gives you both early response and increased stability.

Loud 85 decibel alarm can be heard even through closed doors. The alarm will sound whenever products of combustion enter the chamber and will continue to sound as long as such products are present. To test the unit, simply push the test button and the alarm will sound.

The primary smoke alarm location is in the hallway outside each sleeping area. Additional smoke alarms should be installed on each level of the house.



Uses widely available, low cost batteries.

Battery replacement is never a problem with the FB-1A. The unit uses a 9-volt long life battery that is readily available. One year battery life.

Specifications

- Ionization smoke alarm.
- High impact plastic case.
- POWER: 9Vdc. Duracell MN-1604; Radio Shack 23-553, Eveready 522, or Lafayette 32-47533 **are the only batteries approved for the Model FB-1A.**
- Mounting screws and plate supplied with unit.
- Low battery warning signal sounds every 45 seconds for 30 days.
- Packing: 12 per carton.
- Shipping weight: 13.5 lbs.
- Shipping dimensions: 16⅜" x 16⅛" x 8¼".
- ULC Listed

Pyrotronics Canada Ltd. . . . the recognized leader in the field of early warning fire detection. Since 1951 the company has pioneered the development of industrial and commercial fire detection systems. The reliability that has made these systems the overwhelming choice of architects and consulting engineers is yours when you protect a home with Guardion products.

GUARDIØN™

SMOKE ALARMS

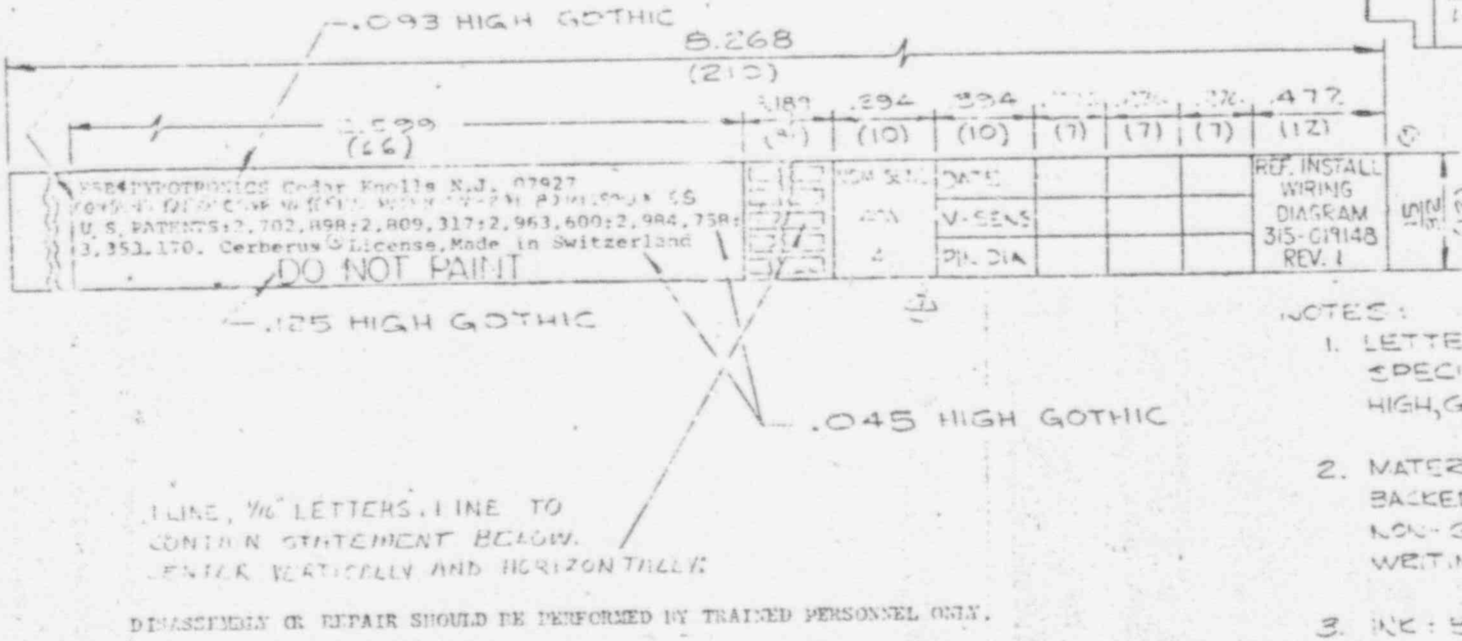
Made in Canada

Pyrotronics Canada Limited
55 Idema Road,
Markham, Ontario L3R1A9

Printed in Canada

575-014757

REV NO	DESCRIPTION	BY DATE	APP'D DATE
1	[illegible]	[illegible]	[illegible]
8	CHANGED LABEL PER [illegible] E.C. 6392	[illegible]	[illegible]
9	DIRECTIONS WERE: 1 LINE, 1/16 LETTERS, .016 BETWEEN LINES. EACH LINE TO CONTAIN STATEMENT AS BELOW. JUSTIFY ALL LINES. [illegible]	[illegible]	[illegible]



NOTES:

1. LETTERS UNLESS OTHERWISE SPECIFIED. ALL LETTERS TO BE 1/16 HIGH, GOTHIC, CENTERED & SPACED EVENLY.
2. MATERIAL: LITHO GRADE (R-29T) ADHESIVE BACKED CONTACT PAPER, LIGHT GRAY, NON-GLOSS SURFACE, SUITABLE FOR WRITING ON.
3. INK: BLACK
4. DIMENSIONS IN BRACKETS ( ) ARE MM.

