INDUSTRIAL SCIENTIFIC

GAS DETECTION AND MONITORING SOLUTIONS

Welcome to Industrial Scientific

Since being founded in 1985, Industrial Scientific has sought to make a contribution to this world by helping people return home from work at the end of the day . . . alive. We recognize that, at any given time, hundreds of thousands of people are betting their lives on the collective work we do as a company.

That being said, it is important to know what drives your supplier of gas detection equipment and solutions. Here at Industrial Scientific, we are driven by three things.

The first is Our Mission—*Preserving human life on, above, and below the Earth. Delivering highest quality, best customer service—every transaction, every time.* What we do, preserving human life, shapes our expectations toward the output. It must be of highest quality and exceed the expectations of our customers. We invest aggressively in capital equipment and business systems to ensure this. We partner with the best suppliers we can find. We don't let anything out of our factories that we wouldn't bet our own lives on.

The second is Our Vision—*Industrial Scientific people are dedicating their careers to eliminating death on the job by the year 2050.* We know that gas detection alone will not prevent all workplace injuries or deaths. We are working toward the next generation of connected safety solutions to see an end to workplace fatalities in our lifetimes.

Lastly, we are guided by Our Way—*Humble, hungry, and smart. Seek truth; speak truth. Serving others is our greatest joy.* We expect our employees to be the most highly qualified for their positions in order to better serve our customers. We will not compromise by serving you with anything but the best people.

If you are a current customer, thank you for your business and partnership. If not, I hope to have the opportunity to demonstrate what the great people of Industrial Scientific are capable of doing to help you create a safer workplace. If I can ever be of any assistance, please do not hesitate to contact me directly at +1-412-490-1842 or at jmcelhattan@indsci.com. Thank you.

Justin McElhattan
President and Chief Executive Officer

Quality Assurance
- ISO 9001 Quality System Certified
- ISO 14001 Environmental Management System (EMS) Certified
- OHSAS 18001 Occupational Health and Safety Assessment Specification Certified
- CSA – Category Certified
- Third Party Certifications – for intrinsic safety, susceptibility to electromagnetic and radio frequency interference, ingress protection and performance

Global Presence
- Manufacturing facilities in USA and China
- Offices in many countries throughout the world
- Distribution network established worldwide
- Established international accounts – references available

Ease of Use and Serviceability
- Simple, one-button operation and calibration on most monitors
- Microprocessor-controlled operation
- Easy sensor replacement and calibration in the field
- Local servicing available through authorized distributors

Environmentally Friendly
- Complete recycling process for returned and decommissioned instruments
- Recycling program for sensors, PC boards and batteries
- Compliant with WEEE and RoHS

Durability and Reliability
- Superior Radio Frequency Interference (RFI) and Electromagnetic Interference (EMI) shielding

State-of-the-Art Product Testing Laboratory
- Tests simulate harsh industrial environments for product design verification
- Rigorous testing for RFI, EMI, water and dust ingress, vibration and drop effects, temperature and humidity
- Ensures product reliability and durability

Flexible Programs
- On-site product demonstrations
- Training courses available at corporate headquarters or customer's site
- Interactive computer-based and web-based training
- Variety of options for purchase and after sale service

Industrial Scientific's Global Gas Detection and Monitoring Solutions are application oriented for every customer we serve.

Customer Applications
- Oil & Natural Gas Producers
- Diversified Manufacturers
- Utilities
- Petroleum or Ethanol Refiners
- Chemical Manufacturers
- Municipalities
- Metal Producers
- Mines
- Fire Rescue
- Construction
- Aviation
- Agriculture or Farming
- Pharmaceutical Manufacturers
- Pulp and Paper Manufacturers
- Food And Beverage Production
- Service Providers
- . . . and others

Need the best solution for your application?
Visit www.indsci.com for our help desk and your nearest location.

CERTIFICATIONS

Agency	Multi-Gas Monitors				Single-Gas Monitors		
	MX6 iBrid	Ventis Pro Series	Ventis MX4	Radius BZ1	Tango TX1	GasBadge Pro	T40 Rattler
UL	•	•	•	•	•	•	•
MSHA	•	•	•				
CSA	•	•	•	•	•	•	•
ANZEx	•	•	•			•	•
ATEX	•	•	•	•	•	•	•
IECEx	•	•	•	•	•	•	•
EAC/GOST	•		•		•		
INMETRO	•	•	•		•	•	
China Ex	•	•	•		•	•	
China MA	•		•		•		
China CPC	•		•				
KOSHA	•		•		•	•	
MED			•				
SANS 1515			•				

Certain limits apply to the number of sensor configurations. Call for details.

