

# YOUR FIRST LINE OF DEFENSE AGAINST FIRE HAZARDS

Protect your people and your property with industrial fire integrated SIL-certified aspiration, smoke, flame, and gas detection solutions that help keep your operations running high and your risks running low.

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HS-81  
VESDA

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**Honeywell** | Industrial Fire Solutions

# **AVERT DISASTERS AND FACILITY INTERRUPTIONS**

At Honeywell, we design fire, flame, and gas detection technologies that help reduce nuisance alarms, provide reliable and early warnings, and mitigate events to prevent disasters.

Our end-to-end, SIL-certified solutions are committed to the highest standard of quality and can help you increase productivity and minimize costs.

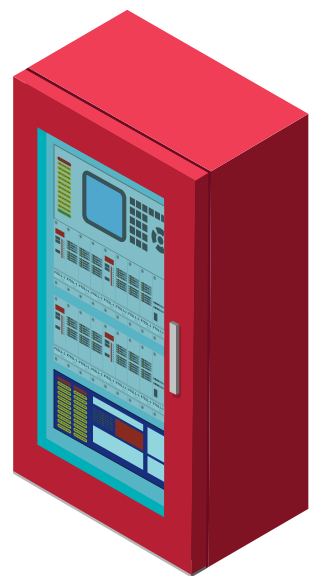
This includes a full suite of integrated industrial fire and gas systems that help you maintain a safe operating environment for your business.

As the world's leading provider of advanced automation solutions for industries, we build and deliver software and technologies for the most mission-critical environments.

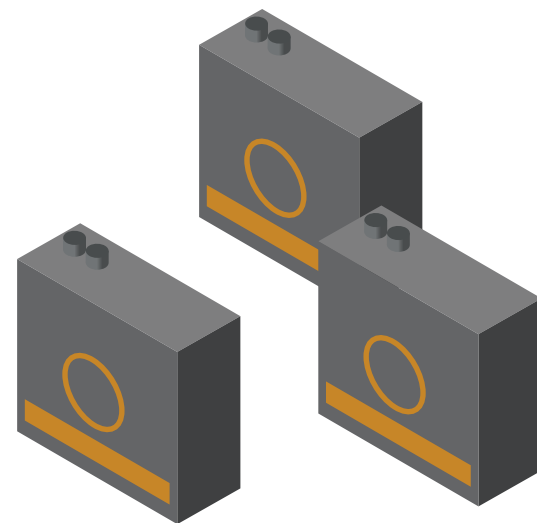
But when it comes to selecting the most suitable form of smoke detection for your site, we believe that reliability and performance should go hand in hand.

On that account, we're proud to present our most progressive industrial fire safety solutions with aspiration smoke technology:

## **HS-81 CONTROLLER**



## **VESDA VLI DETECTORS**





# THE HS-81 FIRE AND GAS CONTROLLER

## BE THE FIRST TO KNOW AND THE FIRST TO ACT

The HS-81 is an industrial-grade, smoke, flame, gas, and releasing system that serves various applications such as Oil and Gas, Power generation and distribution, Data centers, Transportation, and even Biotech.

The Honeywell H-S81 fire and gas controller manages detection, notification, and releasing functions, offering seamless integration with process safety systems and peripherals.

The system has been designed to meet the heaviest functional reliability and availability requirements – with excellent resistance to electromagnetic disturbances and harsh environmental conditions.

The HS-81 complies with fault-tolerance requirements set by IEC61508 and can attain a Safety Integrity level 3 (SIL 3 level) that is certified by a third-party agency.

The system's highly reliable architecture and advanced software enable faster and wiser decisions, ensuring maximum plant uptime.

### POWERFUL INSIDE AND OUT

Externally, the controller is similar in design to a safety programmable logic controller (PLC) with printed circuit board (PCB) cards of various functions, packaged within industry-standard racks.

A panel is fully customizable and can have up to 10 rows with each row holding up to 13 cards.

There are approximately 20 different cards dedicated to

functions such as extinguishing, smoke detection, gas detections, control, communications, and input. The rack has a multifunction operator interface that consists of a large, alphanumeric display with LED indicators to show system status at a glance. Each panel has its own power supply and standby battery, so there is no need for external UPS.