F5B SERIES
NRC 313 1
5/22/81

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
2 PLACE DEC. ± .015
3 PLACE DEC. ± .005
FRACTIONS ± 1/64
ANGLES ± 1°

Pyrotronics

IDENTIFICATION LABEL
IONIZATION DETECTOR
TYPE F5B4

B 575-014757

SCALE 2:1 SH 1 OF 1

1034

Pyrotronics

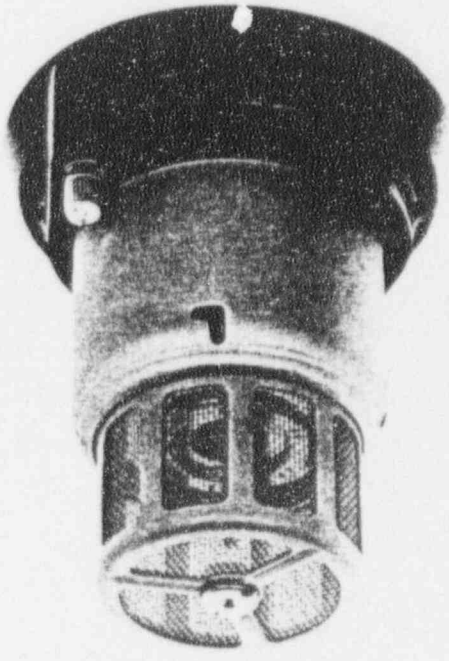
Early Warning
Fire Detection and Alarm Systems

Engineer and Architect Specifications

Ionization Fire Detector

MODEL DIS-5B4

F5B SERIES



DIS-5B4

INTRODUCTION

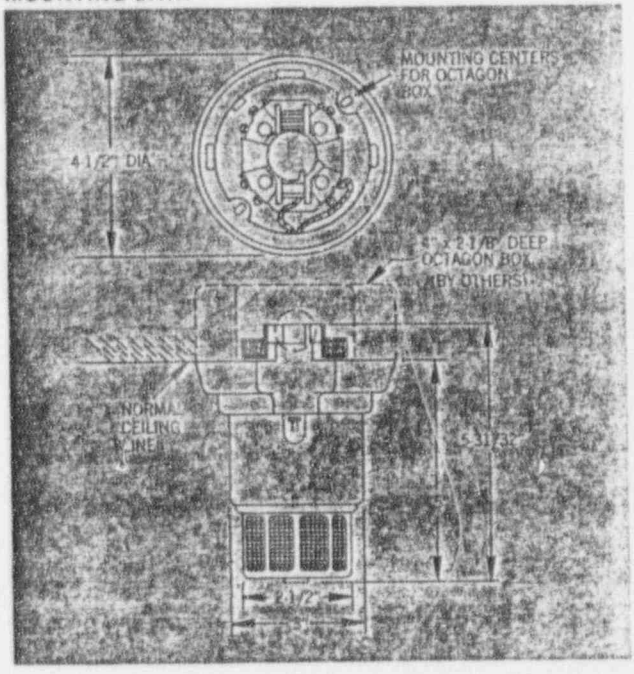
The Pyrotronics Model DIS-5B4 fire detector operates on a patented ionization principle. It reacts to the first traces of fire. Invisible combustion products entering the detector's outer chamber disturb the balance between two ionization chambers and trigger a highly sensitive cold cathode tube. The firing of the tube transmits a signal to the control panel which in turn activates the alarm devices. Neither visible smoke, heat nor flame is required to activate the detector. A detailed technical description of the operation of the detector is available upon request.

APPLICATION DATA

The Pyrotronics Model DIS-5B4 detector is listed by Underwriters Laboratories Inc., and although U.L. gives no specific spacing recommendation, the test spacings of 30 ft. (900 sq. ft.) may be used, if practicable, but only as a guide or starting point in a detector installation layout. The test fires conducted by U.L. were based on only one set of conditions, namely, a 15 ft. 9 in. high smooth ceiling, no air movement, and no physical obstructions between the fire source and detector. It should be realized that these are fairly ideal conditions for a symmetrical detector layout. For conditions other than the above, it is mandatory that engineering judgement be applied regarding detector location and spacing.

It shall be possible to install any number of DIS-5B4 detectors on one zone circuit of high voltage type control equipment, however, the number shall be limited by sound fire protection practice. No more than thirty (30) Model DIS-5B4 detectors may be used on any one System 3, ZH-30 zone circuit (See Catalog #3103).

MOUNTING DATA



Pyrotronics
A Division of Baker Industries, Inc.
Cedar Knolls, New Jersey 07927

NRC 313 1
5/22/81

July 1980
Supersedes Sheet dated 2/77

Pyrotronics 16p PROTECTIVE SYSTEMS

ARCHITECT'S SPECIFICATIONS

The fire detector shall be a Pyrotronics Model DIS-5B4. It shall operate on the ionization principle and shall be activated by the presence of invisible combustion products. The detector shall be listed by Underwriters Laboratories Inc.

The detector head shall be a plug-in unit containing a cold cathode tube and the two ionization chambers. One chamber shall be for fire detection and the second chamber shall function as a reference, to stabilize the detector for changes in environmental temperature, humidity and pressure. It shall be possible to electrically check the detector's sensitivity, using a Pyrotronics Sensitivity Test Set, and adjust the detector's sensitivity, if required. The measurement of detector sensitivity shall provide a precise electrical value as read on the Test Set meter. Approximate "trial and error" methods of sensitivity determination cannot be considered as equal.

The base shall have screw terminals for making all connections; no soldering shall be required. It shall also incorporate a neon indicator which shall provide visual indication should the detector initiate an alarm.