Discover All That iNet® Has to Offer

You're plenty busy focusing on the things that matter to your safety program. Amid your daily tasks is the hefty responsibility of ensuring that your people are protected from workplace hazards so that they go home safely at the end of each day. Buying your fleet of gas detectors was easy, but then the challenges came. How do you get real-time visibility into what's happening in the field? How do you ensure that your instruments are always ready for use? For all of these challenges and more, iNet® is a proven solution that works for thousands of customers worldwide.

How Does iNet Work?

Gas detection technology is evolving every day. We've come a long way in terms of making gas detectors safer, more intelligent, and more sustainable. Today's gas detectors must be extremely rugged, but also smarter than ever before. Much like purchasing a cell phone that you enhance with apps and services, the way you customize your gas detection experience is no different. iNet provides an integrated solution for gas detection that allows you to choose the equipment, software applications, and services that help to keep your workers safe and your workload manageable.

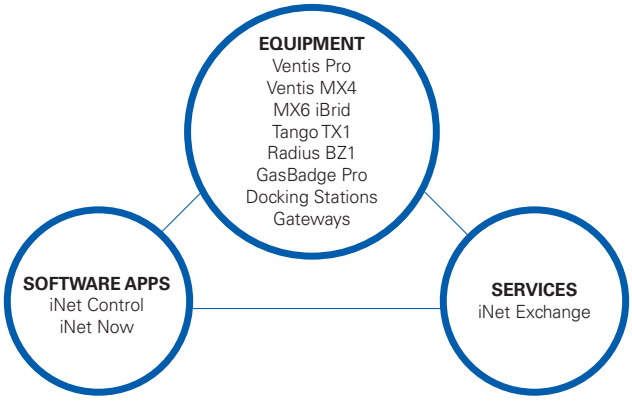
Join the 10,000+ Customer Sites on iNet

Over 37,000,000 Alarm Events | Over 230,000 Gas Detectors
68 Countries | 13 Years of Cloud Experience

Integrated Solution for Gas Detection

iNet is an integrated solution for gas detection that can be easily configured to meet the needs and goals of your gas detection program.

Customers pick equipment, software, and services.



What Combination of iNet Offerings Best Meets Your Needs?

INET SOFTWARE AND SERVICES	REQUIRED EQUIPMENT	DESCRIPTION
iNet Control Software	DSXi*	Gas detection management software including equipment and compliance management, data records and reporting, and worker trends
iNet Exchange Service	DSXi or DSX-L	Gas detection as a service including automatic repair and replacement, and calibration gas replenishment
iNet Now Software	Smart Device, Ventis Pro	Live monitoring software including map of workers and real-time text and email alerts

*DSX Docking Stations in Standalone mode can be upgraded in the field to DSXi.

See all that iNet has to offer at
www.indsci.com/inet

iNet Exchange

Streamline Gas Detector Maintenance and Repair with iNet® Exchange

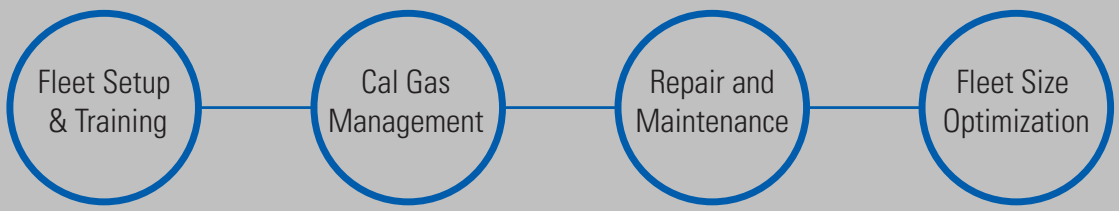
If you are responsible for managing a gas detection program, you may struggle to ensure that instruments are always ready and working properly. Even simple maintenance can become a costly headache when you have to keep extra gas monitors and spare parts around.

iNet® Exchange is a subscription-based service for gas detectors covering repair and replacement. iNet Exchange simplifies operations across all aspects of your gas detection program—gas detector availability, cost, and ownership—by delivering equipment on demand. There is no need to worry about instrument warranties, paperwork of processing the claim, or time to wait for new equipment. Parts, equipment, and shipping are covered, and even damaged instruments can be traded in. As an iNet Exchange customer, you will always have the equipment you need, when you need it.

- Ensure gas detectors are always ready for use with proactive replacement
- Pay only for the equipment you need, when you need it
- Eliminate unexpected gas detector expenses like shipping, calibration gas, and docking stations

Get your iNet Exchange account today,
contact us to learn how
www.indsci.com/inet-exchange

With iNet Exchange, you can focus on your people's safety rather than managing gas detector logistics. We handle everything from setup to maintenance and repair.



