

UL/ULC Listed

#### Features

#### Heat detectors

UL listed to Standard 521 7<sup>th</sup> Edition

ULC Listed to ULC-S530-M91

5" Base and 6" Adaptor Listed to Standard

ANSI/UL 268

CAN/ULC-S530-M91

- Superior performance and reliability
- Attractive new design
- Designed for fast and easy installation
- Unique 'park' position for commissioning and service procedures
- Interfaces seamlessly with a wide range of panels
- Compatible with Tyco 600 Series for easy upgrade
- Low operating current, up to 32 detectors per zone
- Optional remote alarm indicating LED
- Low profile, discrete and unobtrusive
- Designed for EMI compatibility

#### Models available are

- 601H-RF-UL rate-of-rise plus fixed temperature 135°F. UL and ULC spacing distance is 70ft (21.3 m).
- 601H-F-UL fixed temperature 135°F. UL and ULC spacing distance is 60 ft (18.3 m).
- 631H-F-UL fixed temperature 200°F. UL and ULC spacing distance is 60 ft (18.3 m).

#### Description

Heat detectors fall into two main categories: Those that go into alarm once a certain sensor temperature has been reached (fixed) and those that go into alarm if the rate of temperature increase is above a certain level (rate-of-rise).

Usually the design of heat detectors uses a combination of rate of rise and fixed temperature sensing elements. This allows fire detection from low temperatures, where rate of rise sensing would give an earlier alarm than a fixed temperature, but the fixed element provides a backstop for fires where the temperature builds up gradually.

Heat detection is not as fast as smoke detection in most fires as early stages of a fire tend to burn less hot than the later stages. However, hostile environments where aerosols, dust, smoke or even extremes of temperature are normally present, preclude the use of smoke detectors as a fire indicator. In these cases a heat detector may provide an acceptable, though less sensitive alternative. Heat detection is also often used where the risk of fires or the consequences of fire are considered low, as heat detection is generally cheaper than smoke detection.

#### Specifications

Voltage	10.5 to 33 VDC from Fire Alarm Control Panel IDC
Standby Current	
601H-F-UL	100µA @ 24VDC
601H-RF-UL	90µA @ 24VDC
631H-F-UL	95µA @ 24VDC
Alarm Current	Up to 68mA maximum, exact current is determined by alarm current limiting of connected IDC
Storage Temp. Range	-13°F to 176°F (-25°C to 80°C)
Operating Temp. Range	+32°F to +100°F (0°C to 37.8°C)
Humidity Range	Up to 95% non-condensing
Color	White 019
Dimensions	5" Dia. x 2-1/8" H, mounted in base (125.4mm x 55mm). 6" Dia x 2-3/5" H when mounted in base with base adapter (152mm x 65.8mm)



601H-F-UL Heat Detector Mounted in 5B-UL Base and 6A-5B-UL Base Adapter

#### Series 600 Detector Features

##### Rate-of-Rise

Two negative temperature coefficient thermistors, Rsens and Rref are used in a bridge configuration. One thermistor, Rsens, is exposed to the air whilst the other, Rref, is thermally lagged inside the detector body. If the temperature of the air around the detector rises quickly, a temperature difference will be established between Rsens and Rref. The values of the bridge components are chosen such that, if a particular rate of change of temperature is sustained for sufficient time, the comparator will change state and the detector will signal an alarm condition.

If the rate of temperature increase is very slow, then the temperatures of the sensing and reference thermistors will be more nearly equal. Under these conditions the bridge components ensure that the comparator changes state when the predetermined fixed temperature is reached.

The Rate-of-Rise detector has a rate sensitivity and fixed (static) temperature setting to suit a particular type of application.

##### Fixed Temperature

The Fixed Temperature detector is similar to the rate-of-rise detector except that the reference thermistor is replaced by a fixed resistor. The detector, therefore, responds more slowly to Rate-of-Rise of temperature. The bridge components are chosen instead to cause a comparator to change state when the sensing thermistor reaches a predetermined temperature irrespective of the rate of change.

## Application Reference

Heat detectors are used where property protection is desired and where life safety protection is not required or is performed by other equipment. Typical heat detector applications are satisfied by the use of fixed temperature detectors.

The addition of rate-of-rise operation provides two forms of heat detection for use where temperature fluctuations are controlled and are less than 6°F/min (3.33°C/min). Where temperature may fluctuate more quickly, use fixed temperature detectors.

