

# ADT-HRSI Intelligent Heat Detector

### SPECIFICATION DATA



## FEATURES

- 70ft (21.3 meter) spacing
- 9°C (15°F) per minute rate-of-rise and 57°C (135°F) fixed temperature alarm threshold
- Intelligent detector with integral microprocessor
- Non-volatile memory
- Automatic device mapping
- Electronic addressing
- Identification of defective detectors
- Twin status LEDs
- Standard, relay, and fault isolator mounting bases
- Designed and manufactured to ISO 9001 standards

## DESCRIPTION

Honeywell's Signature Series Model ADT-HRSI Intelligent Heat Detectors gather analog information from their fixed temperature and/or rate-of-rise heat sensing elements and converts it into digital signals. The detector's on-board microprocessor measures and analyzes these signals. It compares the information to historical readings and time patterns to make an alarm decision. Digital filters remove signal patterns that are not typical of fires. Unwanted alarms are nearly eliminated.

The microprocessor in each detector provides four additional benefits; self-diagnostics and history log, automatic device mapping, stand-alone operation and fast, stable communication.

### Self-diagnostics and History Log:

Each Signature Series detector constantly runs self-checks to provide important maintenance information. The results of the self-check are automatically updated and permanently stored in the detector's non-volatile memory. This information is accessible for review any time at the control panel, PC, or by using the SIGA-PRO Signature Program/Service Tool. The information stored in the detector's memory includes:

- Detector serial number, address, and type
- Date of manufacture, hours of operation, and last maintenance date
- Current detector sensitivity values and the extent of environmental compensation

- Original detector sensitivity values upon manufacturing
- Number of recorded alarms and troubles
- Time and date of last alarm
- Analog signal patterns just before the last alarm
- Up to 32 possible trouble codes which may be used to diagnose faults.

In the unlikely event that an unwanted alarm does take place, the history file can be called up to help isolate the problem and prevent it from happening again.

### Automatic Device Mapping:

The loop controller learns where each device's serial number address is installed relative to other devices on the circuit. This "mapping" feature provides supervision of each device's installed location to prevent a detector from being reinstalled (after cleaning etc.) in a different location from where it was originally. The history log for the detector at its original location remains relevant and intact.

The Signature Series Data Entry Program also uses the mapping feature. With interactive menus and graphic support, the wired circuits between each device can be examined. Layout or "as-built" drawing information showing wire branches (T-taps), device types and their address are stored on disk for printing hard copy. This takes the "mystery" out of the installation. The preparation of "as-built" drawings is fast and efficient.

Device mapping allows the Signature loop controller to discover:

- Unexpected additional device addresses
- Missing device addresses
- Changes to the wiring in the circuit.

## Stand-alone Operation:

A decentralized alarm decision by the detector is guaranteed. On-board intelligence permits the detector to operate in stand-alone mode. If loop controller CPU communications fail for more than 4 seconds, all devices on that circuit go into stand-alone mode. The circuit acts like a conventional alarm receiving circuit. Each detector on the circuit continues to collect and analyze information from its surroundings. The ADT-HRSI detectors alarm if the ambient temperature increases 57°C (135°F) or if the temperature increases at a rate exceeding 9°C (15°F) per minute. If the detector is mounted to a relay base, the relay operates.

## Fast Stable Communication:

On-board intelligence means less information needs to be sent between the detector and the loop controller. Other than regular supervisory polling response, the detector only needs to communicate with the loop controller when it has something new to report. This provides very fast control panel response time and allows a lower baud rate (speed) to be used for communication on the circuit.

The lower baud rate offers several advantages including:

- Less sensitivity to circuit wire characteristics
- Less sensitivity to noise glitches on the cable
- Less emitted noise from the analog wiring
- Twisted or shielded wiring is not required.

## Installation Spacing:

The ADT-HRSI detector is rated for installation at up to 70ft (21.3m) spacing. These detectors may be installed in rooms with an ambient temperature of up to 100°F (38°C).

## Status LEDs:

Twin LEDs are visible from any direction. A flashing GREEN LED shows normal system polling from the loop controller. A flashing RED LED means the detector is in alarm state. Both LEDs on steady shows alarm state - stand- alone mode.

Normal green LED activity is not distracting to building occupants, but can be quickly spotted by a maintenance technician.

## Quality and Reliability:

Honeywell detectors are manufactured to strict international ISO 9001 standards. All electronics utilize surface mount technology (SMT) for smaller size and greater immunity to RF noise. A conformal coating is used for humidity and corrosion resistance. All critical contacts are gold plated.

## Electronic Addressing:

The loop controller electronically addresses each detector, saving valuable time during system commissioning. Setting complicated switches or dials is not required. Each detector has its own unique serial number stored in its "on-board memory". The loop controller identifies each device on the circuit and assigns a "soft" address to that device's serial number. If desired, detectors can be addressed using the SIGA-PRO Signature Program/ Service Tool.

## Installation:

Signature series detectors mount to North American 1-gang boxes, 3-1/2 in or 4 in octagonal boxes and to 4 in square electrical boxes 1-1/2 in (38 mm) deep. They also mount to European BESA and 1-gang boxes with 60.3 mm fixing centers.

Honeywell recommends that this detector be installed according to local fire alarm codes.

