



### Infrared Three-Wavelength Flame Detector

|  |  |
|--|--|
| Type                                     | Infrared Three-Wavelength Flame Detector   |
| Model                                    | PDCJ001-D  |
| Detection wavelength band                | Three wavelength bands between 4.0 μm and 5.0 μm   |
| Detection sensitivity                    | 33 cm <sup>3</sup> Normal Heptane Flame Detection at 60m Front Distance  |
| Detection viewing angle                  | Horizontal and vertical 90° (The angle at which the monitoring distance is 1/2 to the front direction)   |
| Rated voltage                            | 24 VDC   |
| Consumption current                      | Monitoring & Alarming: 15 mA, Testing: 95 mA,<br>Transmitting: 100 mA plus to the value on the above   |
| Delay time                               | Approximately 3 seconds (default), Changeable by setting   |
| Indicator light                          | Red LED  |
| Test function                            | The contamination of the light-receiving window and the operating status of the internal circuit are checked by the pseudo-fire light, and a trouble signal is transmitted in case of an abnormality   |
| Self-diagnosis function                  | The internal circuit is constantly checked, and if an error occurs, a trouble signal is transmitted.   |
| Power supply voltage monitoring function | When the power supply voltage drops below specified value, a trouble signal is transmitted.  |
| Connection cable specifications          | General purpose terminals: φ0.9 ~ 1.6 shielded communication cable (Recommendation: Heat-resistant shielded cable)<br>Transmission purpose terminals: φ0.9 shielded twisted pair cable (Recommendation: N-300-SB0.9-1P manufactured by Nippon Electric Wire & Cable Co., Ltd.) |
| Environmental condition                  | Operating temperature: -20 to 60°C<br>Operating humidity: 0 to less than 100% (RH), No condensation  |
| Main material                            | Aluminum alloy   |
| Finish                                   | Urethane paint   |
| Dimensions                               | H118×W118×D84 (mm)   |
| Weight                                   | Approximately 1.3 kg   |

Note) The detector may operate in response to sparks of arc welding.  
This product is non-explosion proof. For explosion-proof products, please contact us.

### Dedicated control panel

|                                       |   |  |
|---------------------------------------|---|--|
| Type                                  | Dedicated control panel   |  |
| Model                                 | PAPJ002-R-□L (□: Number of zones) Without battery   | PAPJ002-R-□L-P (□: Number of zones) With battery   |
| Number of circuits                    | 4 / 8 / 12 zones  |  |
| Mounting type                         | Wall mounting, indoor use   |  |
| Main power supply                     | 100 VAC±10%, 50/60Hz  |  |
| Circuit voltage                       | 5 VDC: Microprocessor, IC, display circuit, and switching circuit<br>24 VDC: Others   | 5 VDC: Microprocessor, IC, display circuit, and switching circuit<br>56 VDC: Battery charging circuit (Half-wave rectification)<br>24VDC: Others |
| Power consumption                     | 21VA (Monitoring), 100 VA (Alarm)   |  |
| Maximum number of devices             | PDCJ001-D, PDCJ002-E<br>Infrared Three-Wavelength Flame Detector: 1 unit/circuit  |  |
| Panel sound                           | Built-in electronic buzzer (Alarm: Constant, Trouble: Intermittent)   |  |
| Number of local alarm circuit         | 1   |  |
| Maximum number of local alarm devices | 15 units (10mA/unit in active condition)  |  |
| Test & maintenance function           | Detector operation test   | Manual operation test of the detector (by the test switch)   |
|                                       | Reset   | Reset of detectors and signal-receiving circuits (by the reset switch)   |
|                                       | Signal cut-off  | Cut-off of alarm and trouble output signals (by the signal cut-off switch)   |
|                                       | Alarm silence   | Silence of the control panel (by the alarm silence switch)   |
|                                       | Maintenance alarm silence   | Silence of the control panel and local audible devices during the maintenance (by pressing the alarm silence switch 5 seconds)                   |
|                                       | Local alarm silence   | Silence of the local audible devices (by the local alarm silence switch)   |
|                                       | Alarm verification release  | Alarm verification release: Alarm notification without verification (by the alarm verification release switch)                                   |
| Battery test                          | —   | Manual test of the battery (by the aux. power test switch)   |
| Trouble notice function               | Detector line open, Device fault, AC power fault, Circuit voltage fault, Fuse blown, Alarm receiving circuit fault                          | Detector line open, Device fault, AC power fault, Circuit voltage fault, Fuse blown, Alarm receiving circuit fault, battery fault                |
| Input (terminal symbol)               | Detector monitoring (C, L)  |  |
| Signal output                         | General Alarm: 2 points (Dry A contact, 24VDC/1A)<br>Trouble: 1 point (Dry C contact, 24VDC/1A)<br>Zone: 2 points (Dry A contact, 24VDC/1A) |  |
| Environmental condition               | Operating temperature: 0~40°C<br>Operating humidity: 20~85% (RH), No condensation   |  |
| Maximum cable length                  | 560 m (when the cable size is φ0.9),<br>990 m (when the cable size is φ1.2)   |  |
| End-of-line resistor                  | 10 kΩ, 1/2 W (Connected to the terminal in the detector)  |  |
| Main material                         | Steel plate t1.2  |  |
| Paint color                           | White   |  |
| Weight                                | 4L: 13 kg, 8L: 18 kg, 12L: 19 kg  | 4L: 15 kg, 8L: 20 kg, 12L: 21 kg   |
| Dimensions                            | 4L : H 550×W 450×D 125 (mm)<br>8L・12L : H 840×W 450×D 145 (mm)  |  |

