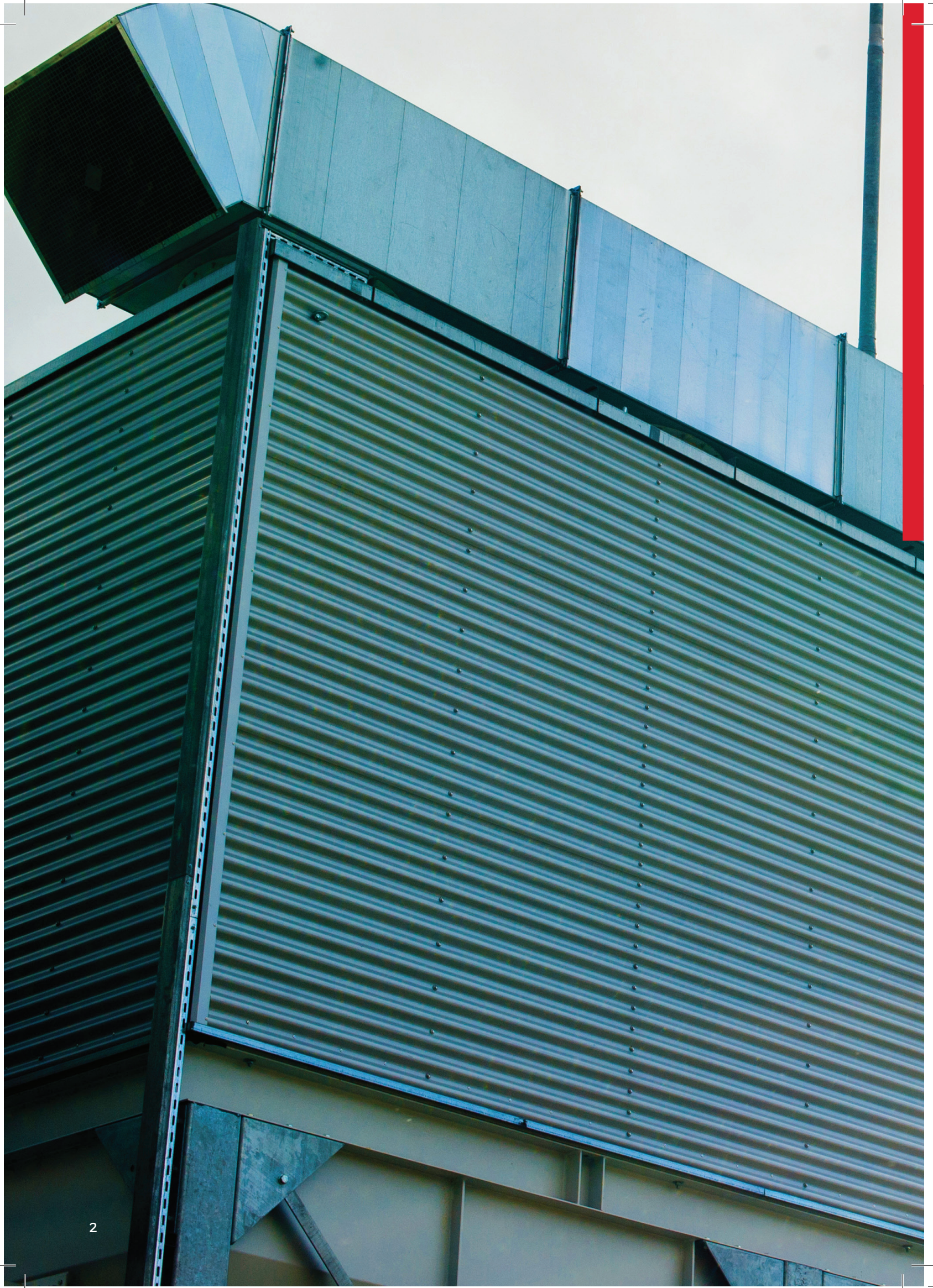# INTEGRATED SAFETY IN ANY ENVIRONMENT.

