For Safety Related Applications
What do you need from an Integrated Fire and Gas System?

In Industrial Fire and Gas environments, it's important to have a reliable system that keeps operations moving and minimizes down time. The Honeywell H-S81 fire and gas controller manages detection, notification, and extinguishing functions and can integrate with process safety systems as well as peripherals.

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Solution</th>
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<tbody>
<tr>
<td>Detect</td>
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</tbody>
</table>
| To accurately identify a site Fire or Gas incident that can impact the process, damage property or hurt people | Smoke detection  
Heat detection  
Aspirating smoke detection  
Flame detection  
Gas detection  
Call points |
| Notify                |                               |
| To notify personnel about the issue, location, and actions | Speakers  
Horns  
Beacons  
Strobes  
LED signs |
| Control               |                               |
| To automatically mitigate and communicate the hazard | Suppression  
Releasing  
Ties to DCS |

Honeywell provides a complete solution to meet the facility’s safety and process requirements. Product and system design support is available for the up-front design stage and field support is available during installation and maintenance.

Honeywell is a best-in-class partner - we offer a comprehensive range of solutions designed for harsh industrial and marine environments – and they all have the H-S81 Fire and Gas Controller at their core.
The H-S81-HS Controller

Honeywell is the world’s leading provider of advanced automation solutions to the process industries. Among this suite of solutions, we offer an integrated industrial fire and gas system that includes flame, gas, and smoke detection; logic control and networking equipment; suppression and extinguishing capability; public address, sounders, beacons, and other safety components.

Working in unison, these elements can be brought together to monitor the state of plant safety and they offer the user a rapid and coherent emergency response capability. The system's highly reliable architecture and advanced software enables faster and better decisions, ensuring maximum plant uptime.

The H-S81 is an industrial-grade flame, gas, smoke, and extinguishing system that serves the petroleum, petrochemical, power, mining, military and off-shore industries. It has been designed to meet the heaviest functional reliability and availability requirements, with excellent resistance to electromagnetic disturbances and a continuous operability in harsh environmental conditions.

Externally it is similar in design to a safety Programmable Logic Controller, with Printed Circuit Board cards of various functions packaged within industry-standard 19” 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 multi-function operator’s 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. Cabinet options provide either wall mount or free standing capabilities.
Advantages and Benefits

**Modular Design** – The system is so flexible, it can be configured for what’s needed now and then easily expanded later.

**Redundancy Where You Need It** – Hot-backup redundant CPU’s and power supplies are built into the architecture.

**Hot Swap Critical Components** – If a CPU, power supply or redundant I/O card needs replacement, there is no need to power down the system for repair. During normal operation, the component can be removed and replaced. The system reconfigures without human intervention and without shutting down the process.

**Open 4-20mA Device Protocol** – A home run to each 4-20mA Gas and Flame device is the most reliable wiring method, and this system works with virtually every 4-20mA scaleable sensor.

**Easy Configuration** – Menu driven pull-down programming speeds configuration and commissioning work. Product training takes two days and experienced installers are functional the first day.

**Networking & Third Party Interfaces** – The fault-tolerant, dual-path redundant panel network can be coupled to a wide variety of plant process control systems, simultaneously communicating with multiple display and control systems.

**Integrated Solution** – Smoke, flame, gas, extinguishing, PAGA, networking, and SIS connectivity are all more than possible with a single controller. There is no need for separate systems that add complexity and cost.

**Single Point of Operation** – Configuration and programming for an entire network can all be managed through a single workstation.

**High Level of Safety** – Functional reliability and fault-tolerant operation are designed into the controller. Some examples are: daily device auto test routines, auto testing of card inputs and outputs, a looped and redundant communications bus, and safe disabling of faulty components.
H-S81-HS System Highlights

**Modular Control Panel**
- Safety PLC for Flame and Gas
- Addressable Smoke Detection Panel
- Suppression and Extinguishing Panel
- Human Machine Interface (HMI) Panel

**Fire Extinguishing**
- Automatic Fire Extinguishing System
- Dedicated Command for Each Solenoid
- Monitoring and Diagnostics

