

FastSense PLUS™ A High Sensitivity Detector

Description

FastSense PLUS™ adopts the latest in laser based technology making it extremely sensitive, thus providing the earliest warning to slight traces of smoke.

Key features of the **FastSense PLUS™** system include:

- Advanced laser technology
- **ClassiFire™** Artificial Intelligence software
- In-built display and programming
- Command Module
- **FireFinder™** Fire Alarm Control Panel interface (APIC) (PDS230-0041)
- PC based remote software
- Remote Display Unit (RDU)
- **SenseNet** graphical display and control
- **FastSense PLUS™** Matrix system
- **PipeCalculator** design software
- Extensive range of fittings

There are four (4) ports for the sampling pipe network. Each port can support a 25 mm sampling pipe of up to 50 m in length, or a total of 200 m for the detector.

FastSense PLUS™ is an aspirating based system that incorporates a patented artificial intelligence known as **ClassiFire™**.

ClassiFire™ continually monitors the environment and internal contamination, and then adjusts the sensitivity of the detector for optimum performance. The sensitivity is adjusted automatically for day/night modes or operational/non-operational levels with no need for external input. The FastLearn feature automatically starts on power up allowing **FastSense PLUS™** to set sensitivity automatically.

An Apollo Protocol Interface Card (APIC) allows seamless connectivity between a **FastSense PLUS™** detector, **FastSense**, and the Ampac **FireFinder™** Fire Alarm Control Panel. This saves time and reduces cost of material, while promoting flexibility in system design.

In a stand-alone configuration the **FastSense PLUS™** detector comes with a two (2) line LCD for programming. In addition 'AUX', 'Pre-alarm', 'Fire' and 'bar graph' smoke density indicators (10 levels) are fitted. Programming and control buttons are also fitted as standard. There is connection to a PC via an RS232 port to enable PC based remote software. Interconnection to the Ampac **FireFinder™** Fire Alarm Control Panel is achieved via an Apollo Protocol Interface Card (APIC).

When multiple **FastSense PLUS™** detectors are networked, it would be necessary to control, monitor and program from the one location. In this configuration one (1) detector may be nominated as the 'main' detector and fitted with a 'Command Module'. The detector now offers the user with all the benefits of the stand-alone version plus the ability to control, monitor and program all **FastSense PLUS™** detectors on the network.

The command module option enables the following enhanced features of the detector:

- BMS output in three (3) formats – TAP, ASCII format only, and BACNET protocol
- SMS messaging to programmed mobile phone numbers

The **FastSense PLUS™** with the Command Module can also operate as a stand-alone detector to take advantage of the high specification features offered by this option.

The advanced technology offered by combining the command module upgrade and the Apollo Protocol Interface Card (APIC) means that there is a seamless link between the **FastSense PLUS™** network and the Ampac **FireFinder™** Fire Alarm Control Panel. The APIC sits on both the Apollo detector loop of the **FireFinder™** Fire Alarm Control Panel and **FastSense PLUS™** network. The number of addresses the APIC uses on a fire detector loop is dynamic, and depends on the number of **FastSense PLUS™**. The status of up to 126 **FastSense PLUS™** detectors can be displayed on the **FireFinder™** Fire Alarm Control Panel.

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A computer, with the **FastSense** PC based software installed, may be connected to the detector. Once operational the software will allow the PC user to configure and control the detector. The user will also be able to interrogate the bar graph and histograms generated by **ClassiFire**™.

The **SenseNet** is the Windows based program that provides graphical central management and monitoring of up to 126 detectors. In a highly complex system design the **SenseNet** makes easy work of identifying the source of smoke, through its ability to produce site maps, warning sounds and spoken messages unique to each detector. There is also real-time **ClassiFire**™ graphical display for each detector.

FastSense PLUS™ together with cutting edge “Matrixing” software converts the system to a point type detector. In a conventional aspirating detection system, smoke can occur anywhere along the sampling pipe. In this scenario, it is not possible to determine the exact location of the smoke. With the application of the “Matrixing” system, a network of **FastSense PLUS**™ detectors and sampling pipes, result in the addressable point type detection. This method is suited for a single risk with multiple cabinets i.e. in a computer room or telephone exchange. The **FastSense PLUS**™ system in this configuration can identify the exact cabinet where the smoke originated.

With the aid of the **PipeCalculator** design software a **FastSense PLUS**™ high sensitivity detection system can be easily designed. **PipeCalculator** models in 3-dimension the size of the risk, location of detector etc. The software calculates the number and length of pipes, as well as the spacing and size of the sampling holes along the pipe. The goal of the software is to ensure that the transport time at the furthest sampling hole is not greater than 90 seconds.

