

# HART XL

## High Sensitivity Smoke Detection



Hart XL High Sensitivity Smoke Detection (HSSD)<sup>TM</sup> is a smoke detection system that is simple to install, commission, service and use yet remains brilliantly capable in terms of performance. It is designed to give very early indication of an incipient fire condition. This swift notification – before the transition into the flaming and heat stages – provides the time necessary to take corrective action and avoid the danger, damage and disruption of fire.

#### Features

- Laser based particle counting – the superior technology
- Elegant, compact, lightweight design
- No particle filters required
- No recalibration during lifetime of detector
- Complete flexibility – four basic sub units provide installation options
- On site sensitivity selection 0.005%/m to 1%/m
- LaserNet networking options
- Modular design for fast and easy servicing
- Configurable for integral or remote display options
- Attachable power supply and battery back up unit
- Individual pre-alarm and alarm levels

#### Protecting assets worldwide

Developed in 1988, Hart was the world's first laser-based detector. Using patented particle counting technology, over 30,000 Hart detectors are in use worldwide, protecting valuable assets for institutions and companies such as Royal Palaces, London Underground, BP and HSBC.

#### Protecting your investment

There are major benefits from a very early indication of incipient fire, which can be dealt with by local corrective measures, i.e. removal of power from equipment or by portable extinguishers. However Hart XL can also provide a first stage signal to initiate suppression system release at a higher alarm level. Hart XL is not dependent upon a particular brand of control panel, which reduces new equipment costs and business disruption.



### Stages of fire

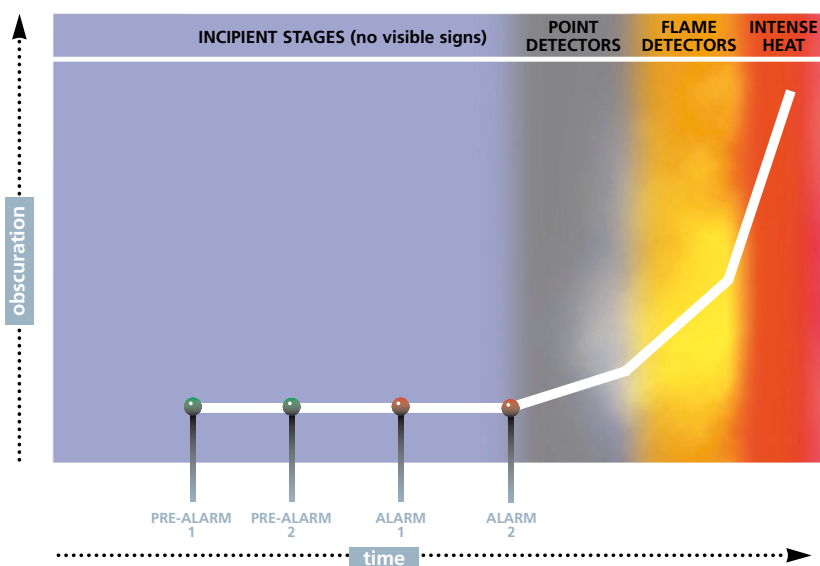
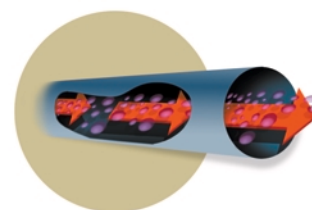
Most fires start with some form of overheating. In this incipient stage, invisible particles are released as the combustion process begins. The particles released at the incipient stage of a fire may not be detected by conventional smoke or heat detectors. In fact, smouldering can continue for minutes, hours or even days before activating conventional detectors. The incipient stage of smouldering fires provides the widest window of opportunity to detect and control the spread of fire.

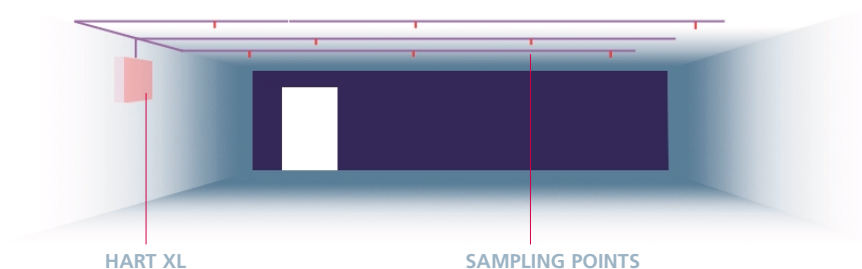
As smoke is formed, it will begin to fog the atmosphere with particles. Conventional point detectors are designed to detect smoke at approximately 3% to 5% obscuration per metre at the detector. This will normally allow sufficient time for occupants to evacuate the area or building, although possibly not enough time to prevent damage to equipment. At this level there may also be an increased risk to anyone attempting to extinguish the fire.