Benefits of iNet Exchange vs. Warranties

✖ WARRANTY	✔ iNET EXCHANGE
RMA/warranty claim forms must be processed	Replacement gas detectors automatically ship
Weeks or months to receive repaired instrument	Equipment typically shipped within 48 hours
Extra gas detectors needed while waiting for warranty repair	Right-sized fleet always available for use

Calibration gas can be included in your iNet Exchange subscription or ordered and invoiced automatically. With either option, you will receive new gas cylinders automatically before you run out to ensure that operations stay up and running.

Find out how to enroll today at
www.indsci.com/calibration-gas-auto-replenishment

iNet Control

Bring Visibility to Your Gas Detection Program with iNet® Control

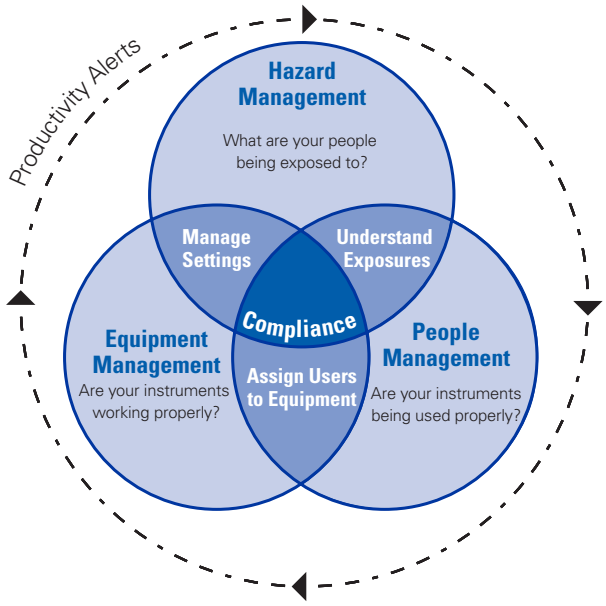
iNet® Control is gas detection management software that provides unparalleled visibility into your gas detection program. Now you can easily manage your hazards, people, and equipment from anywhere with one simple dashboard. For DSXi Docking Station customers, access to iNet Control is included at no additional charge.

iNet Control Helps You Visualize & Manage All Aspects of Your Gas Detection Program

With iNet Control, you don't need an IT project or additional software to get up and running. You can monitor your gas detection program from any web-enabled device and receive custom reports that keep you informed, even on the go. If you're in the dark when it comes to hazards and how your people and equipment are performing, it's time to shed some light on your gas detection program with iNet Control.

- Track and mitigate the everyday hazards your people face by viewing detailed reports
- Know how gas detectors are being used and take corrective action
- Easily manage your gas detection equipment and compliance

Get your iNet Control account today, contact us to learn how
www.indsci.com/inet-control



Receive the Following Email Alerts to Help You Understand Gas Alarm Events, Usage, and Gas Detector Maintenance

What are your people exposed to?

- Gas type
- Alarm duration
- Peak gas concentration
- Average gas concentration
- Instrument, user, and location

Are instruments used properly?

- Who used which instruments without being bump tested or calibrated
- Who turned a monitor off during alarm
- Who changed a critical setting
- Who manually calibrated and bumped instruments

Are instruments working properly?

- Bump/calibration overdue
- Equipment not seen/no data
- Marginal/failed sensor
- Firmware updates

Visualize and manage your gas detection program, watch the video at
www.indsci.com/inet-control-video

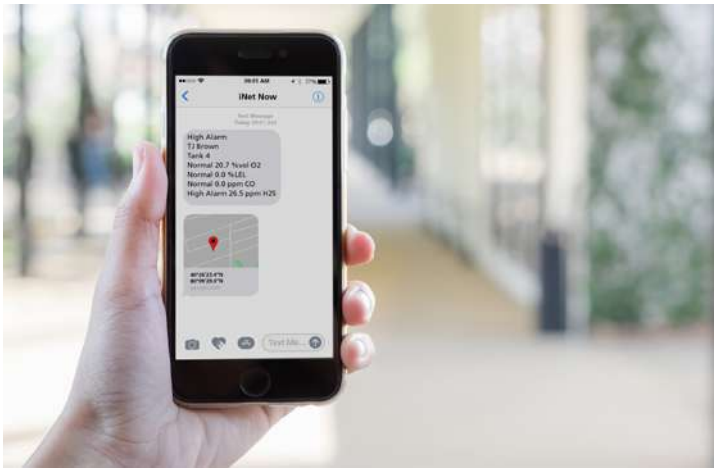
iNet Now

iNet® Now is Live Monitoring Software that provides real-time text and email alerts for gas hazards, panic, and man-down situations allowing you to see and respond to incidents as they happen. A map helps you to pinpoint the location of workers and instruments. With iNet Now, you can have confidence that workers are visible even when you're miles away.

