



Kidde
HART XL
High Sensitivity
Smoke Detection System

HART XL

High Sensitivity Smoke Detection



The Hart XL High Sensitivity Smoke Detection system (HSSD) is an aspirating fire detection system designed to give very early indication of an incipient fire condition. This pre-emptive warning – before the transition into the flaming and heat stages – provides the time necessary to take corrective action and avoid the danger, damage and disruption to operations that a fire can cause. Hart XL is simple to instal, commission, service and use. It has the highest levels of performance and reliability.

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 0.0025%/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 HSSD detector using Kidde's patented particle counting technology. Now, over 30,000 Hart detectors are in use worldwide, protecting valuable assets for institutions and companies such as diverse as Windsor Castle, London Underground, BP and HSBC bank.

Protecting your investment

There are major benefits from a very early indication of incipient fire. The problem can be dealt with through local corrective measures such as powering down equipment or the use of hand extinguishers, avoiding unnecessary evacuation or suppressant release.

The Hart XL can also be integrated into the main fire protection system, providing the first stage alert in an alarm organisation, the final stage of which could be suppressant release.

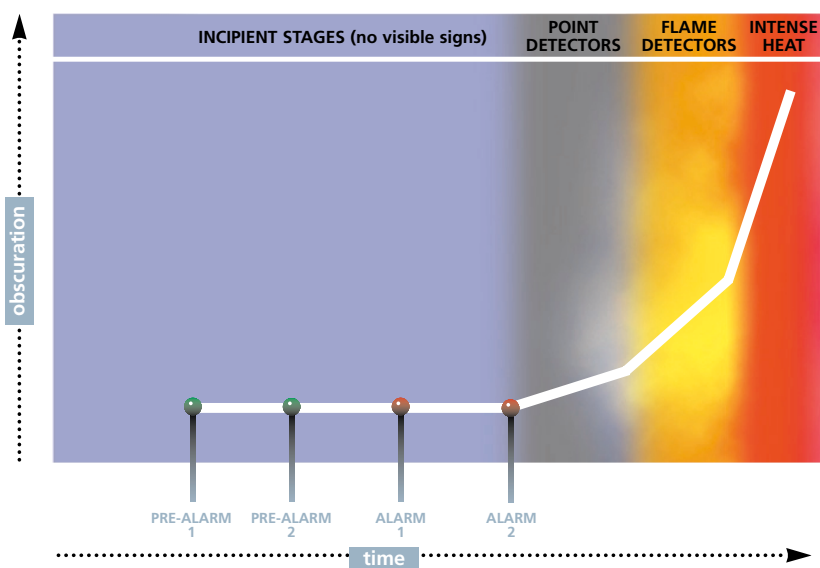


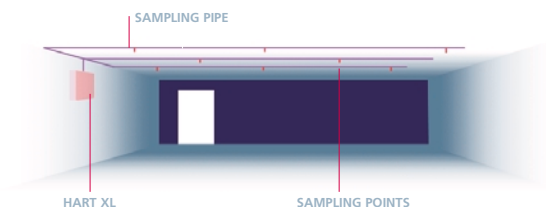
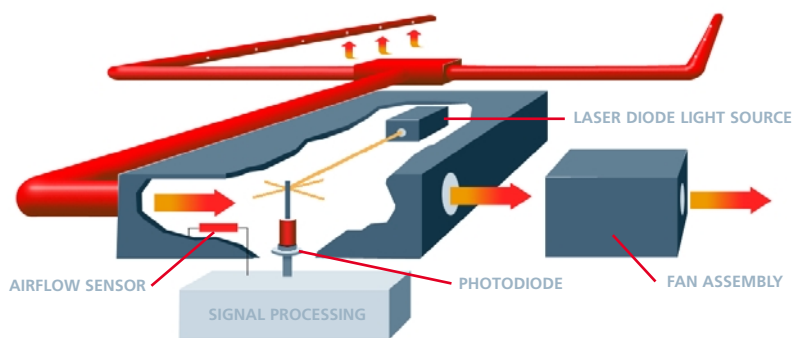
Stages of fire

Most fires start with some form of overheating. In this incipient stage, fine 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 being detected by conventional detectors. The incipient stage of smouldering fires provides the widest window of opportunity to detect and control the spread of fire.

The Hart XL will go through several alarm thresholds in these early stages, long before conventional point detectors will respond to the fire. Conventional point detectors are designed to detect smoke at approximately 5% obscuration per metre. This 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 0.0025% 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.