Hot swap of cards and power supplies with no need for panel shutoff

HS-81 SYSTEM HIGHLIGHTS		
Modular Control Panel		<ul style="list-style-type: none"> <li>Safety PLC for Flame and Gas</li> <li>Addressable Smoke Detection Panel</li> <li>Fire Suppression and Releasing Panel</li> <li>Human Machine Interface (HMI) and MIMIC Panels</li> </ul>
Fire releasing controls		<ul style="list-style-type: none"> <li>Automatic Releasing System</li> <li>Dedicated Command for Each Solenoid</li> <li>Monitoring and Diagnostics</li> </ul>
Smoke detection		<ul style="list-style-type: none"> <li>Addressable Analog &amp; Aspiration smoke detection</li> <li>Early/Very Early detection</li> <li>Wide sensitivity range</li> <li>Multiple Protocols in One Panel</li> <li>SIL2 Detection</li> </ul>
Flame and gas detection		<ul style="list-style-type: none"> <li>4-20mA Protocol with external HART support</li> <li>Front Panel Bar Graph/Numerical Displays</li> <li>Programmable Thresholds</li> <li>Up to 23 Sensors Accommodated</li> <li>Remote Reporting</li> </ul>
Building management system controls		<ul style="list-style-type: none"> <li>Integrated Process and Building Management</li> <li>Direct connectivity to EBI and WinMAG</li> <li>Modbus and OPC connectivity to others</li> </ul>
Software supervision		<ul style="list-style-type: none"> <li>Graphic Maps</li> <li>System Management</li> <li>Remote Control</li> </ul>
Process control integration		<ul style="list-style-type: none"> <li>Ethernet TCP/IP</li> <li>Modbus</li> <li>Object Linking and Embedding for Process Control (OPC)</li> <li>Server and Supervisory Control and Data Acquisition (SCADA) Connect</li> <li>SIL-certified, hardwired I/O's for critical signal exchange</li> </ul>

SYSTEM CAPACITIES		UL	EN-54
	Hardware		
	Racks	6	10
	Cards	13	13
	Single Point Devices	9906	16510
	Addressable Devices	29,700+29,700	29,700+29,700
Software	Safety Zone Capacity	300	300
	Devices Per Zone	99 Inputs, 99 Outputs, 99 Logic Gates	99 Inputs, 99 Outputs, 99 Logic Gates
	Panels per TCP/IP Network	99	99