## Fixed Temperature Guidelines

**135°F (57°C)** fixed temperature detectors are for normal temperatures that do not exceed 100°F (38°C).

**200°F (93°C)** fixed temperature detectors are for normal temperatures that exceed 100°F (38°C) but are less than 150°F (66°C).

### WARNING:

**In most fires, hazardous levels of smoke and toxic gas can build up before a heat detection device would initiate an alarm. In cases where Life Safety is a factor, the use of a smoke detector is highly recommended.**

## Product Selection

### Smoke Detectors

Model	Description	Compatibility
601H-RF-UL	Heat Detector Fixed 135° F + Rate-of-Rise	Compatible with 5B-UL 5" base
601H-F-UL	Heat Detector Fixed 135° F	
631H-F-UL	Heat Detector Fixed 200° F	

### Compatible Bases

Model	Description	Details
5B-UL	2-Wire Base with connections for Remote Alarm LED Indicator	IDC and LED connections are screw terminals for input/output wiring. 18 to 14 AWG (1mm <sup>2</sup> to 1.5mm <sup>2</sup> )

### Detector Accessories

Model	Description	Details
6A-5B-UL	6" Base Adaptor	Increases the 5B surface area
CW-5B	Detector Protective Cage	Robust protective cage for Series 600 detectors using the 5B base
SA600	Line shorting adaptor	Commissioning tool, shorts out base contacts to enable cable resistance checks to be carried out

### Detector Status LED Indications

LED Indication	Status
Pulses approximately every 10 seconds	Normal
Steady On	Alarm



CW-5B Detector Cage

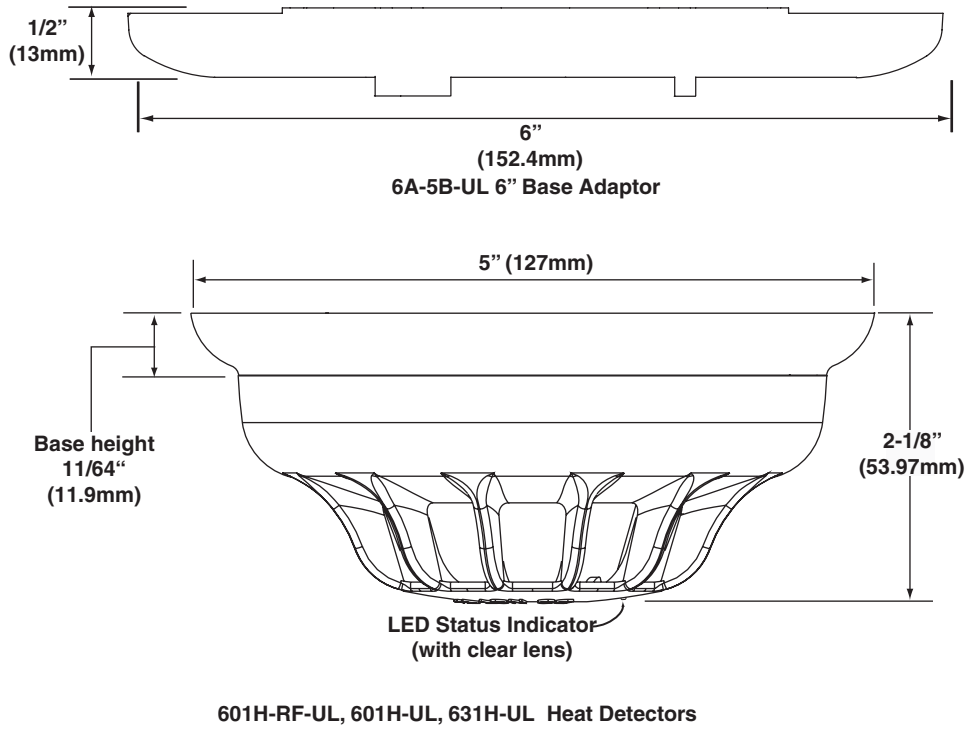
## Application Reference

The following table provides a reference for the maximum rectangular area covered for detectors rated with the given spacing. For additional information, including consideration of ceiling height, refer to NFPA 72, The National Fire Alarm Code.