Industrial Fire Solutions

HS-81 Fire and Gas Controller

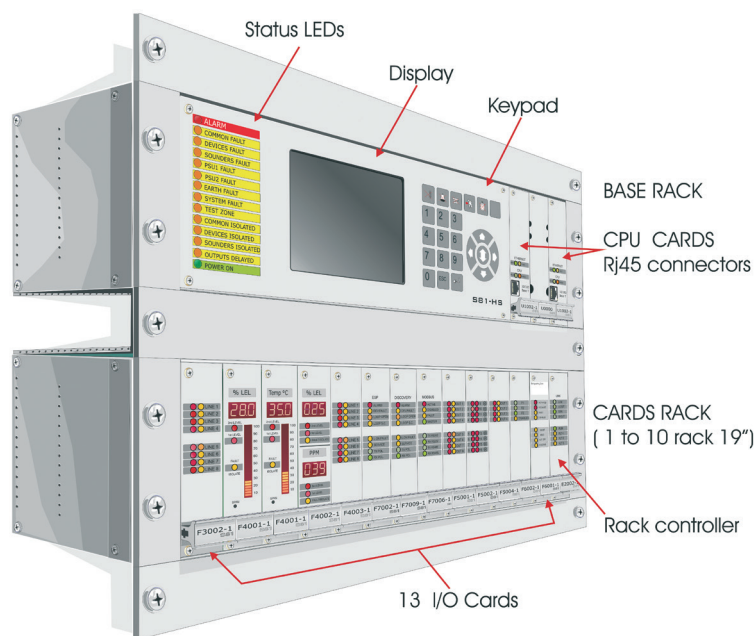**Honeywell** | Industrial Fire Solutions

THE TOTAL PACKAGE

What do you need from an integrated fire and gas system? In harsh industrial environments it is important to have a reliable system that keeps operations moving and minimizes downtime. The Honeywell HS-81 Fire and Gas Controller manages detection, notification and extinguishing functions and can integrate with process safety systems and peripherals – it's everything you need.

Honeywell provides a complete solution to meet any 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 HS-81 Fire and Gas Controllers at their core.

	REQUIREMENTS	SOLUTION
DETECT	To accurately identify a site fire or gas incident that can impact the process, damage property, damage the environment, or hurt people	Smoke Detection Heat Detection Aspirating Smoke Detection Flame Detection Gas Detection Call Points HSSD Linear Heat Detection
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, ESD and PSS

THE HS-81 CONTROLLER

Status LEDs
Display
Keypad
BASE RACK
CPU CARDS
Rj45 connectors
CARDS RACK
(1 to 10 rack 19")
Rack controller
13 I/O Cards

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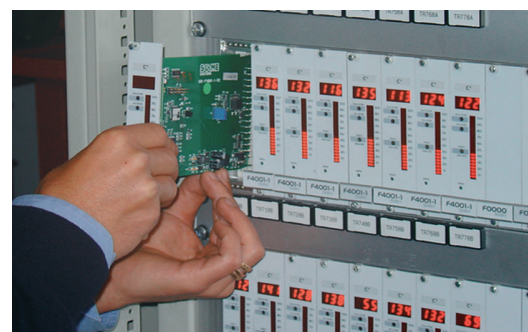
These elements can be brought together to monitor
the state of plant safety and they offer the user a rapid and coherent emergency response capability. The system's highly reliable architecture and advanced software enable faster and wiser decisions, ensuring maximum plant uptime.

The HS-81 is an industrial-grade flame, gas, smoke, and extinguishing system that serves the Oil & Gas, Petrochemical, Power, Mining, Pharmaceutical & Biotech and transportation 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.

POWERFUL INSIDE AND OUT

Externally it is similar in design to a safety programmable logic controller (PLC) with printed circuit board (PCB) 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 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. Cabinet options provide either wall mount or freestanding capabilities.