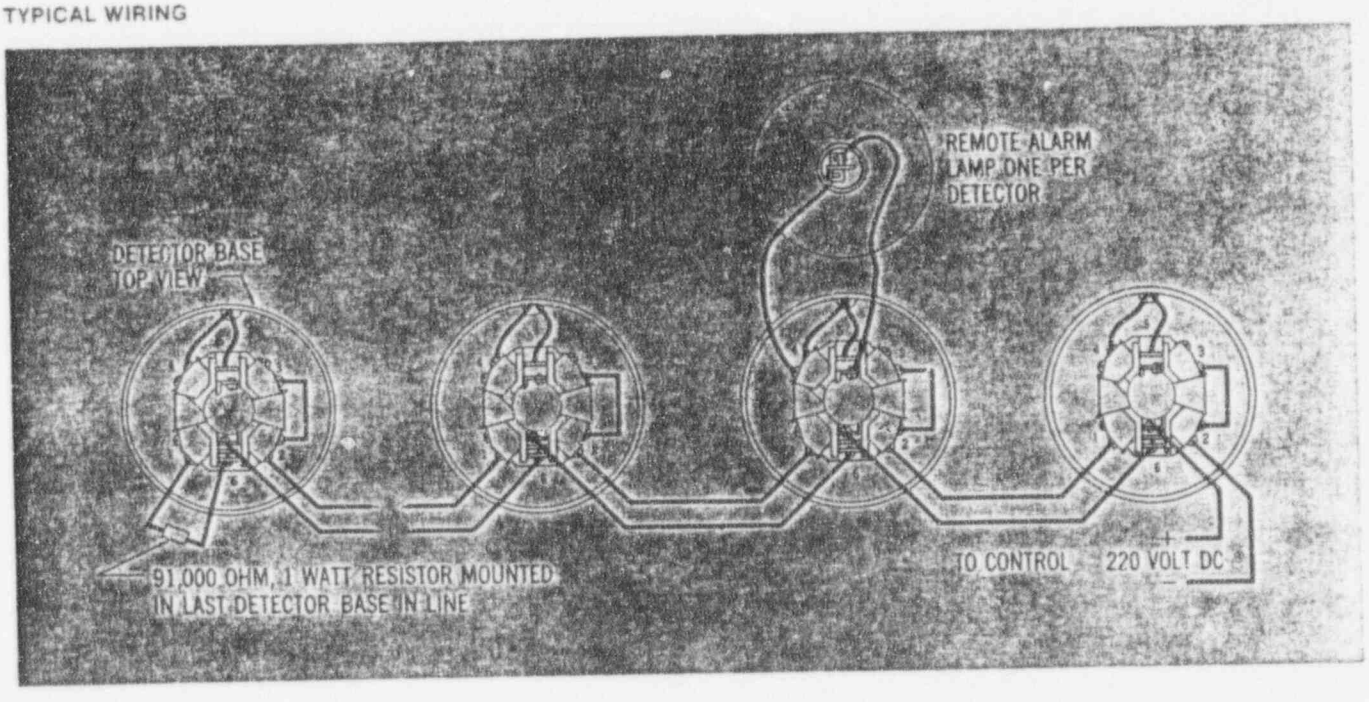
The locking shell shall act as a protective cover which twist-locks into place. A socket-head set screw shall secure shell to base, to prevent removal of detector head without prior loosening of the screw. All components shall be rust and currosion resistant, and vibration shall have no appreciable effect on detector operation.

Each detector, or group of detectors, shall require a 2-wire circuit of #18 AWG, 600 Volt thermoplastic fixture wire, enclosed in conduit, or #18 AWG limited-energy shielded cable, without conduit if permitted by local building codes.

ORDERING INFORMATION

Model No.	Description	Shipping Weight
DIS-5B4	Ionization Detector with DB-2W Base	1 lb. (.45 kg.)

TYPICAL WIRING



Printed in U.S.A.

01 | 575-120889

D C B A

1.150 DIA.

DI-4 SERIES
NRC 313 1
5/22/81

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES ARE:
2 PLACE DEC. ± .01
3 PLACE DEC. ± .005
FRACTIONS ± 1/64
ANGLES ± 1°

DRN [illegible] DATE
CHKD [illegible] 10-1-79
APVD [illegible]
MFG [illegible]

Pyrotronics Cedar Knolls New Jersey

NAMEPLATE/ULI 167

DI-4A

(MFG. IN CAN. FOR U.S.)

C | 575-120889 | 10

SCALE 5/1 | SH. 1 OF 1

1

Pyrotronics

Early Warning
Fire Detection and Alarm Systems

Ionization Fire Detector

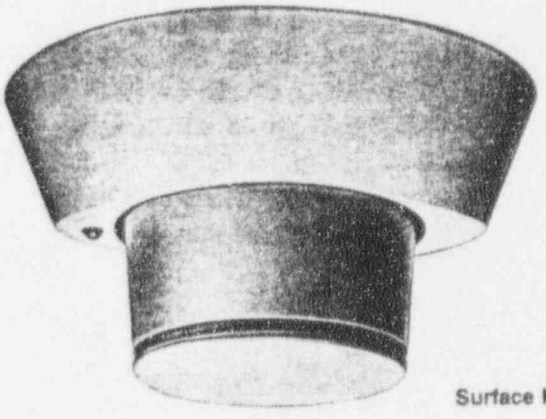
With Adjustable Sensitivity

Model DI-4A

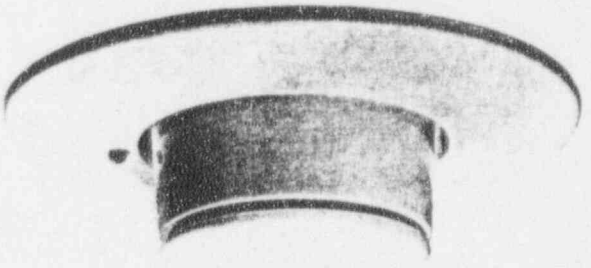
CATALOG NUMBER 6113

Engineer and Architect Specifications

DI-4 SERIES



Surface Mount



Flush Mount

MODEL DI-4A IONIZATION DETECTOR AND BASE ASSEMBLY

Introduction

The Pyr-A-Larm Model DI-4A fire detector with adjustable sensitivity operates on a patented ionization principle. It responds to the first traces of fire in the form of visible smoke or invisible products of combustion. Heat or flame is not required to activate the detector. The Model DI-4A detector has been developed for protection of a wide range of commercial, industrial, institutional, and residential occupancies of all types.

Features

- UL Listed
- Flush or Surface Mounting
- Compact
- Adjustable Sensitivity
- Screw-type Terminals
- Versatile
- New "Free Flow" POC Path
- Rugged
- Alarm Light
- Simple Twist/Lock Assembly
- Solid State Circuitry
- Superior Air Velocity Characteristics

Technical Description

The DI-4A detector is a plug-in, dual chamber ionization detector with adjustable sensitivity and contains two ionization chambers together with a highly sensitive semiconductor amplifier-switching circuit. One chamber detects the presence of combustion products. The second chamber serves as a reference, to stabilize the detector's sensitivity for changes in environmental temperature, humidity, and pressure. The detector assembly locks in upon alarm; therefore it must be reset at the control panel.