Aspirating detection

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

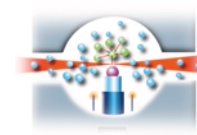
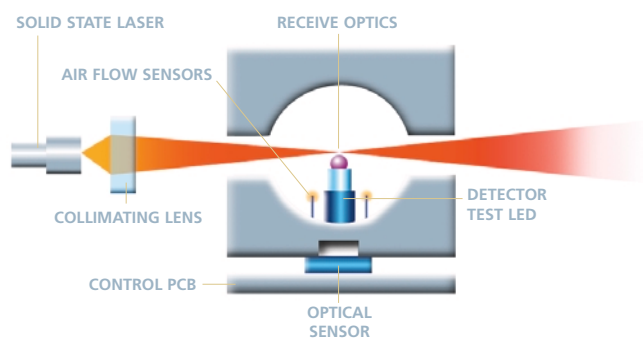
The Hart XL detector can protect areas up to 2000 square metres or between 500 to 750 square metres in high air flow conditions. The pipework is configured in various ways according to the application. Typically it will comprise a pipe network with sampling points at intervals similar to point detection, but it can also be arranged to monitor across air handling units or in ducts.

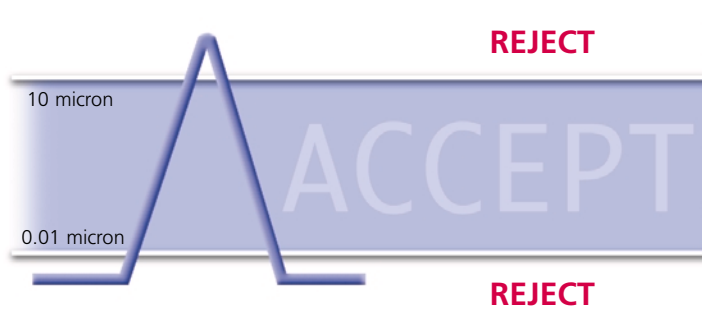
Individual particle counting

The Hart XL operates on a laser-based particle counting principle. The smoke particles pass through a focussed laser beam and scattered light from individual particles is picked up by a photodiode sensor and converted to an electrical pulse. The pulse rate is electronically counted and measured against alert and alarm thresholds.

The output signals are processed and presented on an LCD display. Hart XL communicates the data to the fire alarm control panel or BMS system.

Since the sensing process takes place in the beam in the centre of the sampling chamber, the detection performance is unaffected by any build up of particulate on the walls of the chamber over time. For this reason air filtering is unnecessary, which is an important maintenance benefit.





Particle discrimination

The pulse heights are proportional to the size of the particles. The electronics is set up only to count particles typical of products of combustion. This makes the Hart XL insensitive to other particles such as dust.

Benefits

- High immunity smoke discrimination
- Simple, low-cost maintenance
- High reliability
- High immunity to unwanted alarms
- Long term stability
- No recalibration required

Where to use Hart XL

Hart XL provides total protection in critical applications:

- When downtime must be minimised
- Where smoke is difficult to detect
- In extreme environments
- Where appearances are important
- When extra time is necessary

When downtime must be minimised with high cost equipment:

- Clean rooms
- Computer rooms
- Telecommunications
- Broadcast facilities

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:

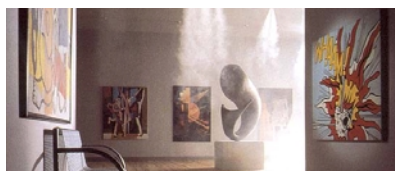
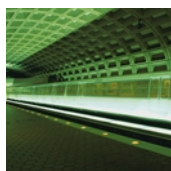
- Power stations
- Mines
- Offshore

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





Product range

The Hart XL High Sensitivity Smoke Detection (HSSD) system from Kidde Fire Protection is the result of 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.

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

Configuration options

Hart XL single station detection unit.

The Hart XL is shown with the display module installed as an integral part of the detection unit.

Installation Options

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 with self-contained power supply

The self-contained power supply 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

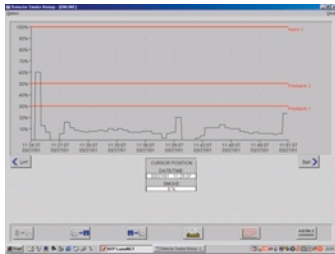
When used with the Intelligent Interface Module (IIM) and LaserNet software, up to 127 Hart XL detection units can be networked and displayed on a PC monitor.