Hart XL can be programmed to be up to 1000 times more sensitive than conventional point detectors. Alarm levels can be set as low as 0.005% obscuration per metre for clean areas and up to 1% obscuration per metre for less controlled environments. This increased sensitivity allows Hart XL to detect and report an incident at the earliest possible stage, providing the time needed to help minimise or prevent fire damage, avoid system down time and provide business continuity.

### Aspirating detection

As opposed to point type smoke detectors mounted at regular intervals throughout the area of protection, an aspirating detector is installed one per area of protection (depending on size of area). A pipe network is spread across the area of protection and transports air from the protected area back to the detection unit.



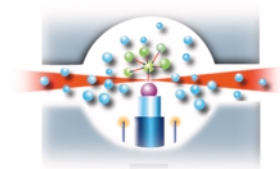
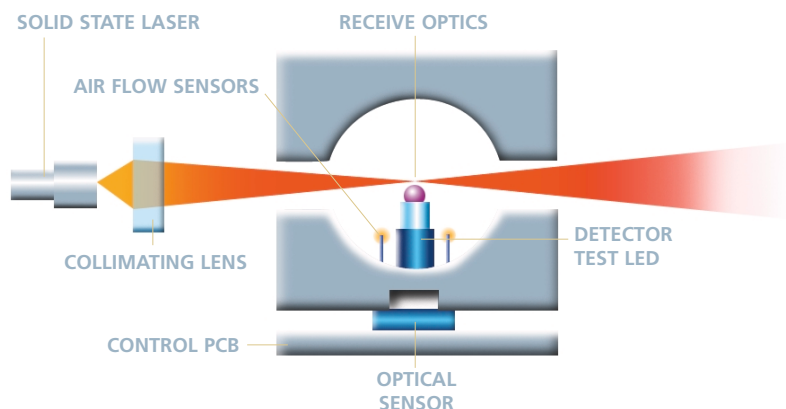


The unit is mounted either inside or outside the area and draws air from the protected area using a fan contained in the detection unit. The pipe network contains sampling holes at predetermined locations along the pipe network through which the air is drawn.

### Individual particle counting

Hart XL is a laser-based particle counter designed to detect very small levels of particulate. The intensity of the laser light source is carefully monitored, maintained and controlled.

The laser is focused into a high intensity beam of light in the centre of the sampling chamber. This beam forms the sensing area for the smoke particles. Light scattered by each smoke particle is detected by very sensitive receive optics. The output signal is processed and presented on the LED or LCD display module. Hart XL communicates this data back to the fire alarm control panel or building management system.



Detection takes place in the centre of the sample chamber which ensures a high level of immunity to particulate build up on the chamber walls. Only particulate within the centre of the focussed laser light is measured by the receive optics.



As the smoke particulate passes into the sampling chamber, the sensor electronically counts each particle. Particle counting HSSD devices are thus much more sensitive to the prevailing concentration of small particulate.



#### Particle discrimination

Hart XL can intelligently discriminate between smoke particles and other foreign matter by individual setting of the upper and lower detection threshold. Dust, for example, would register as a larger particulate than smoke, break the upper threshold level, and therefore be rejected. This ability allows Hart XL to be set up for various applications without compromising the effectiveness of the detector.

#### Where to use Hart XL

Hart XL provides total protection in mission critical facilities:

When downtime must be minimised with high cost equipment:

- Clean rooms
- Computer rooms
- Telecommunications
- Broadcast facilities
- Server farms, Telco hotels

Where smoke is difficult to detect in areas with high ceilings or high air flow:

- Atria
- Warehouses
- Cold storage
- Indoor stadiums

In extreme environments that pose a problem to conventional smoke detection:

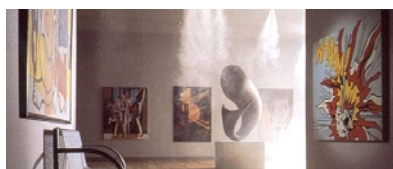
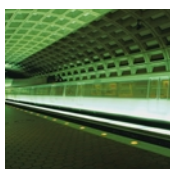
- Power stations
- Mines
- Offshore