The DI-4A can be manually adjusted to three different sensitivity settings: Low, Normal and High. This is easily done by moving the sensitivity indicator, located on the underside of the detector housing, with a small pointed instrument such as a ball point pen. Position 1 is low sensitivity, position 2 is normal sensitivity and position 3 is high sensitivity.

The detector operates from a 20 Vdc source, provided by the Pyr-A-Larm control panel. The detector requires a very small standby current (less than 100 microamperes), which permits the use of a 2-wire detector circuit of #18 AWG wire, reducing system installation costs. In alarm, the detector will draw approximately 70 ma, dc.

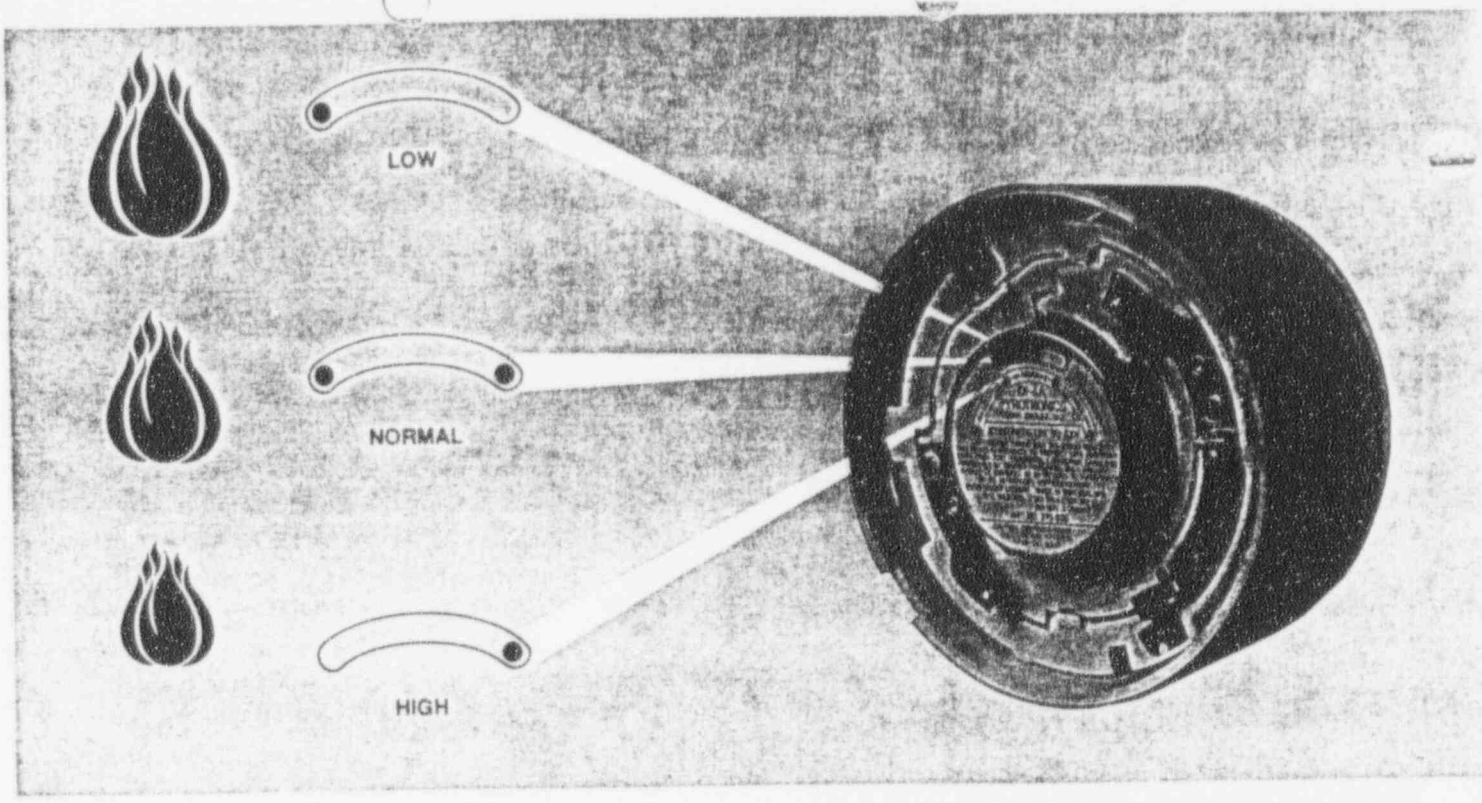
The DI-4A detector is Underwriters Laboratories Inc. listed.

Pyrotronics 16p PROTECTIVE SYSTEMS

NRC 313 1
5/22/81

Pyrotronics
A Division of Baker Industries, Inc.
Cedar Knolls, New Jersey 07927

April 1979
Supersedes Sheet
April 1978



Base assemblies for either flush or surface mounting, all with screw type terminals, are available for use with the DI-4A detector as follows:

DB-4LS — Surface/Base with Integral Alarm Lamp
DB-4TS — Surface/Base with Integral Alarm Lamp and Terminal Connection for Remote Relay or Remote Alarm Lamp
DB-4LF — Flush Base with Integral Alarm Lamp
DB-4TF — Flush Base with Integral Alarm Lamp and Terminal Connection for Remote Relay or Remote Alarm Lamp

A remote indicator lamp may be connected when the detector is concealed from view or a remote relay, Model RR-2, may be connected to the DI-4A where a detector-controlled function is required at or near the detector. (The Model RR-2 relay has one set of double-pole, double throw contacts rated at 120 Vac, 2 amp. resistive).

When the RR-2 is used and the control function is critical, no more than one DI-4A should be installed in a particular circuit or zone, and no other initiating devices should be installed in that same circuit or zone. An exception to this rule would be an application where a number of RR-2 relays were used, each of which was connected to the same critical control function.

The DI-4A detector utilizes either a flush or surface mounting base assembly. Each base may be attached to a standard 4" octagonal electrical box with an adapter (included) when conduit is used, or may be used without box when local building codes permit. Pyrotronics has limited energy, shielded cable available for use where permitted by local codes.

