

# **SENSIDYNE®**

*Industrial Health & Safety Instrumentation*



## **Gas Detection for Power Generation Plants and Facilities**

***For Compliance with NFPA 850, NFPA 54,  
NFPA 2, OSHA 29-1910.146, OSHA  
29-1910-1000, and OSHA 29-1910.111***

***SENSALERT® ASI***

Car Dumper • Crusher House • Coal Silos, Hoppers and Bunkers • Conveyor Tunnels • Pulverizer Area • Battery Rooms • Igniters • Gas Trains and Burners • Gas Metering Skids • Feedwater Treatment • Selective Catalytic Reduction of NOx • Triconex Valves • CEM Shelters • Seal Oil System • Annular Space • Generator Hydrogen System  
CO • CO<sub>2</sub> • Cl<sub>2</sub> • HCl • H<sub>2</sub>SO<sub>4</sub> • H<sub>2</sub>S • NH<sub>3</sub> • NO • NO<sub>2</sub> • O<sub>2</sub> • SO<sub>2</sub> • LEL

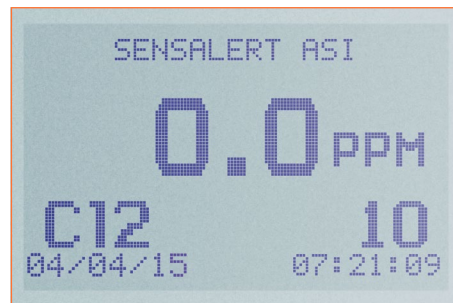
**+** Detection at every point.

# SENSALERT<sup>®</sup> ASI

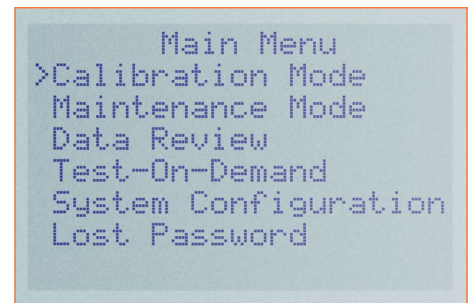
Industry-leading reliability, SensAlert ASI is the ideal fixed-point gas detector for critical safety applications. Flexible configurations and a simple interface provide maximum application versatility while remaining the easiest to install, commission, operate, and maintain.



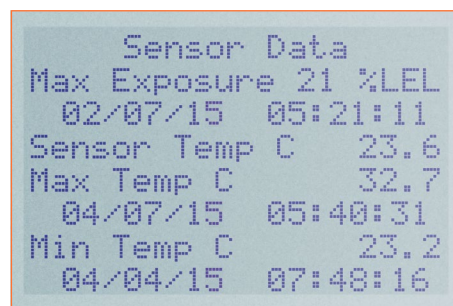
- **Functional Safety, unquestionable reliability**  
Third-party SIL-2 certification validating long-term reliability  
Sensors are performance tested and certified providing assured capability  
Sensor Test-On-Demand, with on-board gas generator
- **Universal platform with Intrinsically Safe sensor head**  
Replace sensors without area declassification or work permits  
Shop calibrate then hot-swap gas sensors in classified areas  
Remote mount sensor up to 100 ft./30 m. away without rigid conduit  
Modbus, HART, and 4-20 mA communication options
- **Intelligent Plus Series sensors**  
Auto-recognition and set-up from sensor memory  
Extensive sensor range for Flammables/Combustibles, Toxics, and Oxygen  
Compatible with all Plus Series sensor ranges and technologies
- **Flexible installation or retrofit**  
2-wire and 3-wire transmitter models with global performance approvals  
Unrestricted installation and operation in hazardous classified areas  
Non-intrusive configuration and maintenance Interface  
Configurable alarms & warnings for hazard mitigation and notification



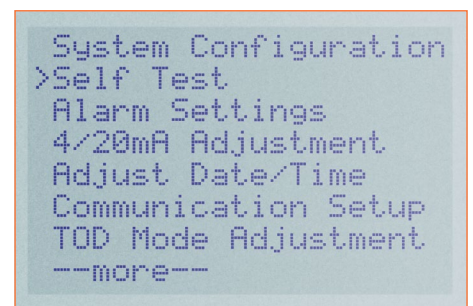
Main Display



Main Menu



Sensor Data Review



System Configuration Menu

**+ Detection at every point.**

## Power Plant Personnel Protection and Loss Prevention

About 6,000 major power plants in the US supply electricity for homes, businesses, and industry. Natural Gas, Coal and to a lesser extent Nuclear and Hydroelectric, with 70% of the facilities being steam plants using a fossil fuel to drive steam turbines.

Environmental factors such as emissions and personnel safety are highly regulated by the EPA and OSHA. Loss prevention from fire or explosion is stressed by owners and insurance companies and a fear of prolonged outage.