Where appearances are important and preservation of priceless objects is a priority:

- Modern offices
- Heritage buildings
- Cathedrals
- Museums
- Libraries

When extra time is necessary to effect safe and orderly evacuation:

- Airports
- Underground railway systems
- Hospitals
- Theatres
- Cinemas





There's complete flexibility – just four sub units provide all the configuration options:

**Product range**

The Hart XL High Sensitivity Smoke Detection (HSSD) system from Kidde Fire Protection represents a major, intensive two-year development programme. The result is a product optimised in terms of performance, capability, reliability and serviceability. Featuring simplicity in both system configuration and operation, Hart XL has a clean, aesthetic design and is compact and lightweight.

**Configuration options**

**Hart XL Unilaser single station detection unit**

The Hart XL Unilaser features the display module as an integral part of the detection unit. The Hart XL detection unit can be wall or flush mounted and allows for top or bottom pipe entry and side or rear air exhaust.



**Hart XL Unilaser with self-contained power supply**

The self-contained power supply and battery back up can be attached to the detection unit or located remotely.



**Hart XL detection unit with remote display module**

The display module can be integrated as part of the detection unit or located remotely. No separate cabinet is required. The detection unit retains a local status LED.



**Hart XL detection unit with system status LED**

Hart XL can be configured to provide a simple three-colour LED status indicator – green for normal, yellow for fault, flashing red for pre-alarm and continuous red for alarm.



**Hart XL network system**

When used with the Intelligent Interface Module (IIM) and LaserNet software, up to 127 Hart XL detection units can be networked and displayed on a PC monitor.





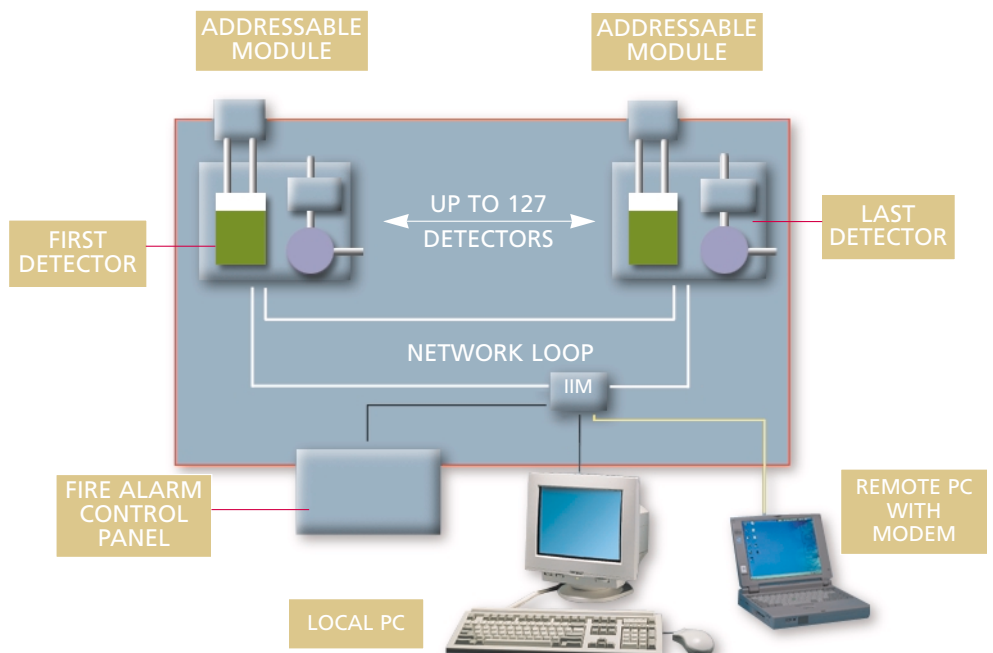
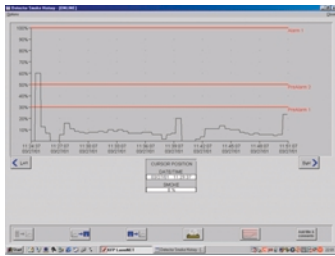
**Display module**

The graphical LCD on the display module provides information including system status, real time smoke levels and other operational parameters. The unit is operated by means of simple pushbutton controls. Password protection is used to restrict higher levels of access to authorised users.