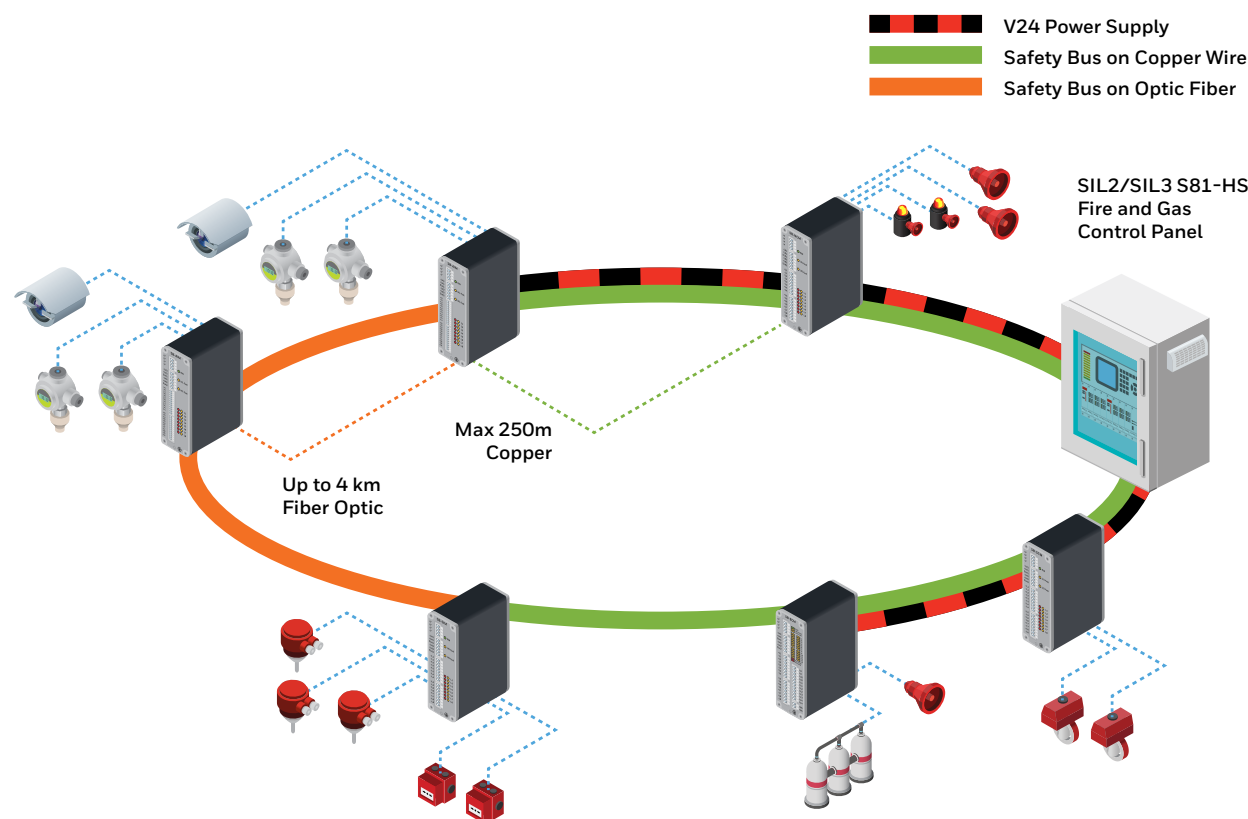




# SAFETY BUS MODULES

The Safety Bus system enables fire detection and firefighting control through dedicated, SIL-certified modules that ensure an advanced level of communication. The system can contain one or two control cards that are integrated in the HS-81 panel and that can support up to 64 addressable remote modules installed in the field.

The communication between the control cards and the addressable modules is based on a Controller Area Network (CAN) protocol with a ring architecture that guarantees optimal functionality in high-speed or faulty conditions.



## PRODUCT BENEFITS

- **Addressable system with remote I/O** – saves installation costs in cables and conduits. Isolated I/O's, power supply, and communication bus allow for installation of local independent power supplies without the need for power cables.
- **Safety integrity level** – designed to meet the most imperative industrial safety standards, certified up to SIL3-level, the modules ensure high reliability in execution and releasing functions.
- **Safety functions** – fire and gas detection, automatic fire extinguishing or release, actuation of notification appliances, integration with other safety systems (such as SCADA, DCS, ESD, PSS, other emergency EVAC) and HVAC systems.
- **Fault-tolerant** – the safety addressable bus uses a closed ring tolerant to a single fault in the loop (Short/Open circuit).
- **I/O density** – with 8 I/O per remote module, up to 64 modules per control card, and up to 130 control cards per panel, the system can match the size of virtually any installation site.
- **Modular design and scalability** – configure the system for your current industry needs and easily expand in the future.
- **No constraint on device brands or type** – compatible with standard 4-20mA input, high-current range for conventional input and output. Any type of Flame/Gas detector, conventional detector, or actuating device can be connected.
- **Easy configuration** – configuration of modules and field devices is as easy and flexible as any other I/O within the same HS-81 panel. The system also empowers menu-driven, pull-down programming that speeds up configuration and commissioning work.