● A dedicated control panel for transmission system is also available. Please contact us for details.

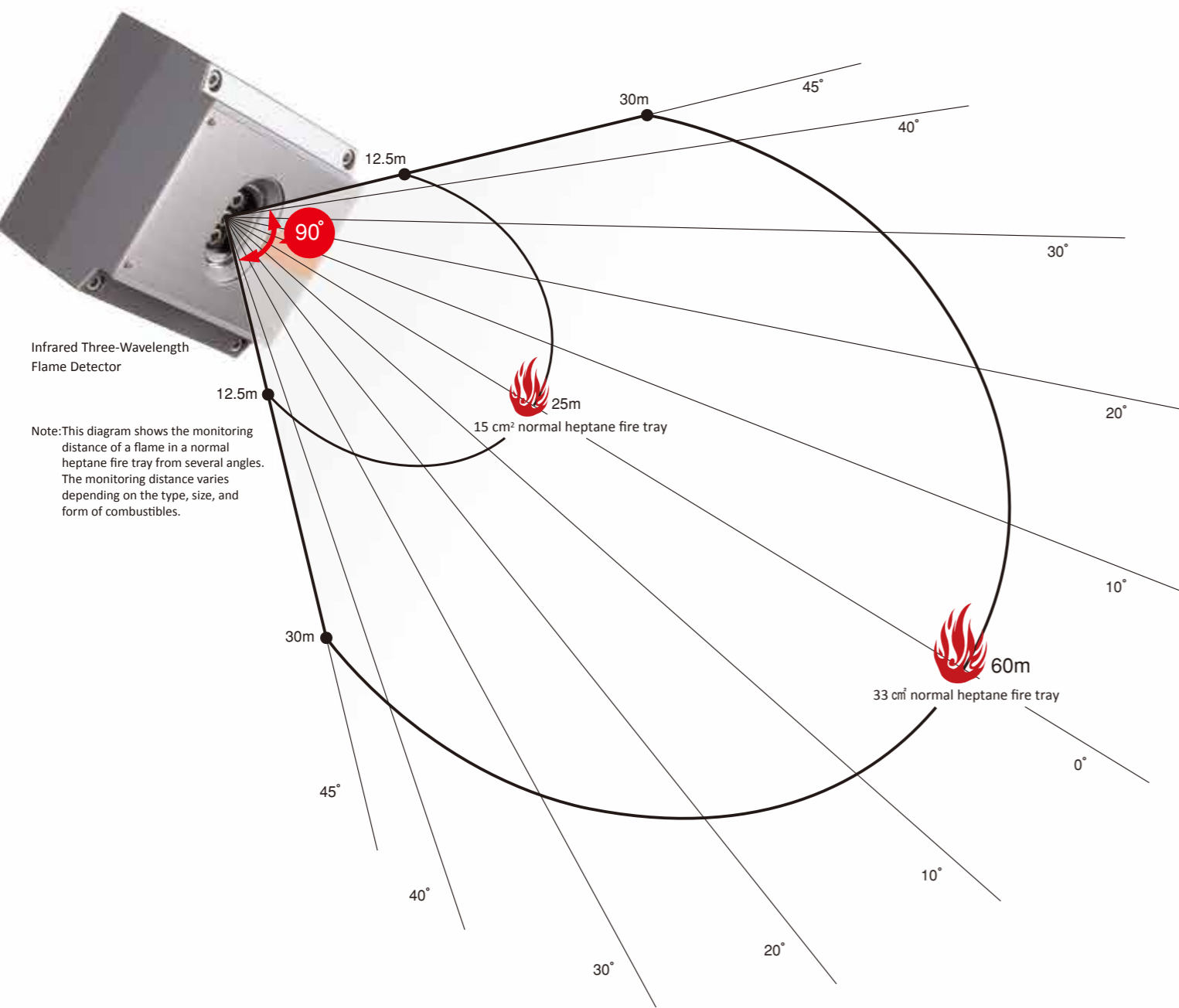
### ⚠ Safety cautions

- For safety purposes, carefully read the instruction manual before use and properly maintain the system.
- This product is different from the fire detection system defined in the Fire Service Act.
- This product is a fire detection device. Do not use it for any other purpose.

