

# Electronic Heat Detectors

Models THD-7052 and THD-7053

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**K-70-03**

sales@norrscope.com

## FEATURES

- **Approvals/Listing**
  - US and Canadian UL Listed (cULus)
  - FM Approved
  - CSFM Approved
  - NYC MEA Accepted
- **Thermistor based Heat Detection**
- **Nominal Sensitivity**
  - THD-7052: 135°F (57°C) Fixed Temperature with 15°F (8.3°C) per minute Rate-of-Rise
  - THD-7053: 135°F (57°C) Fixed Temperature
- **Wide Range of Input Voltage 10.2 to 36.8 Vdc**
- **Low Current Design**
- **Dual Response LEDs Allow 360-degree Viewing**
- **Trouble Indication**
- **Low Profile Appearance Using Surface Mount Technology**
- **Electrically and Mechanically Compatible with all Fenwal Smoke and Electronic Heat Detectors and Bases**
- **Interchangeable 2-Wire and 4-Wire Bases**
- **Universal Relay Modules**
- **Non Polarized**
- **Locking Feature for Vandal Resistance**
- **EMI and RFI Resistant**

## DESCRIPTION

The Models THD-7052 and THD-7053 are thermistor-based electronic Heat Detectors with a 135°F (57°C) Fixed Temperature set point. In addition, the Model THD-7052 has a Rate-Of-Rise of temperature detection feature rated at 15°F (8.3°C) per minute. Both detectors have advanced solid-state, low-voltage, surface-mount circuitry and are designed for 2-Wire and 4-Wire installation using the appropriate Detector base. The detectors are designed for Open Area Protection (UL 521) and may be installed in systems intended for Releasing Device Service through use of a compatible Fire Alarm Control Panel

Two Red Light Emitting Diodes are located diametrically opposite each other so as to allow 360-degree viewing. Both LEDs continuously indicate the operating condition of the Detector. During standby, the LEDs flash once every six seconds. During alarm, both LEDs light steady at full brilliance. A double flash every six seconds indicates a detector with a thermistor trouble. An optional base is available to provide remote LED function. A unique gated output circuit design provides improved stability and transient suppression. Special signal processing techniques verify the presence of smoke before the detector will alarm.

The detector head is installed into the base with a simple twist-lock action. A locking feature is provided for vandal resistant security. Detector base options are available to provide for auxiliary test, indication and/or control functions.

Optional bases are available for supplementary 2-wire or 4-wire relay functions. The Model THD-705x Heat Detectors may be interchanged with other Fenwal Series



CPD-705X Ionization and Series PSD-715X Photoelectric Smoke Detectors when using multifunction base configuration.

## TECHNICAL SPECIFICATIONS

Table 1 lists the Technical Specifications for Models THD-7052 and THD-7053 Heat Detectors.

## CONTROL UNITS

The Models THD-7052 and THD-7053 Detectors are designed for operation with control units and releasing devices having specific voltage and current characteristics that are compatible with the detector circuitry. The Detectors are compatible with the Kidde AEGIS control unit. The Kidde AEGIS has three detection circuits which can support up to 25 detectors per circuit.

Please refer to Fenwal Document F-70-63 for UL Compatibility Listings with Fire Alarm Panels manufactured by others.