The **PipeCalculator** summarises the products that are required to ensure that the design specification is met by giving length of pipes and number of sampling points etc. Ampac offers a range of fittings to ensure that the system is installed to meet the design requirements.

Applications of the **FastSense PLUS**™ include:

- Return air ducts
- Large area/volume offices, warehouses
- Telephone exchanges
- Clean rooms
- Cold stores
- Computer rooms
- Document storage facilities

Technical

The **FastSense PLUS**™ operates on a secondary 24 volt d.c. source i.e. a Fire Alarm Control Panel or a dedicated power supply unit.

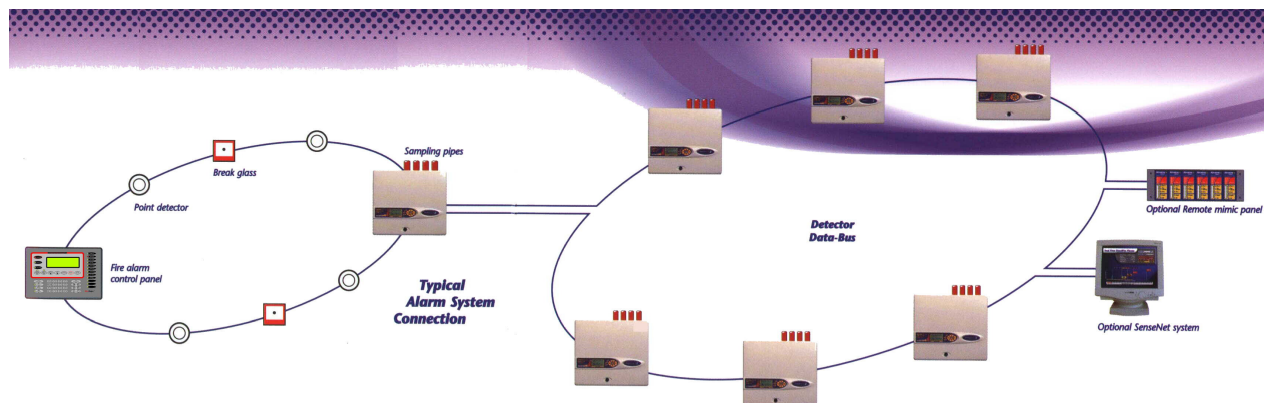
A patented ‘laser forward scatter’ detection principle has been adopted by the **FastSense PLUS**™. If combustion particles exist in the detection chamber a cone of light will scatter against a specially designed reflector, and be focused onto a photo sensitive receiver. This technique has an inherent immunity to dust/dirt build-up, high signal to noise level and resistance to problems caused by vibration and high humidity.

The information from the photo sensitive receiver is then processed by the one of the most sophisticated ‘artificial intelligence’ software for fire detection systems called **ClassiFire**™.

FastSense PLUS™ can be applied to very dirty and dusty environments. This is achieved through the use of Laser Dust Discrimination (LDD) in-conjunction with a patented dust management and separator system. A ‘wastegate’ system bypasses the majority of sampled air, maximising service life and permitting operation in diverse environments.

Every **FastSense PLUS**™ detector has four (4) air ports with top or rear access for sampling pipes. Ideally a length of no more than 100 metres should be connected to each air port. The total length of pipe supported by the **FastSense PLUS**™ detector is 200 metres. The port caters for 25 mm sampling pipes.

Diagram showing the interfacing between
FastSense PLUS™ and **FireFinder**™ Fire Alarm
Control Panel



The airflow the four (4) ports is each monitored by an individual sensor. A fault signal will be generated if an obstruction in one of the pipes causes is enough to affect the performance of the detector.

In the diagram above a maximum number of 126 **FastSense PLUS™** detectors may sit on the 'Detector Data Bus' (also termed **SenseNet** data-bus). When multiple detectors are interconnected, it is mandatory that one detector be a Command Module type. An RS485 communication protocol bus transports the information to all peripheral devices. The communications bus cable is terminated to the command module detector and loops in and out of each detector, and can either terminate at the last detector or be returned to the command module detector.