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

HS-81 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

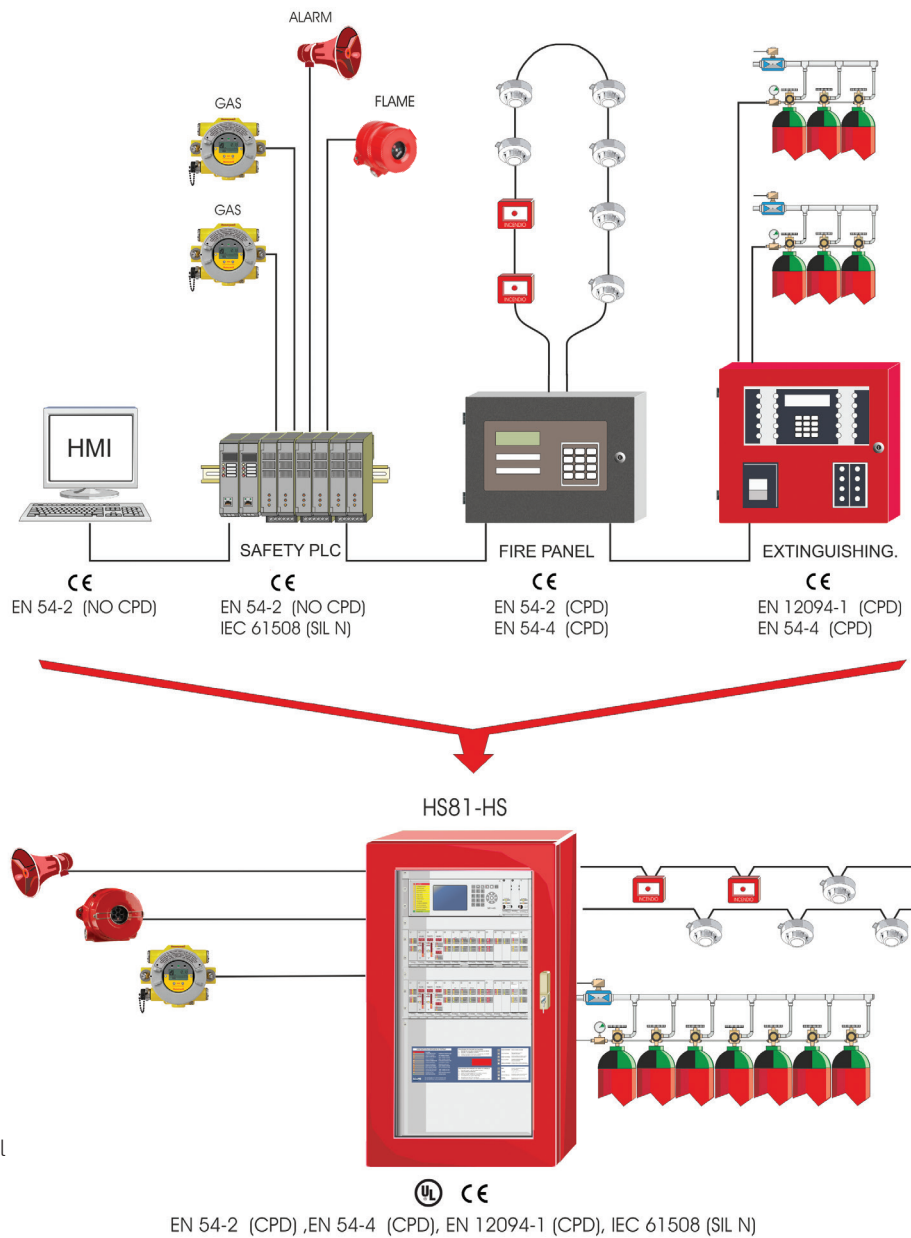| SYSTEM CAPACITIES		UL	EN-54
Hardware	Racks	6	10
	Cards	13	13
	Single Point Devices	9906	16510
	Addressable Devices	29,700+29,700	29,700+29,700
Software	Safety Zone Capacity	300	300
	Devices Per Zone	99 Inputs, 99 Outputs, 99 Logic Gates	99 Inputs, 99 Outputs, 99 Logic Gates
	Panels per TCP/IP Network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

FEATURES

The HS-81 complies with fault tolerance requirements set by IEC61508 and it is capable of attaining a Safety Integrity Level 3 (SIL3 level) that is certified by a third-party agency. In addition to this high achievement with SIL, the HS-81 has some excellent features:

- Hot backup redundant central processing units (CPUs) eliminate downtime

- Hot swappable redundant CPUs and 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 and gas applications can have redundant cards

- Multiple protocol addressable detection systems

The HS-81 can replace several separate systems commonly found at plant site. On the right is an example where the HS-81 carries out all functions that several separate systems would typically fulfill:

- PLC for fire and gas detection

- Addressable fire detection panel for buildings

- Panel for suppression and extinguishing

- Human-machine interface (HMI)

HMI

ALARM
GAS   FLAME
GAS

SAFETY PLC   FIRE PANEL   EXTINGUISHING.

| EN 54-2 (NO CPD) | EN 54-2 (NO CPD) IEC 61508 (SIL N) | EN 54-2 (CPD) EN 54-4 (CPD) | EN 12094-1 (CPD) EN 54-4 (CPD) |

HS81-HS

EN 54-2 (CPD) ,EN 54-4 (CPD), EN 12094-1 (CPD), IEC 61508 (SIL N)

COMMUNICATION SYSTEMS

The panel is designed to communicate with other devices of the same type and with supervisory systems and supervisory control and data acquisition (SCADA) through multiple protocols – including Ethernet TCP/IP, Modbus and OPC Server.
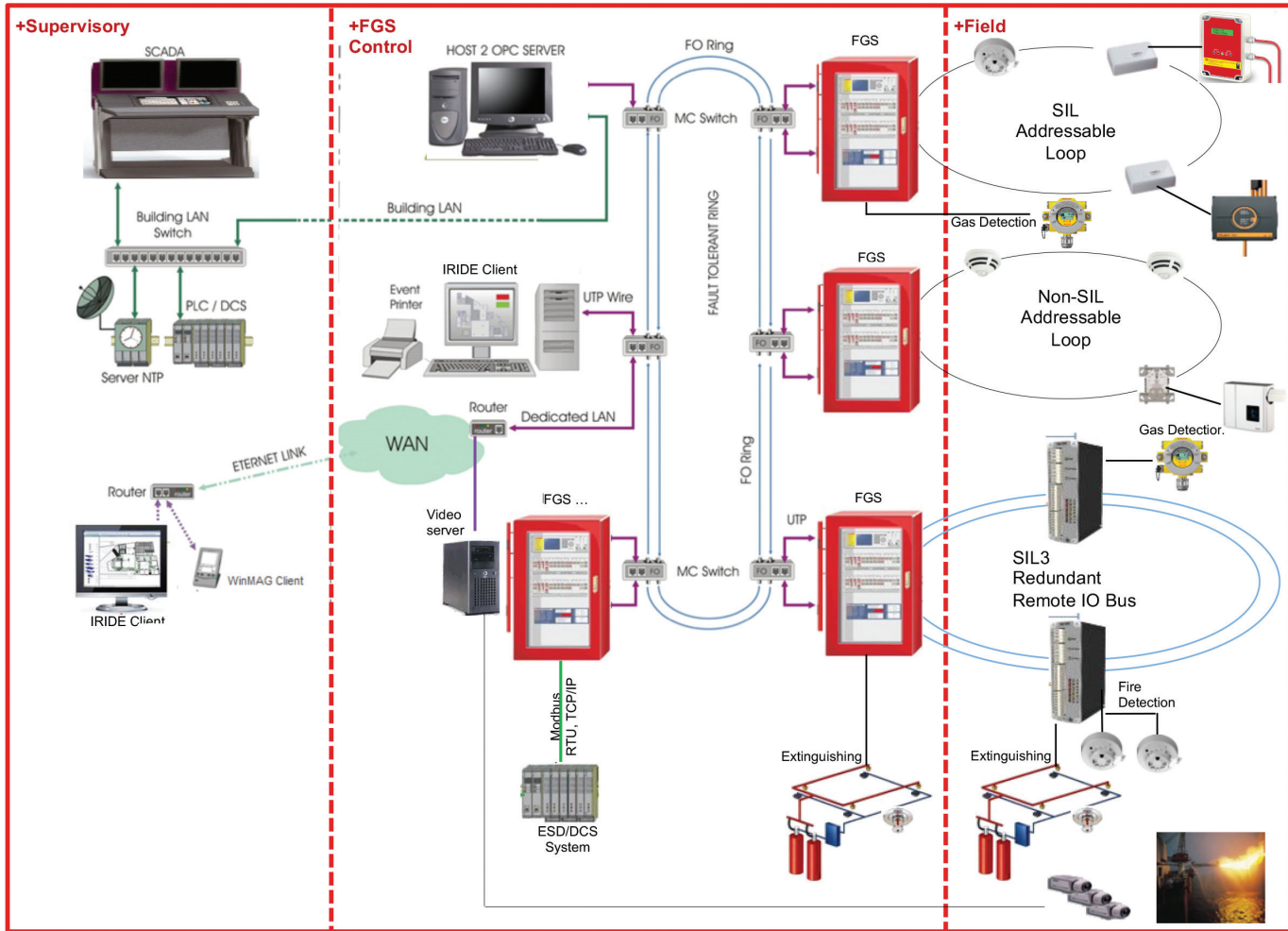