Coal and natural gas both have hazards which are best monitored continuously to prevent fires and employee exposure to toxic gases and Oxygen deficiency.

Unique requirements for safety may be fuel dependent, PRB coal or high pressure natural gas. Emissions control may mean an SCR unit, Scrubber or electrostatic precipitator is used to reduce emissions of criteria pollutants. Each has special hazards.

Many areas in power plants are confined space per the OSHA definition, including instrument shelters, coal tunnels and others. All require careful analysis and monitoring if required by employee usage or traffic.

Sensidyne gas detection experts look forward to discussing appropriate gas and fire monitoring solutions for your facility.

Activity	Description	Hazards	Regulations	Monitors	Comments
Fire & Gas Hazard Monitoring Strategies for Coal and Natural Gas Fired Power Plants					
Coal Delivery and Handling	Receiving: Car Dumper, Conveying, Tunnels	Fire, CO, Methane, Oxygen Deficiency	NFPA 850 RP, OSHA 29-1910.146 and 29-1910-1000 Table Z-1	CO, CH4, O2 Subject to Survey	Tunnels and Other Areas Are Confined Space
Coal Processing and Storage	Crusher House, Tripper Conveyor, Bunkers	Fire, CO, Methane, Oxygen Deficiency	NFPA 850 RP, OSHA 29-1910.146 and 29-1910-1000 Table Z-1	CO, CH4, O2 Subject to Survey	Tunnels Are Confined Space, Coal Bunkers High Fire Hazard
Pulverizers	Reduces Coal to Micrometer Size	Fire Oxygen Deficiency	NFPA 850 RP, OSHA 29-1910.146	O2 and Fire	Pulverizers Are Filled with Inert Gas
Gas Igniters	Ignites Pulverized Coal	Gas Train or Control Valve Leaks and Fire	NFPA 850 RP, NFPA 54	LEL and Fast Fire Detectors	High Pressure Gas Hazardous
SCR for NOx All Plants	Ammonia Sprayed Into Catalyst Bed Reacts Out NOx	Toxic Gas Exposure	OSHA 29-1910-1000 Table Z-1, 29 CFR 1910.111, NH3	NH3 Tanks, Pumps, Vaporizers	Ammonia Spreads Like Fog, Dissipating Upward
Natural Gas Fired Plants					
Burners	Multiple, Fires Boiler	Fire, Explosion	NFPA 850 RP, NFPA 54	LEL, Optical Fire Detection	Gas Leaks Are Very Serious Due to High Pressure
Burner Gas Trains	Controls & Regulates Gas	Fire, Explosion	NFPA 850 RP, NFPA 54		
Triconex Valves	Control Valve	Fire, Explosion	NFPA 850 RP, NFPA 54		
Metering Stations	Meters Usage	Fire, Explosion	NFPA 850 RP, NFPA 54		
General Power Plant Applications					
Generator Cooling System	H2 Leaks, H2 Supply	H2 Fires, Seal Oil System	NFPA 2, Hydrogen Technologies Code	H2 Leaks, Optical Fire Detectors	Invisible Flame
Feed-water Treatment	Chemical Water Treatment	Toxic Chemicals	1910-1000 Table Z-1	Toxic Chemicals	CL2, HCl, SO2, Others
Battery rooms	Multiple Areas	H2 Fire Explosion	NFPA 85	Ceiling Hydrogen	Invisible Flame
CEM Shelters	Analyzer Shelters	Oxygen Deficiency	OSHA 29-1910.146	Oxygen Deficiency	Serious Issue

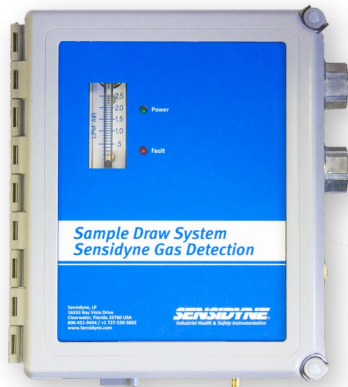
## Comprehensive Solutions

Generation facilities often require multiple technologies to complete a safety monitoring Solution. Open Path gas detection detects a potential catastrophic gas release. SIL-2 optical flame detection sees fire outside the boiler in seconds. Point gas monitors are employed to pinpoint gas leaks and for personnel protection. Wireless gas detection integrates widespread instruments and centralizes data and alarming functions.





## Gas Detection Sample Draw



FM Approved to sample from a Class 1 Division 1 area placed in a Class 1 Division 2 area.

Several Utilities are using Sensidyne's Listed Sample Draw unit to monitor CO in coal bunkers. This is an excellent application, particularly if sample clean-up equipment is in already place.