**Maximum Rectangular Area For Single Detector Coverage**

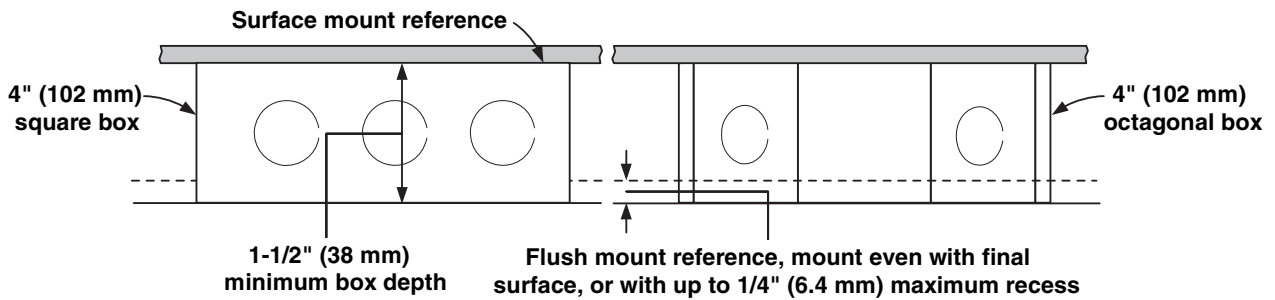
<b>15 ft Rated Spacing (4.5 m)</b>	<b>30 ft Rated Spacing (9.1 m)</b>	<b>60 ft Rated Spacing (18.3 m)</b>	<b>70 ft Rated Spacing (21.3 m)</b>
15 ft x 15 ft (4.5 m x 4.5 m)	30 ft x 30 ft (9.1 m x 9.1 m)	60 ft x 60 ft (18.3 m x 18.3 m)	70 ft x 70 ft (21.3 m x 21.3 m)
10 ft x 18.7 ft (3 m x 5.7 m)	25 ft x 34.2 ft (7.6 m x 10.4 m)	55 ft x 64.6 ft (16.7 m x 19.7 m)	65 ft x 74.6 ft (19.8 m x 22.7 m)
5 ft x 20.6 ft (1.5 m x 6.2 m)	20 ft x 37.4 ft (6.1 m x 11.4m)	50 ft x 68.5 ft (15.2 m x 20.8 m)	60 ft x 78.2 ft (18.3 m x 24 m)
1 ft x 21,19 ft (0.3 m x 6.4 m)	15 ft x 39.7 ft (4.5 m x 21.9 m)	45 ft x 72 ft (13.7 m x 21.9 m)	55 ft x 82.3 ft (16.7 m x 25 m)
	10 ft x 41.2 ft (3.5 m x 12.5 m)	40 ft x 74.8 ft (12.2 m x 22.8 m)	50 ft x 85.4 ft (15.2 m x 26 m)
	5 ft x 42.1 ft (1.5 m x 12.8 m)	35 ft x 77.3 ft (10.6 m x 23.5 m)	45 ft x 88.1 ft (13.7 m x 26.8 m)
	1 ft x 42.4 ft (0.3 m x 12.9 m)	30 ft x 79.3 ft (9.1 m x 24.1 m)	40 ft x 90.5 ft (12.2 m x 27.5 m)
		25 ft x 81 ft (7.6 m x 24.7 m)	35 ft x 92.6 ft (10.6 m x 28.2 m)
		20 ft x 82.4 ft (6.1 m x 25.1 m)	30 ft x 94.3 ft (9.1 m x 28.7 m)
		15 ft x 83.5 ft (4.5 m x 25.4 m)	25 ft x 95.7 ft (7.6 m x 29.1 m)
		10 ft x 84.2 ft (3.05 m x 25.6 m)	20 ft x 96,9 ft (6.1 m x 29.5 m)
		5 ft x 84.7 ft (1.5 m x 25.8 m)	15 ft x 97.8 ft (4.5 m x 29.8 m)
		1 ft x 84.85 ft (0.3 m x 25.8 m)	10 ft x 98.4 ft (3.05 m x 30 m)
			5 ft x 98.9 ft (1.5 m x 30.1 m)
			1 ft x 99 ft (0.3 m x 30.2 m)