The detector shell and base are fabricated of rugged polycarbonate material, eliminating any corrosion problems. They are off-white in color and attractively styled to be unobtrusive and to match most interiors.

By using a sensitivity tester manufactured especially for this unit, the detector can be easily checked for proper operation.

Application Data

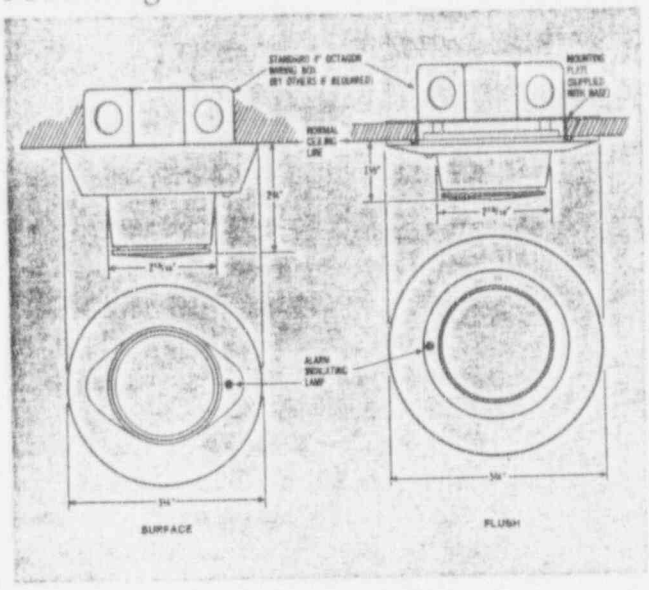
The NFPA Standard No. 72E, "Automatic Fire Detectors", contains information on detector location and spacing considerations and should be referred to for details.

The detector is listed by Underwriters laboratories Inc., and although U.L. give no specific spacing recommendation, the test spacing of 30 ft. (900 sq. ft.) may be used, if practical, but only as a guide or starting point in a detector installation layout. The test fires conducted by U.L. are based on only one set of conditions, namely, a 15 ft. 9 in. high, smooth ceiling, no air movement, and no physical obstructions between the fire source and the detector. It should be realized that these are fairly ideal conditions for a symmetrical detector layout. For condition other than the above, such as in high value equipment protection (computers, etc.) it is mandatory that engineering judgment be applied regarding detector location and spacing.

Architect's Specifications

The fire detector shall be a Pyr-A-Larm Model DI-4A with adjustable sensitivity. It shall operate on the ionization principle, activated by the presence of combustion products, and shall be listed by Underwriters Laboratories Inc. The detector shall be a plug-in, twist/lock unit which may be installed in or removed from its base with one hand or a special installation tool.

Mounting Data



The detector shall contain two ionization chambers, amplifier-switching circuit and solid state indicator lamp. One chamber shall be for fire detection and the second chamber shall function as a reference, to stabilize the detector for changes in environmental temperature, humidity, and pressure. The unit shall contain no operating moving parts. The amplifier-switching circuit in the detector shall be entirely solid-state, and shall operate with a detector line voltage of 20 Vdc.

The unit shall be capable of being manually adjusted for low, normal or high sensitivity. The resulting sensitivity setting shall be visible through an indicator slot located on the underside of the detector housing. No special tools shall be required to change the sensitivity setting.

The base assembly into which the detector is installed shall be of the twist/lock type with screw type terminals, and shall be a Pyr-A-Larm Model DB-4 — (Insert LS, TS, LF or TF). Pigtails or in-line connectors shall not be permitted. The base shall include a lamp to indicate alarm of the detector.

Models TS and TF only — It shall be possible to connect either a remote lamp or a remote relay, Model RR-2, to the base assembly. The relay shall contain a set of DPDT contacts, rated at 120V, 60Hz, 2 amp. resistive, for the control of external devices.

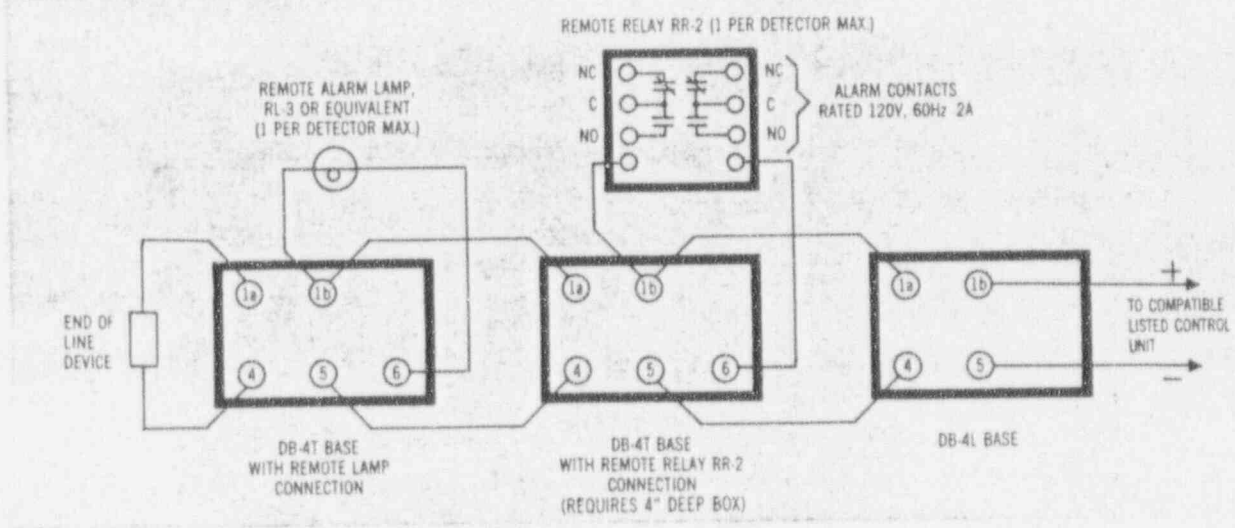
If maintenance is required, the unplugged detector shall be capable of normal handling without causing damage to components, such as field effect transistors.