- The appearance and specifications of this product are subject to change without notice.
- The color of the product in this brochure may be slightly different from the actual product color due to printing concerns.
- For maintenance of your important fire detection system, please contact our authorized distributor.
- The contents of this brochure are correct as of September 2019.



FLAME DETECTOR PDCJ001-D **Infrex Eye**



Nohmi's infrared three-wavelength flame detector (PDCJ002-E) is designed to detect the presence of fire from the radiant energy produced by flames (CO<sub>2</sub> resonance radiation) and flame flicker. The PDCJ002-E quickly detects fire even in places with ventilation flow, external air, or high ceilings where detection is often difficult for the ordinary detectors. This high-sensitivity detector is suitable not only for large spaces but also for outdoor facilities.

## Features

### 1. High sensitivity

Catches the flame of 33 cm<sup>2</sup> normal heptane fire tray at a distance of 60 m. (It is also possible to detect flames more than 60m away depending on the scale of the flame.)

### 2. Reliable fire detection

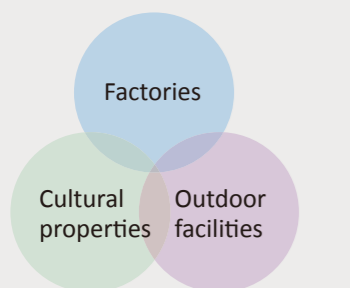
The energy intensity of the three wavelength bands in the CO<sub>2</sub> resonance radiation band and the flicker of the flame are judged as "fire" by an advanced algorithm to suppress false alarms.

### 3. Equipped with self-diagnosis function

The internal circuit is constantly checked, and if an error occurs, a trouble signal is transmitted. The contamination of the light-receiving window is also automatically checked.

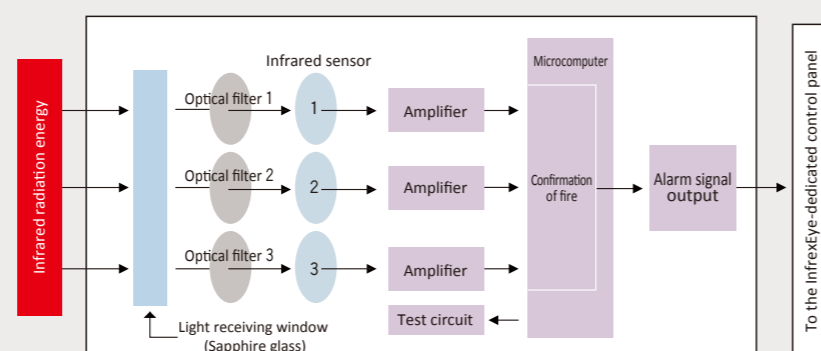
The PDCJ002-E detects the CO<sub>2</sub> resonance radiation and flicker that are unique characteristics of flames. Despite its high sensitivity, the PDCJ002-E has fewer false alarm performance and can be installed under direct sunlight or artificial lighting such as sodium lamp, mercury lamp, fluorescent lamp, germicidal lamp, halogen lamp, etc.

## Main application

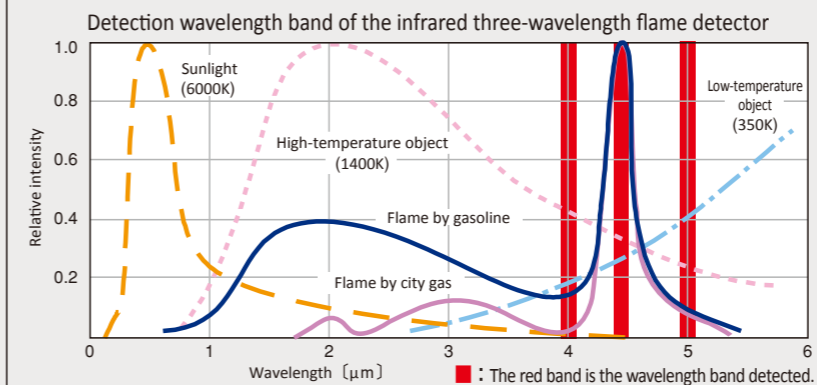


Plants, designated combustible warehouses, large space such as atrium, forests and etc.

## Block diagram



## Detection of CO<sub>2</sub> resonance radiation and flicker that are unique to flame.



The infrared energy emitted from flames has the spectral characteristics of a peak in the wavelength of the 4.4μm band. This is called CO<sub>2</sub> resonance radiation. As shown above, this feature is quite different from the spectral characteristics of infrared rays emitted by objects other than flames.

Another characteristic is that the infrared energy emitted by the flame flickers at a frequency of 1 to 15 Hz. Furthermore, the respiratory action of the flame always causes fluctuation of the amount of radiation.

Nohmi's infrared three-wavelength flame detector monitors the three wavelength bands of CO<sub>2</sub> resonance radiation. It is able to accurately detect fire by recognising the unique property of flames in terms of their energy intensity, ratio, etc, CO<sub>2</sub> resonance and flicker.