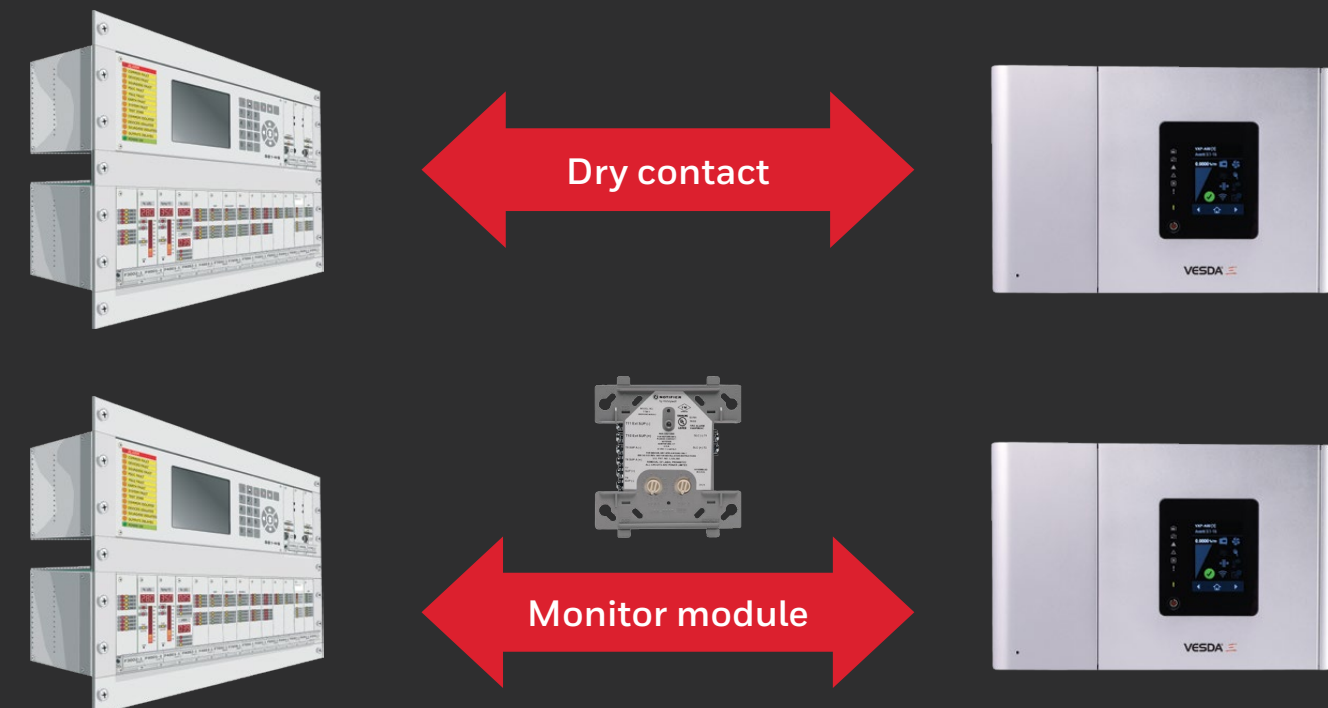
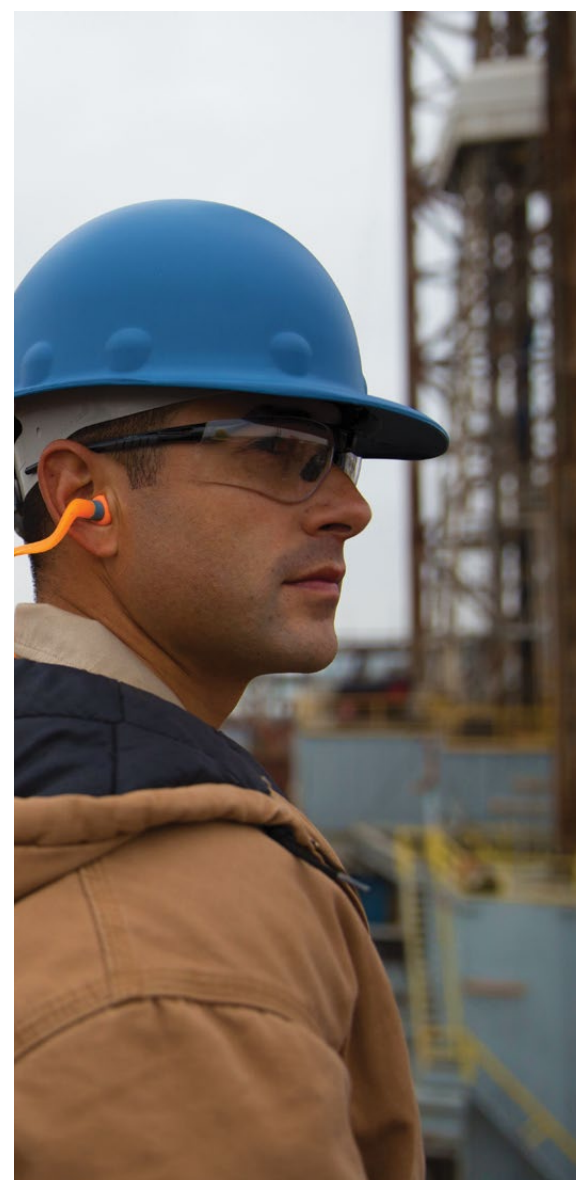
# RELIABLE AND ADVANCED SMOKE DETECTION

The HS-81 addressable fire detection and releasing system is a highly technological, fully redundant system designed to meet uptime industry requirements efficiently. The all-in-one capability (integrated fire and gas detection and releasing) of the HS-81 panels helps reduce the total cost of system installation, integration, maintenance, and services.

The aspiration detectors can identify tiny amounts of smoke, even from the early stages of a smoldering fire. By ensuring the earliest possible warning and distinguishing real smoke from dust and pollutants, HS-81 minimizes the number of nuisance alarms in your plant.

By integrating aspiration systems (VESDA) with HS-81, the system improves its detection capabilities, enabling significantly earlier warnings and allowing up to 40% greater coverage than conventional detection methods. The complete solution is end-to-end, SIL certified.

The VESDA detectors can be connected to HS-81 via conventional inputs (dry contact) and addressable monitoring modules. For both connections, HS-81 receives all the necessary information and diagnostics from connected VESDA detectors.



## ASPIRATION SMOKE DETECTION

Since pioneering Aspirating Smoke Detection (ASD) technology nearly 30 years ago, VESDA devices have been protecting personnel, irreplaceable assets, and mission critical infrastructures in the world's most iconic locations.

Our technologies combine reliability and early warning smoke detection with pinpoint addressability – giving users the time they need to quickly respond before lives, assets, or business continuity is compromised. Our brands include:

- **VESDA-E** – the latest generation of aspirating smoke detection technology
- **VESDA®** – the original very early warning aspirating smoke detection (ASD) system
- **ICAM™** – dedicated to ASD
- **Sensepoint & ECO™** – gas detection and environmental monitoring modules
- **OSID™** – beam smoke detection for open areas





# INDUSTRIAL VESDA VLI SIL-CERTIFIED DETECTION

In the process of selecting the most suitable form of smoke detection, it's important to consider both the application and the environment you need to protect. The VESDA VLI, SIL-certified devices require minimal

service and maintenance, but offer maximum product longevity. Our solutions come with high sensitivity sensors and reliable performance that minimizes both risks and potential losses.



