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 ㎠ 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, 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) 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℃ 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 24 VDC: Others	5 VDC: Microprocessor, IC, display circuit, and switching circuit 56 VDC: Battery charging circuit (Half-wave rectification) 24VDC: Others
Power consumption		21VA (Monitoring), 100 VA (Alarm)	
Maximum number of devices		PDCJ001-D, PDCJ002-E 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 valtage fault, Fuse blown, Alarm receiving circuit fault	Detector line open, Device fault, AC pow fault, Circuit valtage 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) Trouble: 1 point (Dry C contact, 24VDC/1A) Zone: 2 points (Dry A contact, 24VDC/1A)	
Environmental condition		Operating temperature: 0～40℃ Operating humidity: 20～85% （RH), No condensation	
Maximum cable length		560 m (when the cable size is ϕ0.9), 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） 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.

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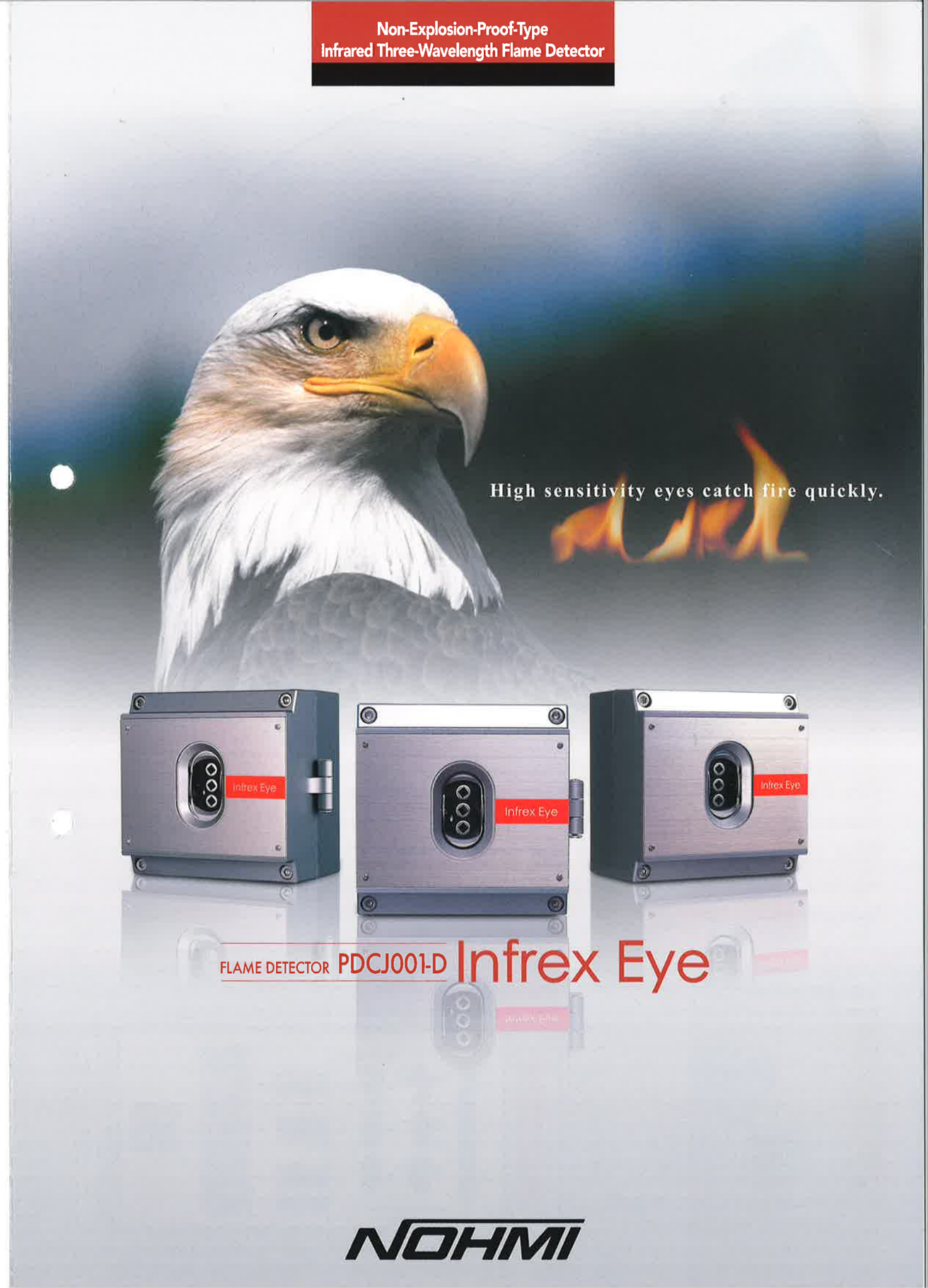
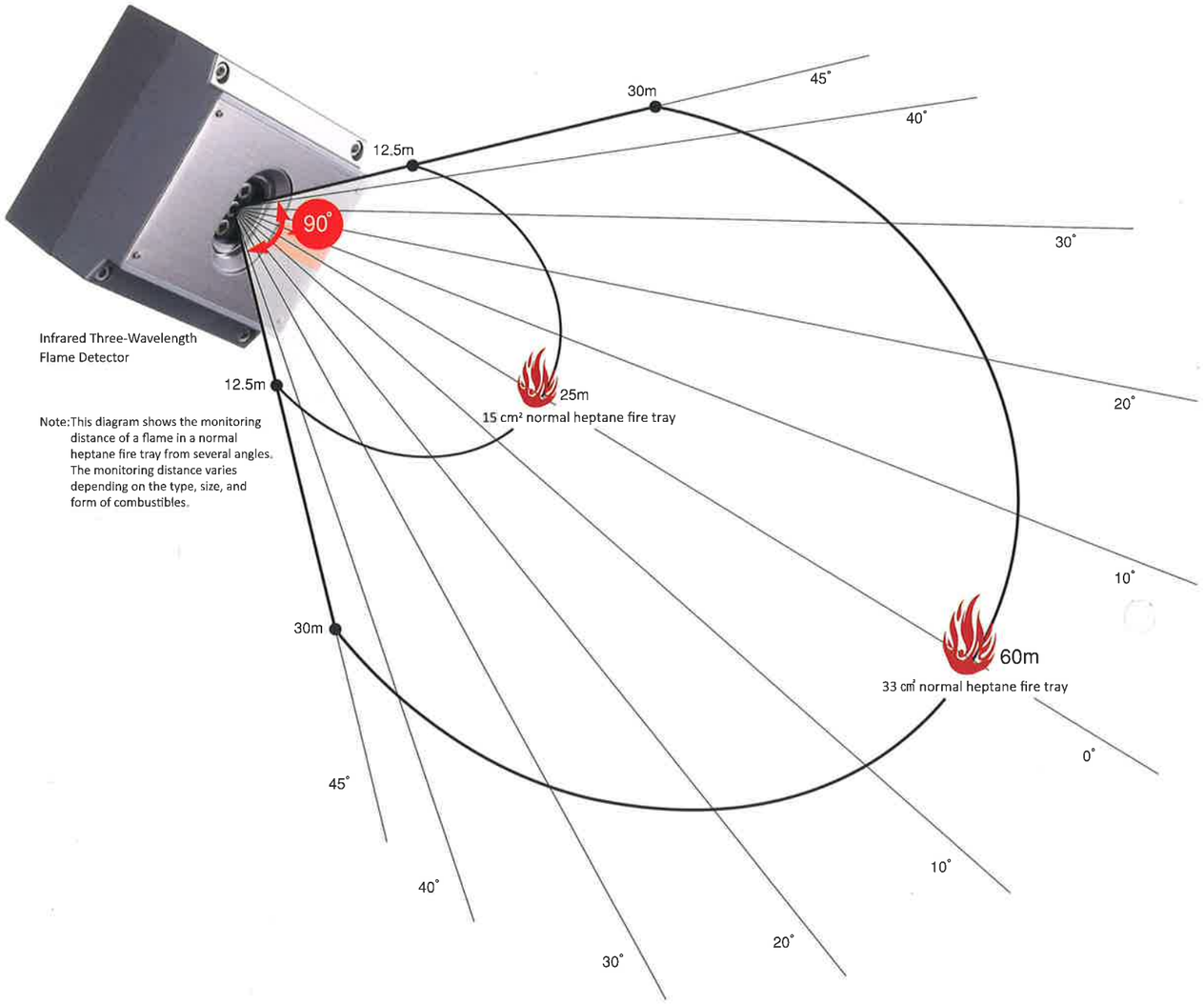
Non-Explosion-Proof-Type Infrared Three-Wavelength Flame Detector