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.



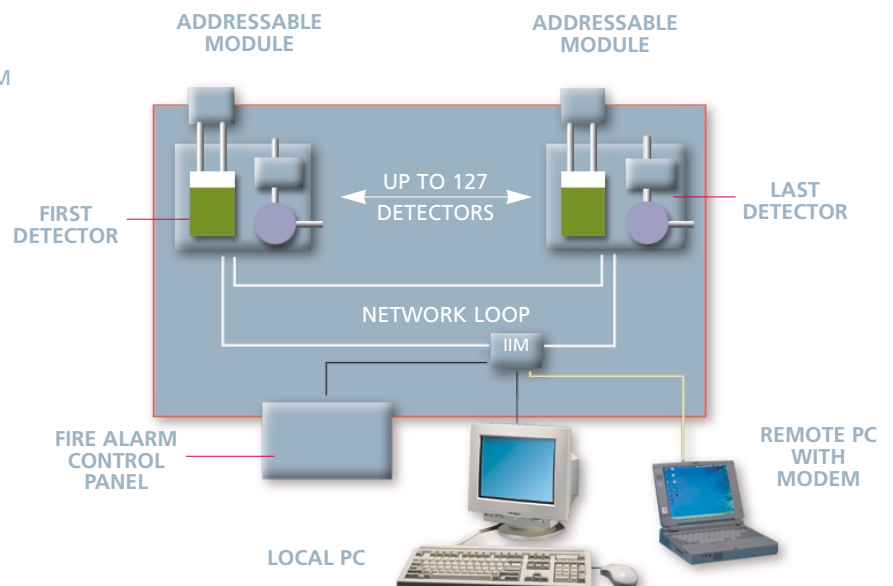
LaserNet

Programming and diagnostics

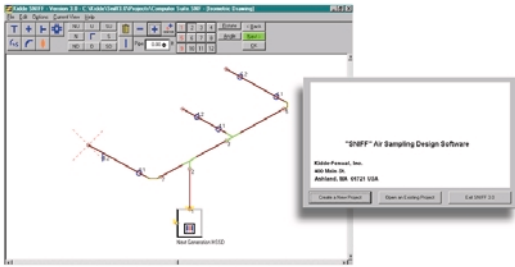
All Hart XL detection units are programmed using a standard PC connection via a service port and the LaserNet software. The software enables the user to monitor, interrogate, configure and download system data. No programmers or interfaces are required.

Networking Capability.

With the LaserNet software and an IIM (Intelligent Interface Module), up to 127 Hart XL detectors can be monitored, configured, isolated and downloaded from a single PC. Networking does not compromise availability of detection.



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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

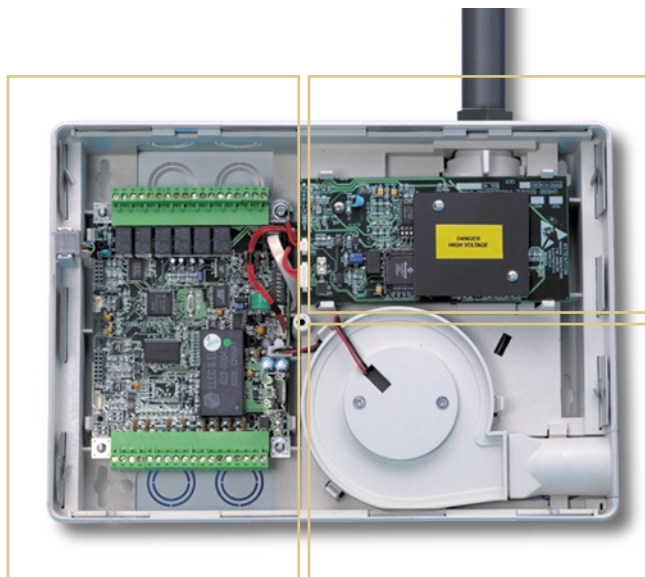
Hart XL has been designed to facilitate servicing and maintenance. The modular design reduces service time and minimises downtime. The HART XL detection unit comprises only three main parts – the termination board, the detector head and the fan module.

DETECTOR HEAD

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

- Modular design concept
- Clip-on modules for quick and easy installation and removal
- Quick release interconnecting cables
- Easy access external cable connectors

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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