Other peripheral devices that can sit on this data-bus include:

- The SenseNet PC based detector monitoring system
- Remote display unit (RDU)

The RDU 'mimics' the display of its associated detector. The **ClassiFire™** bar graph (10 levels), and smoke levels (6 levels expressed as % obscuration/metre). In addition, the RDU, that fits a 19" rack mount fitting, also displays fault, auxiliary, pre-alarm, Fire 1, and Fire 2 alarms. An optional relay board offers the user with voltage free contacts for fault, auxiliary, pre-alarm, Fire 1, and Fire 2 alarms. Maximum distance to an RDU from a

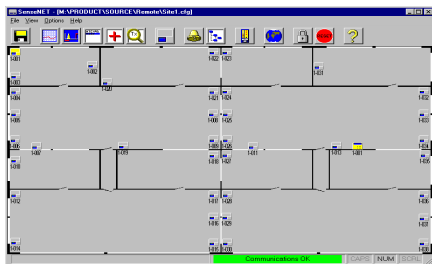
detector is 1.2 km. Unlike the **FastSense PLUS™** detector, the RDU has no repeater ability.

FastSense PLUS™ detectors may be programmed via the front panel or through the use of a PC. With the remote software installed on a PC, the user can program the detector, check status and monitor the **ClassiFire™** histograms.

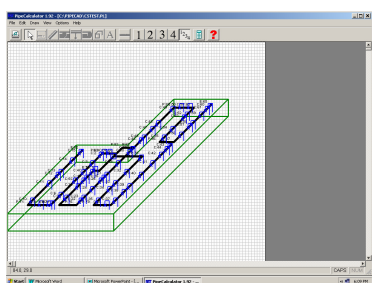
A third party detector may also be connected to the **SenseNet** Data-Bus network through the use of a Contact Monitor Module. This module translates the low level interface input from a third party detector and emulates the presence of a **FastSense PLUS™** detector.



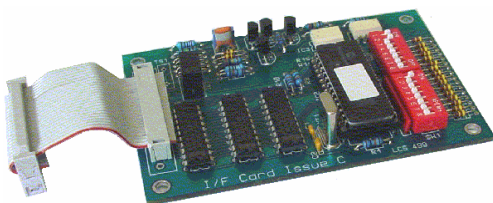
**FastSense PLUS Detector
(without Command Module)**



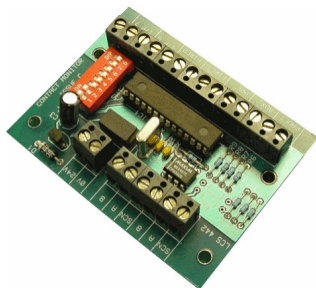
Screen capture of *SenseNet*



Screen capture of PipeCalculator



Apollo Protocol Interface Card



*Contact Interface Card
(for third party detectors)*

Specification

Supply Voltage	24 volts d.c.
Quiescent current	400 mA
Size (mm)	372H x 427W x 95D
Operating Temperature	-10 to +60 deg centigrade
Operating Humidity	0 to 90% Non-condensing
Sensitivity Range	Min=25%, Max=0.03% FSD
Sensitivity Resolution	0.0015% obs/m
Sampling Pipe	200 m max (25mm external Ø)
Sampling Pipe Inlets	4
Alarm Levels	Fire 2, Fire 1, Pre-Alarm, Aux
Bar graph Sensitivity	0.0015% to 25% obs/m
Bar graph Segments	26
Relay Outputs	
Fire 1	Normally Closed – 1Amp
Fire 2	Normally Closed – 1Amp
Pre-Alarm	Normally Closed – 1Amp
Auxiliary	Normally Closed – 1Amp
Fault	Normally Closed – 1Amp
Chamber Service	> 8 years*
Dust Separator Service	> 5 Year*
Laser Life (MTTF)	> 1000 years
Programming	Via front panel of PC
Data bus (<i>SenseNet</i>)	RS485 – 2 core screened
Data bus length	1.2 km
IP rating	IP 50
Weight	Approx. 5.2kg
Approvals	C-Tick, SSL listing no. afp-1589
Order Code	
230-0011	FastSense PLUS Detector
230-0012	FastSense PLUS + command module
230-0031	SenseNET control unit c/w power supply
230-0032	SenseNET contact monitor
230-0033	SenseNET software CD + dongle
230-0034	SenseNET Remote Display Unit 19" board
230-0035	SenseNET Remote Display relay board
230-0036	SenseNET single RDU wall enclosure
230-0041	FastSense Apollo Protocol Interface Card
230-0042	FastSense PLUS Air Heater Box
230-0043	FastSense PLUS Aspirator for Air Heater Box
230-0044	FastSense Wire Overload/Burn Unit
230-0045	FastSense 100m wire for Burn Unit
230-0046	FastSense Notebook Cable
230-0048	FastSense 5 Way Relay Board
216-0065	FastSense 2A PSU excluding batteries
216-0066	FastSense 6A PSU excluding batteries