### NOTE:

- This detector will not operate without electrical power. As fires frequently cause power interruption, we suggest you discuss further safeguards with your fire protection specialist.
- This detector will NOT sense fires that start in areas where heat cannot reach the detector. Heat from fires in walls, roofs, or on the opposite side of closed doors may not reach the detector to alarm it.
- The heat sensor in this device only provides a source of information to supplement the information provided by the ionization and photoelectric smoke sensors. The heat sensor by itself does NOT provide life safety protection. Under no circumstances should heat detectors be relied upon as the sole means of fire protection.

## Testing and Maintenance:

Each detector automatically identifies when it is defective and the user friendly maintenance program shows the current state of each detector and other pertinent messages. Single detectors may be turned off temporarily, from the control panel. Availability of maintenance features is dependent on the fire alarm system used.

Scheduled maintenance should be planned to meet local codes.

**Accessories:**

All detector mounting bases have wiring terminals that are accessible from the "room-side" after mounting the base to the electrical box. The bases mount to North American 1-gang boxes and to 3-1/2 in or 4 in octagon boxes, 1-1/2 in (38 mm) deep. They also mount to European BESA and 1-gang boxes with 60.3 mm fixing centers.

Removing a detector from its base (except isolator base) does not affect other devices operating on the same circuit.

**Standard Base SIGA-SB:**

This is the basic mounting base for Honeywell Signature Series detectors. The SIGA-LED Remote LED is supported by the Standard Base.

**Relay Base ADT-RB:**

This base includes a relay. Normally open or closed operation is selected during installation. The dry contact is rated for 1 amp (pilot duty) at 30 Vdc. The relay's position is supervised to avoid accidentally jarring it out of position. The relay base does not support the SIGA-LED Remote LED. The relay is controlled by the detector and operates as follows: at system power-up or reset, the relay is de-energized.

When a detector is installed in the base with the power on, the relay energizes for 4 seconds, then de-energizes. when a detector is removed from a base with the power on, the relay is de-energized. When the detector enters the alarm state, the relay is energized.

**Isolator Base ADT-IB, ADT-IBS:**

This base includes a built-in line fault isolator. A detector must be installed for it to operate. The integral isolator relay is controlled by the detector or the loop controller. A maximum of 96 isolator bases can be installed on one circuit. The isolator base does not support the SIGA-LED Remote LED.

The isolator operates as follows: a short on the line causes all isolators to open within 23 msec. at 10 msec intervals, beginning nearest the loop controller, the isolators close to provide the next isolator down the line with power. When the isolator next to the short closes, it reopens within 10 msec. In Class A operation, the process repeats beginning on the other side of the loop controller.

**Remote LED SIGA-LED:**

The remote LED connects to the SIGA-SB Standard Base only. It features a North American size 1-gang plastic faceplate with a white finish and red alarm LED.

**SIGA-TS Trim Skirt:**

Supplied with 4 in bases, it can also be ordered separately to use with the other bases to help hide surface imperfections not covered by the smaller bases.

**Application:**

Table 1 below shows six standard test fires used to rate the sensitivity of smoke and heat detectors. The table indicates that no single sensing element is suited for all test fires.

**Table 1. Test Fires.**

Test Fire	Type of Sensor				
	ADT-ISI Ion	ADT-PSI Photo	ADT-HRSI Rate-of Rise/ Fixed Temp.	ADT-PHSI Photo/ Heat 3D	ADT-IPHSI Ion/ Photo/ Heat 4D
Open Wood	Optimum	Unsuitable	Optimum	Very Suitable	Optimum
Wood Pyrolysis	Suitable	Optimum	Unsuitable	Optimum	Optimum
Smoldering Cotton	Very Suitable	Optimum	Unsuitable	Optimum	Optimum
Polyurethane Foam	Very Suitable	Very Suitable	Suitable	Very Suitable	Optimum
n-Heptane	Optimum	Very Suitable	Very Suitable	Optimum	Optimum
Liquid Fire without Smoke	Unsuitable	Unsuitable	Optimum	Very Suitable	Very Suitable

## SPECIFICATIONS

### Heat Sensor:

Combination fixed temperature and rate of rise, alarms at 57°C (135°F) ambient or temp. increases greater than 9°C (15°F) per min.

### Detector Spacing:

70ft (21.3m) center to center

### Environmental Limits:

Temperature: 32° to 100°F (0° to 38°C)  
Humidity: 0 to 93% rh, non-condensing

### Voltage:

15.2 to 19.95 Vdc (19 Vdc nominal)

### Operating Current:

Stand-by: 45µA at 19V  
Alarm: 45µA at 19V  
Emergency stand-alone alarm mode: 18mA  
Pulse current: 100µA (100 msec)  
During communication: 9 mA max.

### Construction:

High impact engineering polymer

### Finish:

White

### Compatible Mounting Bases:

SIGA-SB standard base  
ADT-RB relay base  
ADT-IB and ADT-IBS isolator base

### LED Operation:

On-board green LED: Flashes when polled  
On-board red LED: Flashes when in alarm  
Both LEDs: On steady when in alarm (stand-alone)

### Compatible remote red LED:

Flashes when in alarm

### Compatibility:

Signature loop controller

### Address Requirements:

1 device address

### Accessories:

SIGA-SB: Detector mounting base  
ADT-RB: Detector mounting base with relay  
ADT-IB: Detector mounting base with fault isolator  
ADT-IBS: Same as above, with loop continuity switch  
SIGA-LED: Remote alarm LED  
SIGA-TS: Trim skirt (supplied with 4in bases)

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