

# PERTRONIC INDUSTRIES LTD

## DATASHEET

### Intelligent Addressable PTIR Multi-Criteria Detector

2351PTIRAUS-W



## Overview

The 2351PTIRAUS PTIR multi-criteria detector is a combination heat and smoke detector, with supplementary infra-red (IR) sensor, for Pertronic intelligent addressable fire alarm systems.

This detector features a smoke sensing chamber designed to detect smoke and diminish stray internal reflections that can cause nuisance alarms. These features were developed to satisfy stringent nuisance alarm immunity tests defined in the US smoke detector standard, UL 268 edition 7.

A photoelectric sensor measures the smoke density in the sensing chamber. Temperature in the detector's surroundings is measured by two thermal sensors, one on each side of the detector. In addition, an IR sensor measures the level of infra-red light in the IR sensor's line of sight.

Capable of responding rapidly to fast-flaming fires, the PTIR is designed to reduce nuisance alarms.

The PTIR becomes more sensitive to smoke if the infra-red sensor detects flickering, typical of flames. In addition, smoke sensitivity increases if the thermal sensors detect a temperature increase that is not enough to trigger a thermal alarm.

A thermal alarm signal is reported to the fire panel if either thermal sensor exceeds 57 °C. This thermal alarm is independent of the photoelectric and IR sensors.

A suitably configured fire panel will display the location of any detector which has triggered an alarm, fault, or maintenance signal.



*Intelligent Addressable  
Plug-In Multi-Criteria Detector  
2351PTIRAUS-W  
with B501AUS-W base*

## Features

- » Intelligent addressable (IA) communication with fire panel
- » Automatic drift compensation
- » Stable communication with excellent noise immunity
- » Fire panel may be configured with separate alarm, fault, and maintenance thresholds for each individual detector
- » Rotary address switches for setting the address on the intelligent addressable loop
- » Fire panel identifies active detectors by lighting up two red LEDs on the detector housing
- » LEDs briefly light up ("blink") when the detector is polled
- » LED blink may be disabled via the fire panel configuration
- » Dual LEDs for visibility from all normal viewing angles
- » Optional remote LED indicator available (note 1, page 2)
- » Magnet test function activates detector and bypasses inbuilt delays to facilitate testing
- » Compatible with B501AUS, B501AP, and other System Sensor intelligent addressable bases
- » Compatible bases provide an optional anti-tamper feature
- » SAI Global StandardsMark listed to AS 7240.5 and AS 7240.7, certificate SMHK25312
- » FPA NZ Listing PI/372

## Operation

| Sensor         |         |           | PTIR Internal Software Assessment                                                                                                                                 | Detector Response   |
|----------------|---------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| Photo-Electric | Thermal | Infra-Red |                                                                                                                                                                   |                     |
| ✗              | ✗       | ✓         | Flickering or steady infra-red, without a smoke signal from the photoelectric sensor, will not trigger an alarm.                                                  | None                |
| ✓              | ✗       | ✗         | A quick or brief puff of smoke (including steam or cooking smoke) is rejected as a nuisance pattern.                                                              | None                |
| ✓              | ✗       | ✗         | A steady increase in smoke density is seen as a smouldering fire                                                                                                  | Smoke Alarm         |
| ✓              | ✓       | ✗         | A temperature increase, insufficient to trigger a thermal alarm, will increase detector sensitivity to smoke.                                                     | Faster Smoke Alarm  |
| ✓              | ✓       | ✓         | A temperature increase, insufficient to trigger a thermal alarm, together with flickering infra-red, increase smoke sensitivity and trigger the fastest response. | Fastest Smoke Alarm |
| ✗              | ✓       | ✗         | A significant temperature rise such that the detector's surroundings exceed the fixed temperature alarm threshold will trigger a thermal alarm.                   | Thermal Alarm       |

✓ Thermal sensor records a temperature increase, insufficient to exceed the thermal alarm threshold.

## Specification

|                         |                                                       |
|-------------------------|-------------------------------------------------------|
| Operating Voltage       | 15 to 32 V dc                                         |
| Average Standby Current | 150 $\mu$ A (note 2)                                  |
| Maximum Alarm Current   | 2 mA (LEDs on)                                        |
| Remote Output Voltage   | 22.5 V dc, no load (minimum)                          |
| Remote Output Current   | 10.5 mA (note 3)                                      |
| Smoke Alarm Threshold   | 3.2 %/m to 12.5 %/m, configurable in fire panel       |
| Thermal Alarm Threshold | 57 °C                                                 |
| Address                 | Pertronic F220, 120A                                  |
| Range                   | Pertronic F100A                                       |
| Diameter                | 103 mm (in B501AUS base)                              |
| Height                  | 57 mm (in B501AUS base)<br>64 mm (in B524IEFT-1 base) |
| Weight                  | 105 g                                                 |
| Air Velocity, in Duct   | up to 1.5 m/s                                         |
| Operating Temperature   | -10 °C to 50 °C                                       |
| Humidity                | 10% to 93% RH non-condensing                          |

## Ordering Information

| Product Code  | Description                                                            |
|---------------|------------------------------------------------------------------------|
| 2351PTIRAUS-W | Intelligent Addressable PTIR Multi-Criteria Detector, White, excl Base |
| B501AUS-W     | Intelligent Addressable Base, White                                    |

## Notes

1. Please refer to the [Remote Indicators RMIND \(AU\)](#) or [Remote LED Indicator DETREM \(NZ\)](#) datasheets for details of Pertronic remote LED indicators.
2. Average standby (quiescent) current = 150  $\mu$ A with LED blink enabled and one poll every 5 seconds.
3. Remote output current is specified with terminal 3 shorted to terminal 1
4. Smoke sensitivity specifications allow comparison between various detector types from the System Sensor product range. However, please note that actual detector performance may vary.
5. The 2351PTIRAUS is the recommended replacement for the System Sensor 2251TMBPI "Acclimate™" detector.
6. The 2351PTIRAUS will not trigger an alarm based only on information from the infra-red (IR) sensor. The infra-red sensor is used only to increase smoke sensitivity when flickering IR is detected.
7. Manufactured by System Sensor.

This information must not be treated as partial or complete instructions for the design, construction, installation, commissioning, or maintenance of fire detection, fire alarm, or building evacuation systems. Fire and evacuation systems must be designed and installed by properly qualified persons, in accordance with all regulatory requirements. Unless explicitly stated otherwise, this document provides typical specifications and nominal dimensions. Actual product performance and dimensions may vary. All information in this document is subject to change. Please consult Pertronic Industries or visit our web site for up to date information. PERTRONIC® is a registered trademark of Pertronic Industries Limited.