The detector, or group of detectors, shall require a two-wire circuit of #18 AWG thermoplastic fixture wire enclosed in conduit, or #18 AWG limited energy shielded cable without conduit, if permitted by local building codes.

Ordering Information

Model	Description	Shipping Weight
DI-4A	Detector, Ionization, with Adjustable Sensitivity.	1 lb. (.45kg.)
DB-4LS	Base Assembly with Alarm Lamp, Surface Mtg. (includes adapter for 4" octagonal box.)	1 lb. (.45kg.)
DB-4TS	Base assembly with Alarm Lamp and Terminal for Remote Relay or Lamp, Surface Mtg. (includes adapter for 4" octagonal box.)	1 lb. (.45kg.)
DB-4LF	Base Assembly with Alarm Lamp Flush Mtg. (includes adapter for 4" octagonal box.)	1 lb. (.45kg.)
DB-4TF	Base Assembly with Alarm Lamp and Terminal for Remote Relay or Lamp, Flush Mtg. (includes adapter for 4" octagonal box.)	1 lb. (.45kg.)
RR-2	Remote Relay	1 lb. (.45kg.)
465-514391	Cable, Limited Energy, Shielded (for use where building codes permit detector wiring without conduit), 2-wire.	1 lb. (.45kg.)

Typical Wiring



Pyr-A-Larm®

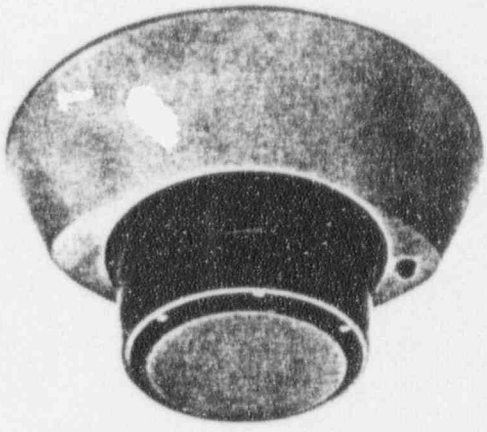
Early Warning Fire Detection and Alarm Systems

Ionization Fire Detector

MODELS DI-7L & DI-7R

Catalog Number 9010

Engineer and Architect Specifications



MODEL DI-7L DETECTOR ASSEMBLY

INTRODUCTION

The Pyr-A-Larm Model DI-7L fire detector operates on a patented ionization principle. It responds to the first traces of fire in the form of visible smoke or invisible products of combustion. Heat or flame is not required to activate the detector. The Model DI-7L detector has been developed for protection of light commercial, institutional, and residential occupancies. It is recommended for use in clean, dry, normal room ambient conditions.

The model DI-7R is identical to the above except that the detector base contains a normally open alarm-operated relay contact to control the operation of external devices.

The detector is a plug-in, dual chamber ionization detector with fixed sensitivity and incorporates a solid state alarm lamp in its mounting base. The detector assembly locks in upon alarm; therefore it must be reset at the control panel.

The DI-7L and DI-7R are Underwriters Laboratories Inc. listed.

APPLICATIONS

Nursing Homes	Homes for the Aged
Hospitals	Banks
Dormitories	Museums
Hotels and Motels	Day Care Centers
Stores	Nurseries
Office Buildings	Libraries
Commercial Establishments	

TECHNICAL DESCRIPTION

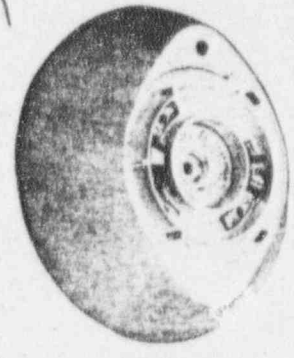
The detector contains two ionization chambers and a highly sensitive semiconductor amplifier-switching circuit. One chamber detects the presence of combustion products. The second chamber serves as a reference, to stabilize the detector's sensitivity for changes in environmental temperature, humidity and pressure.

The detector operates from a 20 Vdc source, provided by the Pyr-A-Larm control panel. The detector requires a very small standby current (less than 100 microamperes), which permits the use of a 2-wire detector circuit of #18 AWG wire, thereby reducing system installation costs. In alarm the detector will draw approximately 70 ma. dc. A remote indicator lamp may be connected when the detector is concealed from view or a remote relay (Model RR-1) may be connected to the DI-7L where a detector controlled function is required at or near the detector. Up to six DI-7L detectors may be so connected.

When the DI-7R is used, and the control function is critical, no more than one DI-7R should be installed in a particular circuit or zone. The contact rating of the relay is 10 VA (200 Vac or .5 amp. max. resistive). When the RR-1 is used, and the control function is critical, no other detectors other than those controlling the RR-1 should be installed in a particular circuit or zone.

The Model DI-7L consists of a surface mounting base assembly and a plug-in type F-7 detector head. Each base may be attached to a standard 4" octagonal electrical box

DETECTOR REMOVED FROM BASE



Detector Base

Detector

Pyrotronics
A Baker Industries Company
8 Ridgedale Avenue, Cedar Knolls, New Jersey 07927

July, 1975
Supersedes Sheet dated 7/74

Pyrotronics 16p PROTECTIVE SYSTEMS

with an adapter strut when conduit is used or may be used without box when local building codes permit. (Pyrotronics has available limited-energy shielded cable, for use where permitted by local codes.)

The detector shell is cast aluminum, while the base is fabricated of rugged poly-carbonate material, thereby eliminating any corrosion problems. The unit is of an off-white color and attractively styled to be unobtrusive and match most interiors.

By using a sensitivity tester manufactured especially for this unit, the detector head can be easily checked for proper operation.

APPLICATION DATA

The detector is listed by Underwriters Laboratories Inc., and although U.L. gives no specific spacing recommendation, the test spacing of 30 ft. (900 sq. ft.) may be used, if practical, but only as a guide or starting point in a detector installation layout. The test fires conducted by U.L. are based on only one set of conditions, namely, a 15 ft. 9 in. high smooth ceiling, no air movement, and no physical obstructions between the fire source and detector. It should be realized that these are fairly ideal conditions for a symmetrical detector layout. For conditions other than the above, it is mandatory that engineering judgment be applied regarding detector location and spacing.