SUPERVISORY PROGRAM

The HS-81 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 local area network (LAN) or serial cable.

COMPACT INDUSTRIAL FIRE CONTROLLERS

The HS-81-HS/C-ULS and the HS-81-HS/C-ULD are the compact versions of the HS-81-HS with a single or double power supply, respectively. The compact panel is smaller than the HS-81-HS, designed to fit in tight spaces but also for use by those who need a discreet, user-friendly system. Like the HS-81-HS, it provides an integrated industrial protection 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.

Each panel is a modular system comprised of an enclosure (a metal cabinet with double door), display, a redundant CPU and up to 8 I/O cards. The number and type of I/O cards are selected based on the protection needs of the facility. These panels have a single or dual redundant power supply to match either requirement. The HS-81-HSC panels are capable of supporting the F7011-UL Safety Bus Control Card (see #HI- 60946) which controls remote modules installed on a unique bus. Up to 64 remote safety bus modules can be controlled by a single F7011-UL control card, expanding the capacity of the control panel while providing optimal functionality in fault condition with high communication speed.
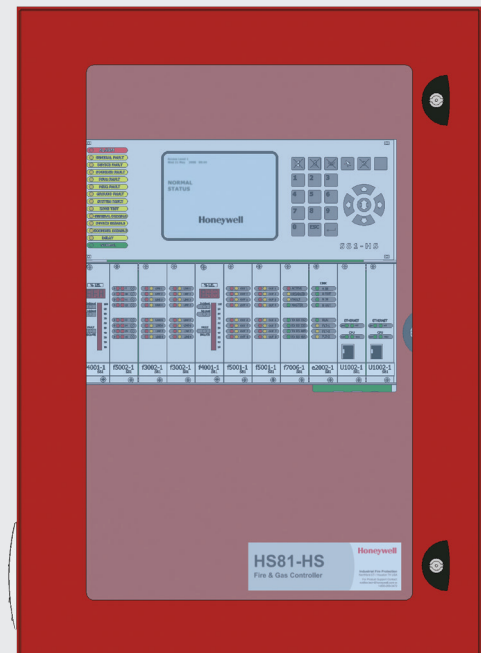
SAFETY BUS SYSTEM DIAGRAM
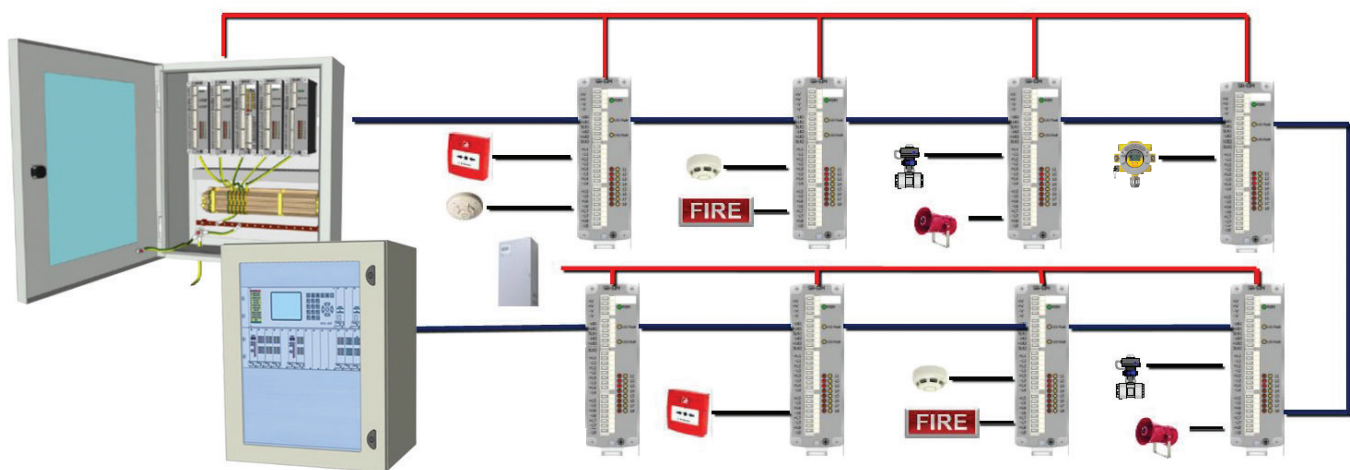
FEATURES