## FEATURES AND BENEFITS

- **Reliable and consistent performance** – robust, absolute smoke detection.
- **Patented intelligent filter** – fail-safe filter design provides consistent sensitivity over the entire life of the filter and extends the detector's longevity.
- **Lint trap** – captures fibrous particulates, safeguarding against nuisance alarms.
- **Clean air barrier** – time-tested technology keeps the optical surfaces within the chamber free of contamination.
- **IP66 enclosure** – total protection against ingress of dust and strong water jets.
- **Clear Air Zero™** – minimizes the number of nuisance alarms.
- **Air-path monitoring** – detects internal blockages in due time.
- **Easy service and maintenance** – reduce downtime and lowers total cost of ownership thanks to modular field replaceable parts.
- **Convenient mounting** – eliminates the need for access equipment.
- **AutoLearn™** – smoke and flow, out-of-box operations





# VESDA-VLF 250 & 500 SERIES



The VESDA VLF detectors (VLF250 and VLF 500) are very early warning smoke detectors designed to protect small, business-critical environments of less than 500 m<sup>2</sup> (5,380 sq. ft.). By continually drawing air into sampling holes and into a pipe network, the detector filters the air and then passes it into a detection chamber where light scattering technology immediately detects even the tiny amounts of smoke.

The VLF can be installed and commissioned out-of-the-box without the need for a special interface or software programming tools. In operation, the unique Smoke Dial™ display provides the user with an instant understanding of a smoke event, even from a distance. Should a fault occur, the user simply opens the field service door and activates the Instant Fault Finder for a full diagnosis. The information can then be passed onto the fire service company, ensuring that service technicians arrive onsite fully prepared.

## ULTRASONIC FLOW SENSING

The patent-pending Ultrasonic Flow Sensing used in the VLF provides a direct reading of the sampling pipe flow rate. The system is immune to air temperature and pressure changes and is unaffected by contamination. The VLF is the first air sampling smoke detector to use ultrasonic flow sensing.



## PRODUCT FEATURES

- Out-of-the-box installation and commissioning
- Ultrasonic airflow sensing
- Laser-based absolute smoke detection
- Pre-engineered pipe network designs
- Programmable alarm thresholds
- Clean air barrier optics protection
- Instant recognition display
- Instant Fault Finder™
- Autolearn™ smoke
- Autolearn™ flow
- Field service access door
- Multiple event logging, with separate logs
- Event log – up to 18000 events
- Offline/online configuration capability
- Up to 500 m<sup>2</sup> (5,380 sq. Ft.) coverage



# VESDA-E ASPIRATING SMOKE DETECTION ASD









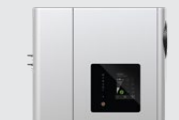


VESDA-E is the next-generation of ASD technology, featuring multiple innovative capabilities across a new and enriched portfolio that includes:

- VESDA Smoke+, offers increased sensitivity; up to 15 times greater than VESDA VLP, with at least three times better dust rejection and up to twice the longevity; maintains consistent sensitivity over time and enables up to 8% lower power consumption.
- VESDA Flex, future-proof expandability for maximum flexibility using StaX Hardware expansion modules that easily bolt onto the VESDA-E detector to add additional capabilities.
- VESDA-E VEA, introduces pinpoint addressability to deliver situational awareness to improve response time and efficiency (up to 40 locations).
- VESDA Connect, provides extensive connectivity options including Ethernet, WiFi, USB, VESDAnet and relays – reducing installation, commissioning, monitoring and maintenance costs.
- VESDA TCO, reduces the Total Cost of Ownership (TCO) through Capex value, Opex savings, Plug'n'Play installation, design-less pipe and microbore tube networks, vast monitoring options, and backwards compatibility. With VESDA-E you can reduce TCO by up to 15% for non-addressable products and up to 60% for the point addressable products.