ARCHITECT'S SPECIFICATIONS

The fire detector shall be a Pyr-A-Larm Model DI-7__ (Insert L or R). It shall operate on the ionization principle and shall be activated by the presence of combustion products. The detector shall be listed by Underwriters Laboratories Inc.

The detector shall be a plug-in unit containing two ionization chambers, amplifier-switching circuit and solid state indicator lamp. The unit shall contain no moving parts. One chamber shall be for fire detection and the second chamber shall function as a reference, to stabilize the detector for changes in environmental temperature, humidity and pressure.

The amplifier-switching circuit, in the detector head, shall be entirely solid-state. It shall operate with a detector line voltage of 20 Vdc. The lamp in the detector shall light to indicate the initiation of the alarm. It shall be possible to connect a remote lamp to the detector. The model DI-7L may be connected to a remote relay (model RR-1). The model DI-7R shall contain a normally open detector operated relay contact for the control of external devices.

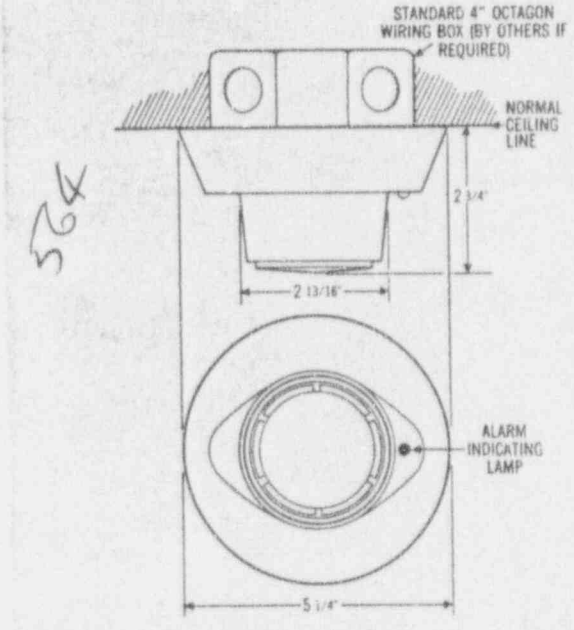
The detector base shall have terminals for making all connections; no soldering or wire nuts shall be required. If maintenance is required, the unplugged detector shall be capable of normal handling without causing damage to components, such as field effect transistors.

The detector, or group of detectors, shall require a two wire circuit of #18 AWG thermoplastic fixture wire enclosed in conduit or #18 AWG limited-energy shielded cable without conduit, if permitted by local building codes.

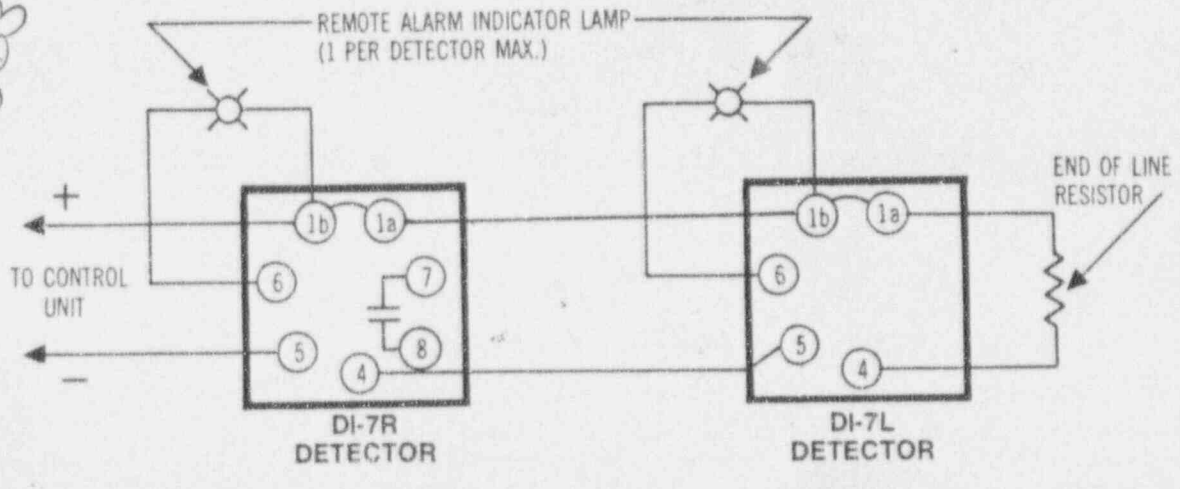
ORDERING INFORMATION

Model	Description	Shipping Weight
DI-7L	Detector, Ionization, Surface Mtg. (includes detector head, base, and adapter strut for 4" octagonal box.)	2 Lbs.
DI-7R	Detector, Ionization, with relay, Surface Mtg. (includes detector head, base, and adapter strut for 4" octagonal box	2 Lbs.
465-514391	Limited—energy type shielded cable (for use where building codes permit detector wiring without conduit), 2-wire.	

MOUNTING DATA



TYPICAL WIRING



(a) Housing (Variants C or E) (Figure 2)

Similar to that of variant A, it has in addition a second connector (70 - P2) making it possible to check, on the aircraft, the sensitivity and to carry out the operating tests by means of the Test Set BTCG 02.

(a) Housing (Variants D, F or G) (Figure 2)

Similar to that of variant B, it has in addition a second connector (70 - P2) identical to that of variant C.