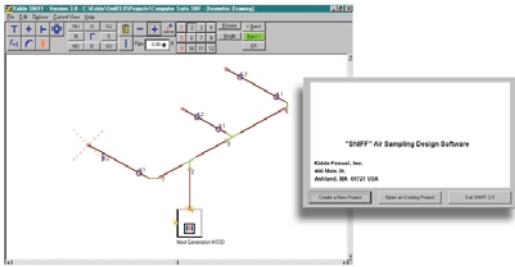
**LaserNet**

**Programming and diagnostics**

All Hart XL detection units are programmed using a standard PC connection via a service port and the LaserNet software. The software enables the user to monitor, interrogate, configure and download system data. No programmers or interfaces are required.



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### SNIFF

#### System Design Software

The easy-to-use pipework design software, SNIFF, has been upgraded to be Windows™ compatible and includes new features such as isometric system design drawings from different angles, easy operation and clear displays.

### Maintenance

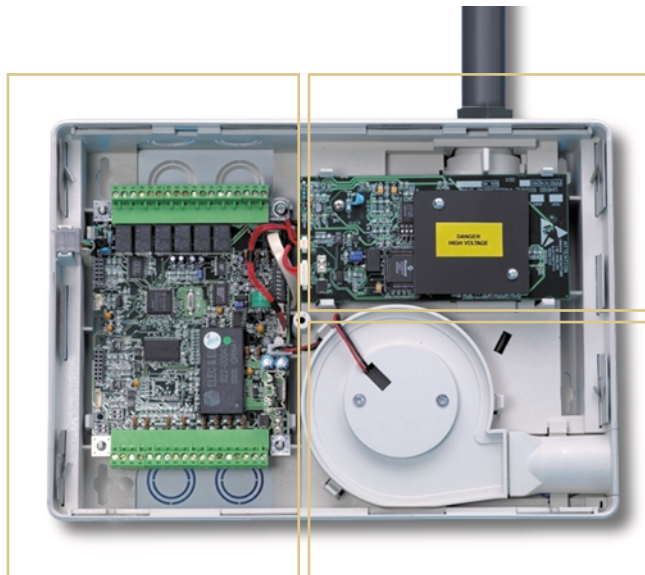
Hart XL has been designed to facilitate servicing and maintenance. The modular design reduces servicing time and minimises downtime. The HART XL detection unit comprises only three main parts – the termination board, the detector head and the fan module

Each can be installed and removed quickly and easily. Routine maintenance and cleaning of the laser sensor unit is a simple process.

### DETECTOR HEAD

- Modular design concept
- Clip-on modules for quick and easy installation and removal
- Quick release interconnecting cables
- Easy access external cable connectors
- No filter - lower servicing cost

### TERMINATION BOARD



### FAN MODULE

**Specification**
**Hart XL Detection Unit – Physical Specification**

Overall dimensions	320mm x 228mm x 108mm
Weight	3.4kg
Enclosure	IP31
Operating temperature	0 to 52°C

**Hart XL Detection Unit – Power Requirements**

Voltage	18 to 30 vdc (24 vdc nominal)
Current Consumption:	
Quiescent	315 mA
Alarm	380 mA
Fault	365 mA

**Hart XL Display Control Unit – Physical Specification**

Overall dimensions	122mm x 145mm x 38mm
Weight	0.5kg
Enclosure	IP31
Operating temperature	0 to 52°C

Displays	Large format graphical LCD
Operator controls	4 cursor controls (up, down, left, right) and "Enter" key
Outputs	Relay outputs – Alarm 1, Alarm 2, Pre-alarm 1, Pre-alarm 2, Fault, Isolate Volt free change over relay outputs rated at 2 amps 30 vdc, providing common and normally open, contacts Power out – two sets of auxiliary outputs – 0 to 24 vdc rated at 0.5 amps Remote display control unit connection – 4 core connection providing 0v, 24v, and RS485 communication Service port – RS232 connection to PC Network connection – RS485 to LaserNet network (127 Hart XL detection units max)
Programmable time delays	Delay before alarm registration – 0 to 60 seconds
History buffer	40320 entries – 28 days
Event log	128 event capacity
Signal averaging	2, 4 or 8 second averaging
Referencing	Controlled by LaserNet software
Factory presets	Sensitivity default to 0.2%/m full scale on bar graph (adjustable with LaserNet)
Programming	Direct connection to PC (D-type-RJ12) provided by LaserNet software

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