## FEATURES AND BENEFITS

- **Detection performance** - Vastly better sensitivity and faster response time
- **Detection reliability** - Operating temperature stability and minimized nuisance alarms
- **Consistent performance over time** - Just as effective during long-term exposure to dust
- **Operational efficiency** - Power consumption per unit area

## VESDA-E PRODUCT RANGE

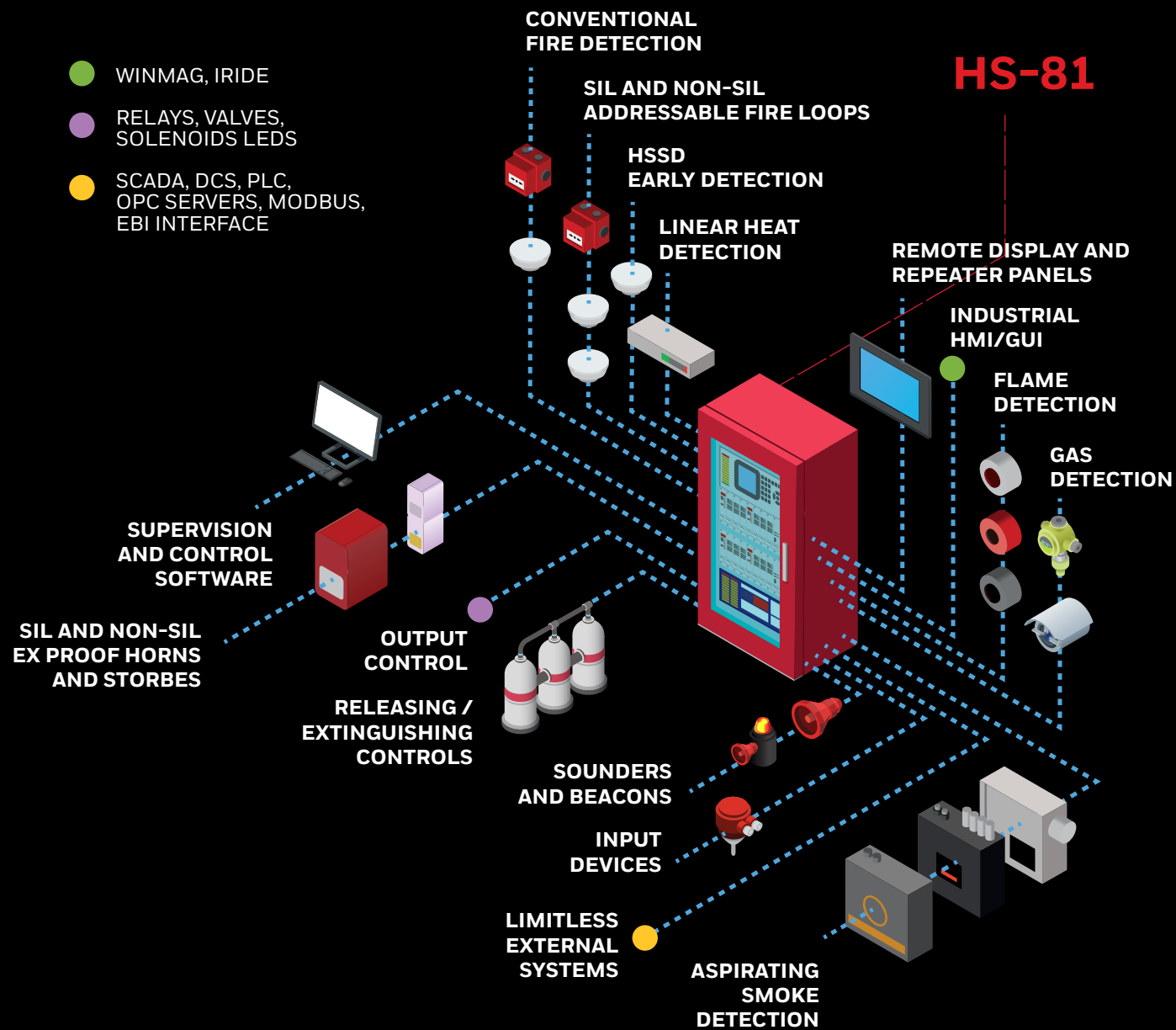
VESDA-E VEU		
VEU-A00		The VESDA-E VEU is the premium offering from the VESDA-E Range. It provides ultra-wide alarm sensitivity, ranged from 0.001% - 20.0% obs/m (0.0003 to 6.25% obs/ft) and up to VEU-A00 80 Class A holes, with a minimum 40% extending detector coverage in high airflow environments.
VEU-A10		VEU also provides 400 m (1,312 ft) and 800 m (2,625 ft) of linear and branched pipe VEU-A10 networks respectively, increasing coverage by up to 80% in high-ceiling applications – enabling convenient detector mounting for ease of access and maintenance.  VEU has an area coverage of up to 6,500 m <sup>2</sup> (69,965 sq. ft)* and standard features include StaX support along with Ethernet, Wi-Fi, USB, and VESDAnet capabilities.
VESDA-E VEP		
VEP-A00-P		The VESDA-E VEP series of aspirating smoke detectors extend the reach of the VESDA-E platform to a wide range of applications.
VEP-A10-P		VEP's sensitivity ranges from 0.005 to 20%/m (0.0016-6.25%/ft) and provides up to 40 Class A holes. VEP is equipped with a powerful aspirator that provides a total of 130 m (427 ft) with the one-pipe model and 560 m (1,837 ft) in the four-pipe model.
VEP-A00-1P		VEP also provides StaX support together with Ethernet, Wi-Fi, USB and VESDAnet capabilities.
VESDA-E VEA		
VEA-040-A00		VESDA-E VEA is the first pinpoint addressable aspirating smoke detector (ASD) for standard addressable detection applications and comes with a unique centralized test and maintenance function.
VEA-040-A10		VEA supports up to 40 sampling points and with end-to-end tube integrity, monitoring ongoing tests and maintenance procedures can be conducted at the detector – reducing maintenance time by up to 90% while lowering TCO by 60%.  Centralized tests and maintenance are ideal in environments where maintenance access to protected areas is restricted or difficult.
VESDA-E VES SIL CERTIFIED		
VES-A00-P		The VESDA-E VES is similar to the flagship VESDA-E VEP aspirating smoke detector, but also includes a valve mechanism in the inlet manifold and software to control the airflow from the four Sectors (pipes).
VES-A10-P		The VES enables the user to locate the source of smoke by identifying the first sector to reach the Alert level. The detector then continues to sample from all sectors to monitor fire growth and then reports separate alarm levels for each sector. The VES provides four individually configurable alarm levels (Alert, Action, Fire 1 and Fire 2), enabling optimal protection for a wide range of applications. Built on the Flair detection technology and years of application experience, VES detectors achieve consistent performance over their lifetime via absolute calibration.