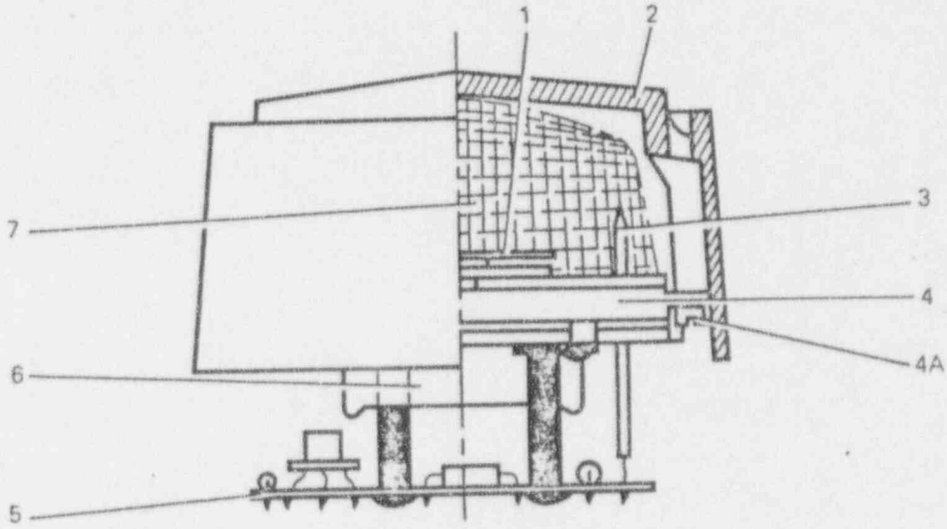
(b) Detection cell (Figure 3)

The detection cell essentially consists of :

- A measuring chamber made up of a cover (2) fitted with a honeycomb permitting the passage of air to the interior of the cell.
- A hermitically sealed reference chamber (6).
- An electronic unit (4), attached by screws (4A).
- An automatic temperature compensation circuit (5) associated with a temperature probe (3) (See NOTE 1), makes it possible to carry out the «TEST». The measuring chamber and the reference chamber each contain a radio active source of approximately 0.8 μc of americium 241 mounted on an electrode (1).
- A protection grid (7) (See NOTE 2).

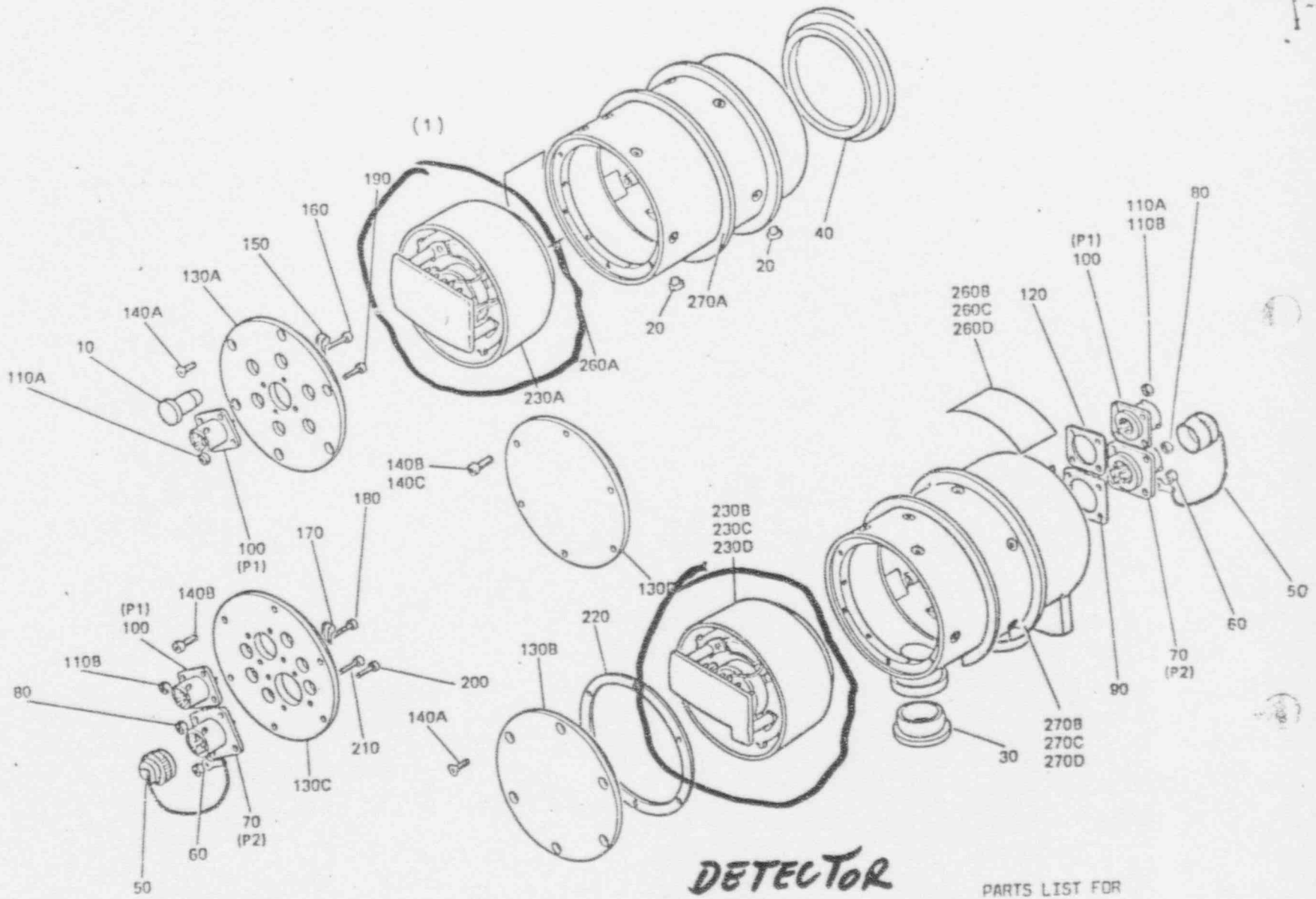
NOTE 1 – For variants E, F and G probe (3) is fitted to board (5)

NOTE 2 – Variant G does not have this grid.



THIS DETECTOR IS IDENTICAL TO PYROTRONICS MODEL DI-7 (SPEC SHEET 9010 ATTACHED) WHICH IS ALREADY LISTED ON OUR N.R.C. LICENSE

Detection cell assembly
Figure 3



DETECTOR CELL SEE FIGURE 3

FIGURE 1

PARTS LIST FOR

(1) CG7PF-10 SMOKE DETECTOR
BOEING PART NO. 204-68901-2

(2) CG7GF-10 SMOKE DETECTOR
BOEING PART NO. 204-68901-3