- Fire Detection
- Gas Detection
- Fire Suppression
- Redundancy
- Hot-swap with all I/O cards, CPUs and display
- Addressable
- 8 I/O cards maximum
- 300 programmable fire zones
- 300 programmable intrusion zones
- 1 suppression zone per I/O card
- 99 input, 99 output, 99 association points per zone
- CPU redundancy standard
- Networking panels with TCP/IP protocol
- Modbus RTU/Modbus TCP Protocols for interfacing with third-party systems
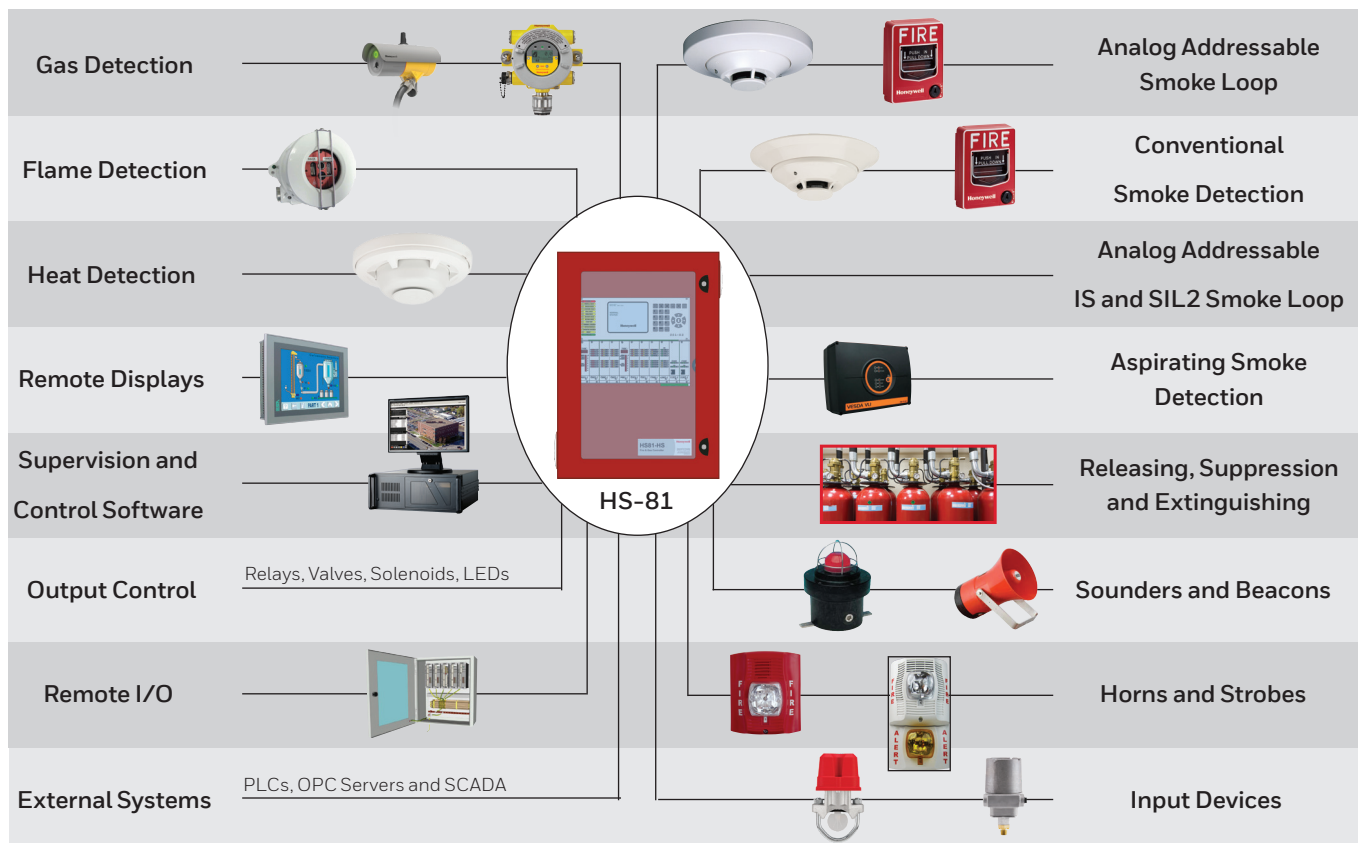
MECHANICAL FEATURES