**Smoke Detection**
- Addressable Analog Detection
- Multiple Protocols on One Panel
- Fault Monitoring
- Pre-Alarm, Alarm, and Alarm Verification
- SIL2 Detection

**Flame and Gas Monitoring**
- 4-20mA Protocol with HART
- Front Panel Bar Graph/Numerical Displays
- Programmable Thresholds
- SIL2 Sensors Accommodated
- Remote Reporting

**Building Management System Controls**
- Integrated Process and Building Management

**Software Supervision**
- Graphic Maps
- System Management
- Remote Control

**Process Control Integration**
- Ethernet TCP/IP
- Modbus
- Object Linking and Embedding for Process Control (OPC)
- Server and Supervisory Control and Data Acquisition (SCADA) Connect

### System Capacities

<table>
<thead>
<tr>
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<th>UL</th>
<th>EN-54</th>
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</thead>
<tbody>
<tr>
<td><strong>Hardware</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Racks</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Cards</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>Single Point Devices</td>
<td>9906</td>
<td>16510</td>
</tr>
<tr>
<td>Addressable Devices</td>
<td>29,700+29,700</td>
<td>29,700+29,700</td>
</tr>
<tr>
<td><strong>Software</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety Zone Capacity</td>
<td>300</td>
<td>300</td>
</tr>
<tr>
<td>Panels per TCP/IP Network</td>
<td>99</td>
<td>99</td>
</tr>
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Features

The H-S81 complies with the fault tolerance requirements set by IEC61508, and it is capable of attaining a SIL3 level (Safety Integrity Level 3) which is certified by a third-party agency. In addition to this high achievement with SIL, the H-S81 has some excellent features:

- Hot backup redundant CPU’s (no down time)
- Hot swappable redundant CPU’s & power supplies
- Hot swappable cards, with automatic reconfiguration
- Redundant and looped panel communication bus
- Automatic testing of card inputs and outputs
- Self-diagnostics and fault signaling of cards and CPU
- Automatic safe disabling of malfunctioning cards
- Fire & Gas applications can have redundant cards
- Multiple protocol addressable detection systems

The H-S81 can replace several separate systems commonly found at plant site. On the right, is an example where the H-S81 carries out all functions that several separate systems would typically fulfill:

- A safety Programmable Logic Controller (PLC) for the fire and gas detection
- An addressable fire detection panel for buildings
- A panel for suppression & extinguishing
- A Human Machine Interface (HMI)
**Communication systems**

The panel H-S81 has been designed to communicate with other devices of the same type and with supervisory systems and SCADA through multiple protocols, such as Ethernet TCP/IP, Modbus and OPC Server.

**Supervisory Program**

The H-S81 can be connected to the IRIDE supervisory program, which allows easy management of the system with graphic maps from a remote location. The IRIDE program is installed on one or more PCs, which are connected to the panel via LAN network or serial cable.
The H-S81-HS Controller Has the Following Standards and Certifications:

<table>
<thead>
<tr>
<th>Category</th>
<th>Standards and Certifications</th>
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<tbody>
<tr>
<td>Construction Products</td>
<td>Norm EN 12094-1:2003 European product conformity 0051-CPD-0137/138/139</td>
</tr>
<tr>
<td>Fire Detection</td>
<td>EN 54-2, EN 54-4+A1:2002 Certificate of conformity and use of IMQ mark CA12.00956/957/958</td>
</tr>
<tr>
<td>Functional Safety</td>
<td>SIL2 and/or SIL3 IEC-61508 1-7:2010 SIL certification 968/EL 884.01/13</td>
</tr>
<tr>
<td>NFPA 72 (UL 864)</td>
<td>Emergency Alarm System control units, Control Units, Releasing Device</td>
</tr>
<tr>
<td>Fabrication Process Control and Surveillance FPC</td>
<td>Production process (FCP) Certified ISO 9001:2000</td>
</tr>
<tr>
<td>GOST R</td>
<td>Product conformity Certificate n° POCC IT. AB24.B01128</td>
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<tr>
<td>Marine Equipment Directive</td>
<td>MED 96/98/EC Harmonized standards for marine and off-shore certification in progress with ABS</td>
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