## Dimensions and Reference Information



## Mounting Information

**Electrical Box Requirements:**  
 4" octagonal or 4" square, 1-1/2" deep  
 Single gang, 2" deep



**6A-5B-UL Adapter Plate, required for mounting to surface mounted boxes and to 4" square flush mount boxes**



ENVIRONMENT	A		B		C		D		E	
	VERY CLEAN AND DRY	BENIGN MODERATELY CLEAN REGULATED TEMPERATURE	DIRTY - SMOKY	DUSTY AND/OR HUMID	UNREGULATED TEMPERATURE					
<b>FOR EXAMPLE</b>	CLEAN ROOM DATA PROCESSING SUITE	OFFICES, LIGHT INDUSTRIAL, HOSPITALS, RESIDENTIAL, PASSENGER ACCOMMODATION	LOADING BAY/ WAREHOUSE WITH DIESEL FORK-LIFTS etc. HEAVY INDUSTRIAL FERRY (CAR DECK)	LIVESTOCK PEN MILL, LAUNDRY, CHANGING ROOM	KITCHEN, ENGINE ROOM, ENGINE TEST BEDS					
<b>FIRE LOADING</b>	<b>PROBABLE RISK</b>									
1	ELECTRONIC EQUIPMENT ELECTRICAL SWITCHGEAR ELECTRIC MOTORS CABLE CONDUIT	CABLE PYROLOSIS (TOXIC FUMES) ELECTRICAL ARCS (IGNITION SOURCE) ASSOCIATED ELECTRICAL DANGERS	601P-UL 601PH-UL 601I-UL	601P-UL 601PH-UL 601I-UL	601P-UL 601PH-UL 601I-UL	601P-UL 601PH-UL 601I-UL	601P-UL 601PH-UL 601I-UL	601P-UL 601PH-UL 601I-UL	601P-UL 601PH-UL 601I-UL	601P-UL 601PH-UL 601I-UL
2	FABRICS, CLOTHES SOFT FURNISHINGS PAPER, CARDBOARD PLASTIC FOAMS ANIMAL BEDDING WOOD SHAVINGS etc.	SMOULDERING (DIFFICULT TO LOCATE - TOXIC FUMES) LIKELIHOOD OF FLASHOVER (BACK-DRAUGHT)			601PH-UL 601P-UL	601PH-UL 601P-UL	601PH-UL 601P-UL	601PH-UL 601P-UL	601PH-UL 601P-UL	601PH-UL 601P-UL
3	FLAMMABLE LIQUIDS PAINTS, SOLVENTS FLAMMABLE GASSES UNSTABLE CHEMICALS	FLAMING FIRE (RAPID BUILD-UP OF DENSE SMOKE) HIGH TEMPERATURE FUMES ASSOCIATED EXPLOSION DANGERS	601I-UL 601PH-UL 601P-UL		601I-UL 601PH-UL 601P-UL	601H-RF-UL 601I-UL	601H-RF-UL 601I-UL	601H-RF-UL 601I-UL	601H-RF-UL 601I-UL	601H-RF-UL 601I-UL
4	FOODSTUFFS GENERAL ORGANIC WASTE ANIMAL FODDER WOODEN STRUCTURES SOLID FUELS	SMOKE AND FLAME INITIALLY FAIRLY SLOW BUT HIGH TEMPERATURES ONCE ESTABLISHED			601PH-UL 601P-UL 601I-UL	601PH-UL 601P-UL 601I-UL	601PH-UL 601P-UL 601I-UL	601PH-UL 601P-UL 601I-UL	601PH-UL 601P-UL 601I-UL	601H-F-UL 631H-F-UL
5	PLASTIC, CHEMICALS MACHINERY BUILDING MATERIALS UNKNOWN CONTENTS	TYPE OF FIRE RISK MAY VARY AS CAN THE TYPE OF FIRE (MAY REQUIRE A MIX OF DETECTION TYPES)	601PH-UL 601P-UL 601I-UL		601PH-UL 601I-UL 601H-RF-UL	601PH-UL 601I-UL 601H-RF-UL	601PH-UL 601I-UL 601H-RF-UL	601PH-UL 601I-UL 601H-RF-UL	601PH-UL 601I-UL 601H-RF-UL	601H-F-UL 631H-F-UL

**Table 1 Application of Series 600 Sensors**

The table is for guidelines only, specific situations are likely to require variations on the suggested detector types. Real situations may require detector combinations to cover all likely risks.