**Table 1: Technical Specification**

<b>Model Number</b>	<b>THD-7052</b>	<b>THD-7053</b>
Part Number	70-520000-001	70-530000-001
Detection	Electronic Heat Detector	Electronic Heat Detector
Approvals	cULus, FM, CSFM, MEA-NYC	cULus, FM, CSFM, MEA-NYC
UL Compatibility I.D.	P56FE1	P56FE1
<b>Listed Spacing</b> UL/ULC Applications:  FM Applications:	70 ft. (21.3 m) centers or 4,900 ft. <sup>2</sup> (455 m <sup>2</sup> )  35 ft. (10.7 m) centers or 1,225 ft. <sup>2</sup> (113.8 m <sup>2</sup> )	70 ft. (21.3 m) centers or 4,900 ft. <sup>2</sup> (455 m <sup>2</sup> )  35 ft. (10.7 m) centers or 1,225 ft. <sup>2</sup> (113.8 m <sup>2</sup> )
Nominal Sensitivity	135°F (57°C) with 15°F (8.3°C) per minute Rate-of-Rise	135°F (57°C)
<b>Standby Voltage (Vdc)</b> Using 2WB: Using 4WRB:	10.2 to 36.8 16.8 to 36.8	10.2 to 36.8 16.8 to 36.8
<b>Maximum Current</b> Standby: Alarm:	70 µA 100 mA	70 µA 100 mA
<b>Response Indicators</b> Quantity: Standby Condition: Thermistor Trouble: Alarm Condition:	2 external LEDs One flash every 6 seconds Double flash every 6 seconds Steady at full brilliance	2 external LEDs One flash every 6 seconds Double flash every 6 seconds Steady at full brilliance
<b>Operating Environment</b> Operating Temperature: Storage Temperature: Relative Humidity: Altitude:	32° to 120°F (0° to 49°C) -20° to 180°F (-29° to 82°C) 0 to 93% Non-condensing Up to 7,500 ft. (2,286 m)	32° to 120°F (0° to 49°C) -20° to 180°F (-29° to 82°C) 0 to 93% Non-condensing Up to 7,500 ft. (2,286 m)
<b>Physical Characteristics</b> Material and Finish:  Weight:	High-impact, flame-retardant plastic, off white  35.3 oz. (110 g) w/o base	High-impact, flame-retardant plastic, off white  35.3 oz. (110 g) w/o base
<b>Dimensions</b> Detector Height: Detector Diameter: Base Height: Base Diameter:	1-3/8 in. (35 mm) 3-29/32 in. (99 mm) 3/64 in. (11 mm) 5-29/32 in. (150 mm)	1-3/8 in. (35 mm) 3-29/32 in. (99 mm) 3/64 in. (11 mm) 5-29/32 in. (150 mm)

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## **DETECTOR BASE OPTIONS**

The Models THD-7052 and THD-7053 can be used with the detector base options and accessories in Table 2. Various base options are available to provide auxiliary relay and/or remote indication and remote test feature.

## **SPACING (OPEN AREA LOCATION)**

For UL/ULC applications, the Model THD-7052 and THD-7053 Detectors are listed to be installed on 70 foot (21.3 m) centers, typically on smooth ceilings up to 15 feet (4.6 m) high and will operate with minimum air circulation. Resultant maximum 4,900 square foot (455.2 m<sup>2</sup>) spacing may be used as a reasonable guide for comparable applications.

For FM applications, the listed spacing is 35 feet (10.7 m) centers. Where special conditions exist (ceiling obstructions, etc.), reduced spacing must be used to achieve adequate protection.

For additional information, consult the Fenwal Automatic Fire Detection Application Engineering Manual MC-402, NFPA-72 and the local Authority Having Jurisdiction.

## **WIRING DIAGRAMS**

For detailed wiring diagrams with Fenwal 2- and 4-wire bases, please refer Fenwal Document 06-235056-001.

## **INSTALLATION**

Detector bases are directly mounted on the electrical junction boxes (3-inch, 3-1/2-inch and 4-inch octagonal, 3-inch round or 4-inch square) (76 mm, 89 mm, 102 mm octagonal, 76 mm round or 102 mm square) without the need for any mechanical adapter required. Refer Fenwal Document 06-235056-001 for additional details.

The detector bases also include a locking feature that prevents removal of the detector without use of a tool.

## **TESTING AND MAINTENANCE**

Testing shall be performed upon installation of the detector and once a year thereafter as stated in NFPA-72 latest edition.

All alarm signal devices, releasing devices, and extinguishing systems should be disengaged before the test is performed and re-engaged at the conclusion of testing. Detectors may be tested using a low power heat gun per instructions detailed in Fenwal Document 06-235056-001. Failure to alarm in this test indicates a detector requiring service.

The recommended requirement for detector maintenance consists of an annual cleaning of dust from the detector head by using the suction of a vacuum cleaner. Cleaning programs should be geared to the individual environment in conformance with NFPA 72.



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**Do not attempt disassembly of the factory sealed smoke detector. This assembly is sealed for your protection and should not be opened for servicing. Opening of the detector will void its warranty.**

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## **SPARE PARTS**

The Models THD-7052 and THD-7053 Detectors are factory repairable only and have no field serviceable spare parts. No field repair should therefore be attempted. For service, return detector head intact to Kidde-Fenwal.

