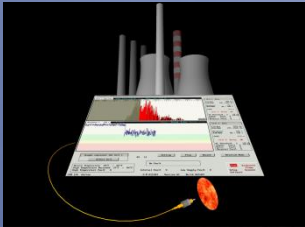




# PIA Flame Scanners



# PIA COMPANY PROFILE

**PIA is a Canadian company established in 1984, which manufactures commercial and industrial electronic equipment. PIA specializes in flame detection for industrial combustion and also makes custom designs. We created and fabricated various electronic controls and, since their creation, we have integrated microcontrollers in different fields of application, being the first using this technology for flame detectors.**

## **LONG FIELD EXPERIENCE**

Designer and manufacturer of flame scanning systems for over 25 years, PIA has built thousands of units for installations around the world. We now concentrate on design, manufacture and distribution of advanced flame scanners. Our technology is suitable for the flame scanning of coal, oil, gas, and other fuels for industries and applications such as various industrial boilers and processes, steam generation, ovens, dryers, power generation, utilities, petroleum and petrochemical, ethanol production, pulp and paper, oil and liquefied gas tankers, steel plants (coke production) and cement works (kilns).

## **INNOVATIVE FLAME DETECTION**

Our flame detection technique is based on UV and/or IR signal analysis. To improve flame discrimination and characterization, our team made in depth research on high IR flicker frequencies that have led to a unique technology for real time flame analysis.

## **RESEARCH AND DEVELOPMENT**

PIA has developed a technology which permits measurement of high flame flicker frequencies. More precisely, this technique allows detecting and analyzing all the variations existing in the IR signals, and not only those present in the flame envelop. Thus, we achieved the possibility to verify the existence of IR flicker frequencies going up to 5000 Hz.

Most of the time, these high frequencies are considered as noise, and not as a part of the flame signal. For its part, our team has discovered that the high IR flicker frequencies are very present and stable, and are an integral part of the flame. Present combustion flame detection technology did not permit verification of high frequencies existing in flames. Furthermore, we developed flame detectors able to read these frequencies, which ensure more precise flame characterization and discrimination, and better adjustments.

PIA still pursues research about high flicker frequencies in infrared signals and, based on the results obtained with our analysis, we are currently developing digital filters resulting from a frequency spectrum analysis adapted to random flame signals. These filters can be set by the end user, permitting to associate a flame to a precise IR frequency range, which will be particularly useful in multi-fuel combustion scenarios.

# WINDOW 141 FLAME SCANNING SYSTEM

**Patented see-through scanners for easy alignment and visual monitoring of burner flames**

The Window 141 is a flame scanning system having a combination of UV tube (ultraviolet), a high speed IR cell (infrared), and a window allowing a direct visual sight to the targeted flame through the same hole used for sensors. This industrial flame detector has excellent discrimination with coal, oil, gas and non-standard fuel burners.

PART #	DESCRIPTION
W1411-1	UV/IR Flame Scanner
W1411-2	UV Flame Scanner
W1411-3	IR Flame Scanner
W1412	Signal Processing Module
W1413-1	Chassis for module (x1)
W1413-2	Chassis for module (x2)
W1413-3	Chassis for module (x3)
W1413-4	Chassis for module (x4)
W1413-5	Chassis for module (x5)
W1413-6	Chassis for module (x6)
W1413-7	Chassis for module (x7)
W1413-8	Chassis for module (x8)
W1414	DT-1 Data Terminal
W1415-12	Scanner Cable (12 Ft)
W1415-100	Scanner Cable (100 Ft)
W1416	FS-2 Flame Simulator
W1417	Ball Joint Assembly
W1411-T	High Sensitivity UV Tube
W1412-1	Fuse 100 mA
JB10	4 x 6 Junction Box 10 conductors

## ACCESSORIES

All chassis have to be installed in a closed panel. For example, if a Nema4 panel box is required, it can be supplied by the manufacturer, but it can also be provided by the customer.

In addition to the 12 Ft cable, longer cables can be supplied, depending on the distance between head and module. Please note that the customer can provide his own cable, as long as it meets essential electrical specifications like the Belden cable #83609.

## WARRANTY

PIA warranties for one year from the date of installation to replace, or at its option, to repair any product or part. An extended one year warranty is available for new products. Repairs are subject to six-month warranty.

## Flame Scanner Head



The flame scanner head features a pure UV detection and a very stable IR detection up to 5,000 Hz, unaffected by fluorescent light, sunlight reflections or any foreign light sources.

### Available models

W1411-1	UV/IR Dual Head
W1411-2	UV Head
W1411-3	IR Head

## Signal Processing Module



Plug-in unit handling independently both UV and IR signals received from the scanner head. One module per W1411-1, but only one required for a combination of W1411-2 and W1411-3 heads.

## DT-1 Data Terminal



Plug-in hand held unit for data diagnosis and adjustment of the Window 141 system. Very easy to operate, with four push buttons and a liquid crystal display providing an intuitive menu selection.

## APPROVALS

FM Standard 7610.  
CSA C/US (NRTL) Classes 2632-01, 2632-81, 2642-01, 2642-81.

## FS-2 Flame Simulator (optional)



Testing accessory with adjustable frequency and intensity for UV and IR sources. Just plug in the scanner head and the whole Window 141 system can be tested in the field.

## NEW PRODUCTS

Following the latest developments in flame detection, PIA has designed new user friendly flame scanners featuring Graphic User Interface: the Flamoptic IR fiber optic and Window 143 dual IR flame scanners.

These new models will be added to the existing Window series in the upcoming months, offering more choice for specific applications such as tilting burners, hazardous locations and narrow spaces.

## INFORMATION

**PIA Inc.**  
7958 16<sup>th</sup> Ave, Montreal, QC, H1Z 3P5, Canada  
(514) 251-8169  
[info@piacanada.ca](mailto:info@piacanada.ca)  
[www.piacanada.ca](http://www.piacanada.ca)

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