- Cabinet: Sheet metal with internal door and transparent door; stainless steel option available upon request
- Color: RAL 7035 (Industrial Gray standard), RAL 3000 (Red for fire, optional)
- Protection degree: Cabinet rated for IP54/IP66,
- Installation: Wall mounting
- Size: 27.5" (700mm) x 19.7" (500mm) x 9.8" (250mm)
- Product UL-listed for use in dry locations

CERTIFICATIONS

- SIL2
- EN54
- ATEX
- UL864
- ABS
- FM 3010

ELECTRICAL INFORMATION

- Input power: 110-240V (± 10%)
- Nominal output power: 24VDC
- Maximum output power: 4A/8A (dual supply version)
- Maximum batteries charging current: 4A, up to 65Ah. Up to 14Ah allowed inside cabinet. Larger batteries require use of a separate cabinet.
- Protections: Surge, short-circuit and reverse battery
- EN54 Standard: EN54-4
- CE standards: EN50081-2 and EN50082-2 (Industrial environment)
- Safety standard: EN1508
- UL standard: UL864 9th Edition

Gas Detection		Analog Addressable Smoke Loop
Flame Detection		Conventional Smoke Detection
Heat Detection		Analog Addressable IS and SIL2 Smoke Loop
Remote Displays	HS-81	Aspirating Smoke Detection
Supervision and Control Software		Releasing, Suppression and Extinguishing
Output Control	Relays, Valves, Solenoids, LEDs	Sounders and Beacons
Remote I/O		Horns and Strobes
External Systems	PLCs, OPC Servers and SCADA	Input Devices

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 CPUs 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 scalable sensor.