## **ARCHITECT/ENGINEER SPECIFICATIONS**

The contractor shall furnish and install where indicated on the plans, thermistor-based electronic Fixed Temperature with Rate-of-Rise of temperature detection feature Model THD-7052 Heat Detectors. The contractor shall also furnish and install where indicated on the plans, thermistor-based electronic Fixed Temperature Model THD-7053 Heat Detectors. The fixed temperature alarm set point of the THD-7052 and THD-7053 Detectors shall be 135°F (57°C) and the Rate-Of-Rise detection feature of the THD-7052 shall be rated at 15°F (8.3°C) per minute. The combination detector head and twist-lock base shall be UL Listed compatible with a UL Listed fire alarm control unit. The THD-7052 and THD-7053 Heat Detectors shall share interchangeable bases with the PSD-7157 Photoelectric Smoke Detectors and CPD-7054 Ionization Smoke Detectors.

The Models THD-7052 and THD-7053 Heat Detectors shall have two Red LEDs located diametrically opposite each other so as to allow 360-degree viewing. The LEDs shall continuously indicate the operating condition of the Detector. During standby, the LEDs shall flash once every six seconds. During alarm, both LEDs shall light steady at full brilliance. A double flash every six seconds shall indicate a detector with a thermistor trouble. The detector may be reset by actuating the control panel reset switch. The vandal-resistant security locking feature shall be used in those areas as indicated on the drawings. The locking feature shall be field removable when not required.

It shall be possible to perform a functional test of the detector by using an appropriate heat source.

The Models THD-7052 and THD-7053 Heat Detectors shall operate over an input voltage range from 10 to 33.5 Vdc. Voltage and RF transient suppression techniques Supplementary SPDT relays, remote test, and/or remote LED alarm indicators shall be installed where indicated.

**Table 2: Ordering Information**

<b>Part Number</b>	<b>Model</b>	<b>Description</b>
<b>Detector Heads - Ionization Smoke</b>		
70-540000-001	CPD-7054	Ionization <i>Advanced</i> Smoke Detector (cULus)
70-540000-002	CPD-7054D	Ionization <i>Advanced</i> Smoke Detector (cULus)
<b>Detector Heads - Photoelectric Smoke</b>		
71-570000-001	PSD-7157	Photoelectric <i>Advanced</i> Smoke Detector (cULus)
71-570000-002	PSD-7157D	Photoelectric <i>Advanced</i> Smoke Detector (cULus)
<b>Detector Heads - Heat</b>		
70-520000-001	THD-7052	135°F (57°C) Fixed Heat Detector, 15°F (-9°C) Rate of Rise (cULus)
70-530000-001	THD-7053	135°F (57°C) Fixed Heat Detector (cULus)
<b>Detector Bases</b>		
70-501000-001	2-Wire	2-Wire Standard Base. Connects to circuit via screw terminals. (CID = FE51A)
70-501000-002	2WRLT	2-Wire Base w/ Remote LED & Test capabilities. Connects to circuit via screw terminals. Minimum Alarm Current 15 mA @ 24 Vdc. (CID = FE52A)
70-501000-005	2WRB	2-Wire Base w/ 2WRM, Remote LED & Test capabilities. Connects to circuit via pigtail leads. Minimum Alarm Current 19 mA @ 24 Vdc. (CID = FE55A)
70-501000-101	4WRB	4-Wire Base w/ 4WRM, Remote LED & Test capabilities. Connects to circuit via pigtail leads. Minimum Alarm Current 35 mA @ 24 Vdc.
70-500000-004	2WRM	Spare SPDT Relay for 2WRB Bases. Contacts rated 1.0 A, 30 Vdc/0.5 A, 125 Vac.
<b>Detector Accessories</b>		
06-117883-001		Test Magnet
29-116788-001		EOL Supervisory Relay
70-200000-911	RA-911	Remote Alarm Indicator
70-200000-914	RA-914	Remote Alarm Indicator with Smoke Detector Switch
70-500000-003	DST-003	<i>Advanced</i> Handheld Wireless Smoke Detector Sensitivity Tester
70-501000-003	MA-001	Mechanical Retrofit Adapter. Allows CPD-705X and PSD-715X Detectors to physically connect to Base P/Ns 70-201000-001, -002, -003, -005 & DH-22. (CID = MAFE1)