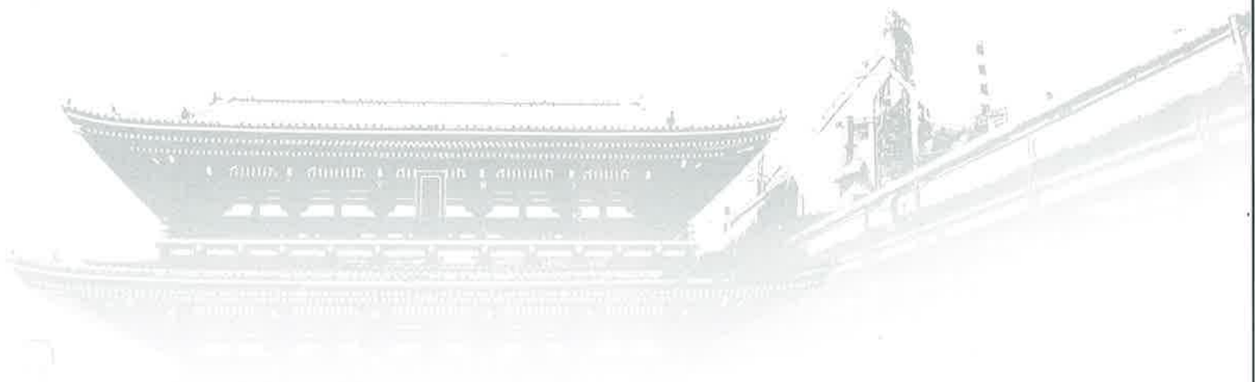
Non-Explosion-Proof-Type
Infrared Three-Wavelength Flame Detector

FLAME DETECTOR PDCJ001-D **Infrex Eye**



Note: This diagram shows the monitoring distance of a flame in a normal heptane fire tray from several angles. The monitoring distance varies depending on the type, size, and form of combustibles.

The PDCJ002-E detects the CO_2 resonance radiation and flicker that are unique characteristics of flames. Despite its high sensitivity, the PDCJ002-E has fe er 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.



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_2 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^2 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_2 resonance radiation band and the flicker of the flame are judged as "fire" by an advanced algorithm to suppress false alarms.

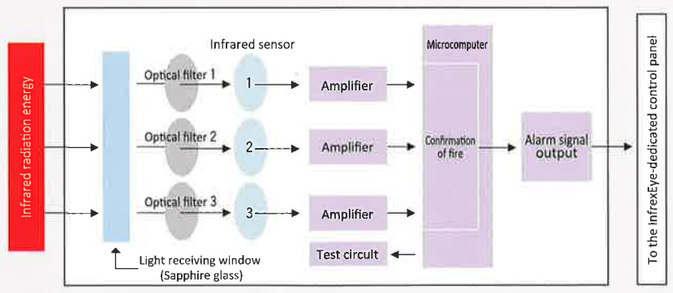
3. Equipped with self-diagnosis function

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.

Main application

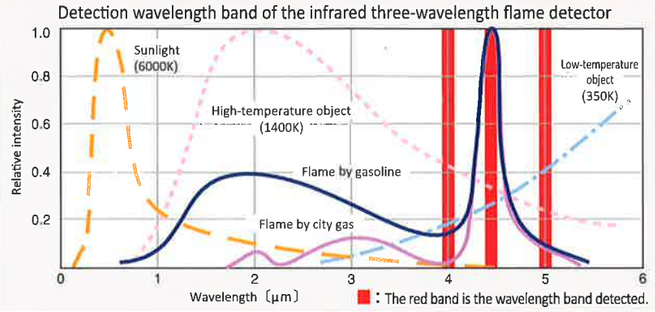
Plants, designated combustible warehouses, large space such as atrium, forests and etc.

Block diagram



Detection of CO_2 resonance radiation and flicker that are unique to flame.

Detection wavelength band of the infrared three-wavelength flame detector



: The red band is the wavelength band detected.

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_2 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_2 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_2 resonance and flicker.