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

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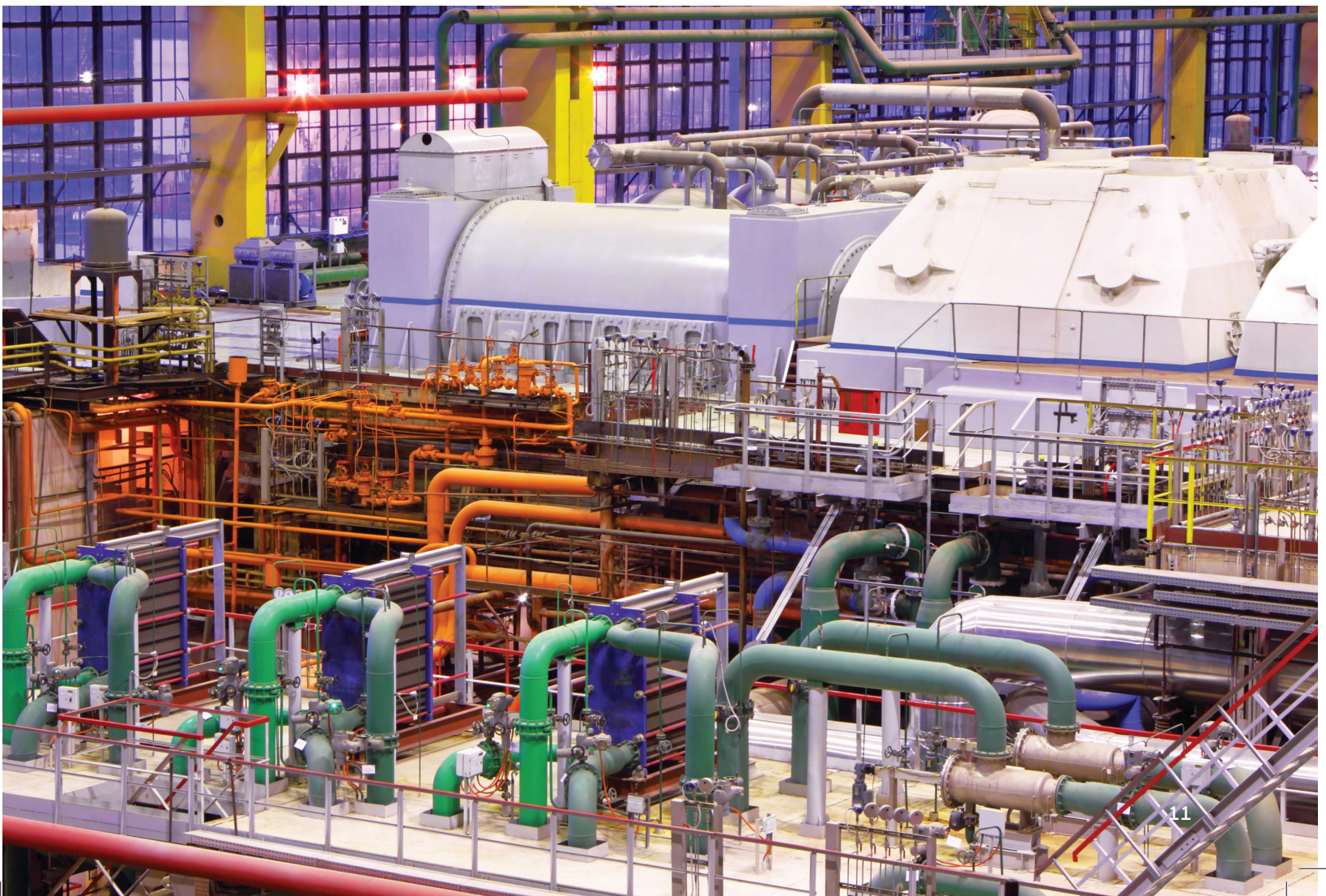
Single Point of Operation – Configuration and programming for an entire network can all be managed through a single workstation.

High Level of Safety – Functional reliability and fault-tolerant operations are designed into the controller. Some examples are: daily device auto test routines, auto testing of card inputs and outputs,
a looped and redundant communication bus and safe disabling of faulty components.

HS-81-HS CONTROLLER STANDARDS AND CERTIFICATIONS:

CE	European Product Conformity	Norm EN 12094-1:2003 0051–CPR–0423
(logo)	Fire Detection	EN 54-2:1997 + A1:2006 EN 54-4:1997 + A1:2002 + A2:2006 EN 54-21:2006 0051–CPR–0423
TÜV INTERCERT SAAR	Functional Safety	SIL2 and /or SIL3 IEC-61508 1-7:2010 SIL certification 16-SIL-0010017-01-TIC
UL	UL864 (NFPA 72)	Standard for Control Units and Accessories for Fire Alarm Systems
FM APPROVED	FM 3010	Fire Alarm Signaling Systems
GOST R logo	GOST R	Product conformity Certificate n° RU C-IT.ПБ34.В.00306/19
Ex	ATEX	DIR 2014/34/EU IMQ 16 ATEX 006 X

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INDUSTRIAL FIRE SOLUTIONS