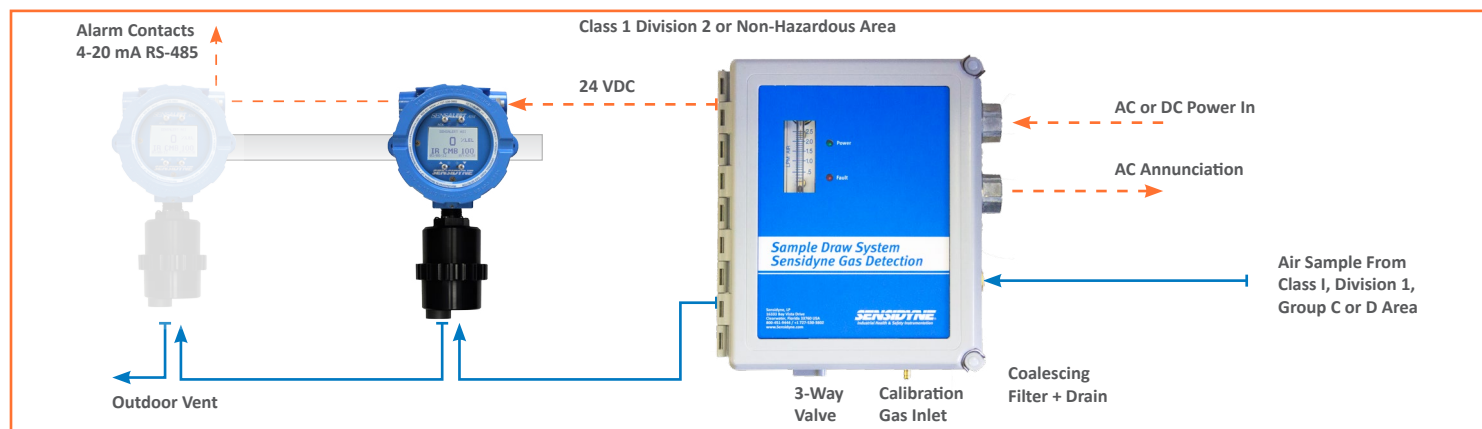
## Model 7200 Controller



- 16-64 Inputs
- LAN Webserver
- Ethernet TCP/IP
- Dual RS 485 Modbus
- Embedded Web Pages
- Common Alarm Relays
- Discrete Alarm Relays
- Division 2 Approved
- Wall or Rack Mount

The 7200 can integrate all your gas and fire monitoring devices and place the information on your LAN for access and programming from any location.

## Typical Gas Detection System with Sample Draw



Gas	Formula	Density	TLV/LEL	Span	Type	Part Number
Acetylene	C <sub>2</sub> H <sub>2</sub>	0.9	2.5% vol	50% LEL	Infrared	823-0249-51
Ammonia*	NH <sub>3</sub>	0.6	25 ppm/15% vol	100, 300 ppm	LI, EC, D	823-0201-21, 41
Carbon Dioxide	CO <sub>2</sub>	1.5	0.5%, 3% IDLH	5.0% vol	Infrared	823-0205-52
Carbon Monoxide*	CO	1	50 ppm	100 ppm	EC, ND	823-0219-23
Chlorine*	Cl <sub>2</sub>	2.5	0.5 ppm	5, 10 ppm	LI, EC	823-0202-22, 21
Gasoline	HC Mix	2 to 4	1.2 - 1.3% vol	100% LEL	Infrared	823-0211-51
Hydrogen Chloride*	HCl	1.3	2 ppm	20 ppm	EC, ND	823-0208-22
Hydrogen Sulfide*	H <sub>2</sub> S	1.2	1 ppm	50, 100 ppm	EC, ND	823-0206-22, 21
Methane	CH <sub>4</sub>	0.63	0.63	100% LEL	Infrared	823-0211-51
Natural Gas	CH <sub>4</sub> Mix	0.6 - 0.7	3.8-6.5%	100% LEL	Infrared	823-0211-51
Nitrogen Dioxide	NO <sub>2</sub>	1.6	1 ppm	10 ppm	EC, ND	823-0221-21
Nitric Oxide	NO	1	25 ppm	100 ppm	EC, ND	823-0242-21
Oxygen	O <sub>2</sub>	~1.0	19.5%, 18% IDLH	0.25	EC Fail Safe	823-0240-22
Propane	C <sub>3</sub> H <sub>8</sub>	1.6	2.1% vol	100% LEL	Infrared	823-0211-51
Sulfur Dioxide*	SO <sub>2</sub>	2.3	2 ppm	10 ppm	EC, ND	823-0218-22

\* Additional Ranges Available  
LI: Low Interference; EC: Electrochemical; D: Depleting with Gas Exposure; ND: Non-depleting with Exposure  
TLVs from ACGIH or OSHA, IDLH from NIOSH, STEL from ACGIH, LELs from NFPA 325 and NFPA 820

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