# THE TOTAL PACKAGE

In harsh industrial environments it's essential to have a reliable system that keeps operations moving and minimizes downtime. The Honeywell HS-81 fire and gas controller manages aspiration, addressable and conventional detection, notification, and extinguishing/releasing functions – integrating with process safety systems and peripherals.

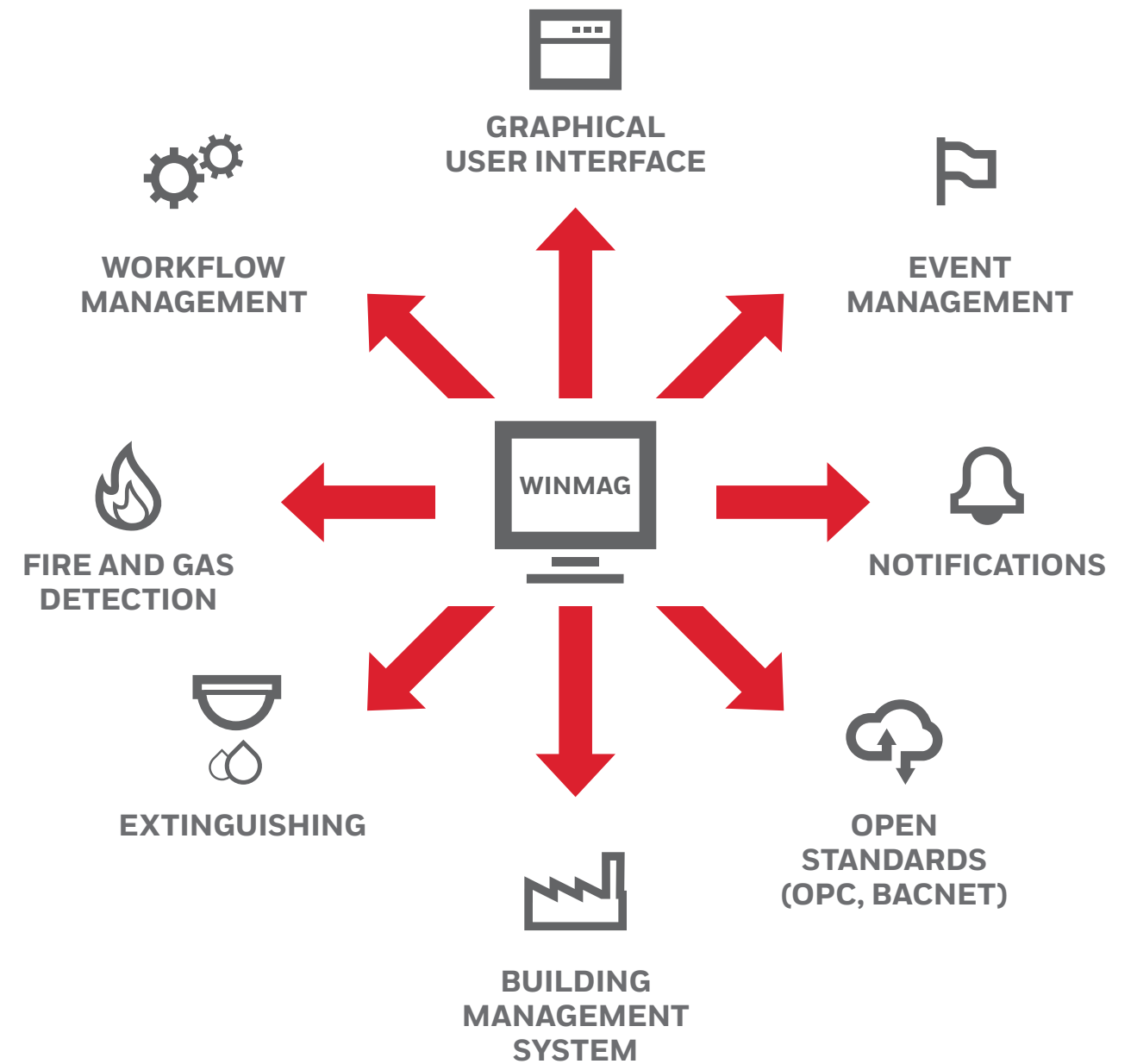
Honeywell provides a complete solution that can accommodate any facility safety and process requirement. Product and system design support is available for the up-front design stage, whereas field support is available during installation and maintenance. Honeywell is a best-in-class partner that offers a comprehensive range of solutions designed for harsh industrial and marine environments.



# WINMAG SUPERVISORY PROGRAM

The HS-81 can be connected to the WINMAG supervisory program which allows easy system management and remote graphic maps.

The WINMAG is installed on one or more PCs which are connected to the panel through a local area network (LAN), serial cable, or Wi-Fi.





# PRODUCT COMPARISON



FEATURES	VLI	VLF 250/500	VEA
Worldwide Approvals	UL, ULC, FM, ATEX, ActivFire, CE, LPCB, NF, EN 54, IEC61508	UL, ULC, FM, CCC, ActivFire, VdS, CE, EN54-20, LPCB	UL, ULC, CSFM, ActiveFire, VdS, CE, EN, CPR
SIL Certification	Yes	No	No
Hazardous Area Approval FM Class 1, Div. 2 (Groups A, B, C, D)	Suitable for Class 1 Division 2 applications Groups A, B, C & D	No	N/A
Area Coverage	2,000 m <sup>2</sup>	Up to 500 m <sup>2</sup>	3,345 m <sup>2</sup> across 40 sampling holes
No of Holes (A / B / C)	0.15 %-2.0% obs/m	0.025 - 20.00% obs/m	1.6% obs/m (0.5% obs/ ft)
Min Fire 1 Threshold	24/28/60	30 holes	40
Linear Pipe	360m	50m	40 x 100 m (40 x 328 ft)
No. Relays	5	3 (Extendable to 6)	(expandable up to 47)
Connectivity	USB, Ethernet, RS485	Serial	USB, Ethernet, WiFi
On-board Memory (Max. Events)	18	18	20
Bar Graph/ Indicator LED	5 on-board LEDs Remote Display (VLI-885)	7 on-board LEDs 10 Segment Circular display	LEDs or 3.5" Color Touch Screen
StaX Expandability	No	No	Yes

VEU	VES	VEP-1 / VEP-4
UL, ULC, FM, ActiveFire, VdS, CE, EN, CPR	UL, ULC Pending	UL, ULC, FM, ActivFire, VdS, CE, EN, CPR
No	Yes	No
No	No	Pending
6,500 m <sup>2</sup>	2,000 m <sup>2</sup>	1,000 m <sup>2</sup> / 2,000 m <sup>2</sup>
0.001%/m	0.01%/m	0.01%/m
80/80/100	40/80/100	30/40/45~40/80/10
400 m	280 m	100m / 280m
7	12	7
USB, Ethernet, WiFi	USB, Ethernet, WiFi	USB, Ethernet, WiFi
20	20	20
LEDs or 3.5" Color Touch Screen	LEDs or 3.5" Color Touch Screen	LEDs or 3.5" Color Touch Screen
Yes	No	Yes





## APPLICATIONS

- Battery Rooms
- Clean room
- Control and Auxiliary Rooms
- Control Panels
- Electrical and Switching Cabinets
- Harsh MCC and Cable spread rooms
- Indoor substations areas
- Industrial Office building
- Industrial Accommodation
- Industrial warehouses
- Indoor Fabrication Workshops / Ship Building
- Industrial Server / Telecommunication / Data rooms
- MCC cabinets
- Storage facility
- Underground Tunnels / Utility Tunnels / Metro Stations
- Waste Facility

### Honeywell Industrial Fire

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