- Receive notifications and respond immediately when a worker encounters a high alarm, low alarm, TWA, STEL, panic, or man-down situation; alerts are fully customizable by gas level
- Eliminate the human error, cost, and time it takes for lone workers to complete manual check-in processes
- Improve your gas detection program visibility
- Get your live monitoring application up and running immediately

What do you need to get up and running with iNet Now?

1. Ventis Pro Series Multi-Gas Monitors with iNet Now firmware version 2.3 or above
2. A supported smart device gateway
3. The iNet Now Sync app downloaded and installed on a smart device
4. An active iNet Now account



iNET NOW SMART DEVICE GATEWAY REQUIREMENTS*

Operating System Requirements	Estimated Data Usage
• iOS 9.0 or later • Android 5.1 or later	• 15MB per month
Bluetooth Requirements	**Estimated Battery Usage**
• Bluetooth Low Energy (BLE) 4.1	• Consumes 10% to 25% of smartphone battery depending on other apps in use • 10% off of Ventis Pro battery standard run time

*GPS and Bluetooth must be enabled on smart devices.

Note: See www.indsci.com/inet-now-sync-devices for most current list of supported devices.

Get started with iNet Now at
www.indsci.com/inet-now

DSX™ DOCKING STATION

The DSX™ Docking Station easily maintains the gas detectors that keep your people safe in hazardous environments.

- Know that your gas detectors are ready for use every day, every shift, without the burden of manual maintenance routines.
- Stop worrying about calibration gas and let DSX monitor and order replacement gas cylinders when you need them.
- Effortlessly manage your fleet, data, and software updates from any web-enabled device.

The DSX is a three-in-one hardware platform that easily transitions from a standalone gas detector maintenance station (standalone mode), to a feature-rich fleet management system accessible from any mobile browser or web-enabled PC, anywhere in the world (cloud-connected mode). In addition, it provides a local server mode option that addresses the needs of users who choose the docking station functionality but prefer to maintain all information on their own server due to network connection or data storage restrictions.

With the use of an in-field enabled activation key, the DSX Standalone will go from basic instrument charging, bump test, calibration, and record keeping functionality to cloud-based instrument fleet configuration, management, and data storage capabilities – all in a single piece of equipment.

In all modes, the DSX provides easy bump testing and calibration of instruments, automated record keeping, auto detection of gas type used and expiration date upon connecting the cylinder to the docking station, and automated instrument wake-up and instrument battery charging. Whether you manage one gas monitor or an entire fleet, the DSX provides superior cost-savings and flexibility.

Where Do You Want Your Data?

Choose the out-of-the-box solution that best fits your needs.

DSX
Standalone

A simple out-of-the-box gas detector maintenance and record keeping station that requires no PC or network connection.

DSXi
Cloud-connected

Cloud-based record storage, fleet management, and automated maintenance and notification solution.

DSX-L
Local Server

Server-based record storage, fleet management, and automated maintenance and custom data reporting.

PHYSICAL SPECIFICATIONS

WARRANTY
Two-year warranty – DSX (Standalone) and DSX-L (Local Server)
Guaranteed For Life™ Program** – DSXi (Cloud-connected)

INSTRUMENTS SUPPORTED
GasBadge Pro, MX6 iBrid, Tango TX1, Ventis MX4, Ventis Pro Series, SafeCore

DIMENSIONS
GasBadge Pro, Tango TX1: 22.7 x 16.9 x 27.3 cm (8.92 x 6.65 x 10.75 in)
Ventis MX4, Ventis Pro Series: 24.9 x 16.9 x 27.3 cm (9.83 x 6.65 x 10.75 in)
MX6 iBrid: 25.3 x 16.9 x 27.3 cm (9.96 x 6.65 x 10.75 in)
SafeCore: 27.3 x 16.9 x 29.2 cm (10.75 x 6.65 x 11.5 in)

GAS INLETS
3-Port Version: One "fresh" air port, two calibration gas ports
6-Port Version: One "fresh" air port, five calibration gas ports (for Ventis, MX6 iBrid, and SafeCore only)

PUMP FLOW RATE
1.2 SCFH (550 mL/min)

COMMUNICATION
10 / 100 Ethernet support, RJ-45 Category 5 Connection

DISPLAY
128 x 64 Dot Matrix LCD – Multilingual modes
English, Spanish, French, German and Portuguese***

PERFORMANCE SPECIFICATIONS

OPERATING TEMPERATURE RANGE
0 °C to 50 °C / 32 °F to 122 °F

OPERATING HUMIDITY RANGE
0% to 80% relative humidity (RH) up to 30 °C (86 °F), decreasing linearly to 50% RH at 50 °C (122 °F)

EXTERNAL POWER SUPPLY RATINGS
Supply voltage: 100-240 VAC / 12 VDC
Frequency range: 50-60 Hz
Current rating: 5A

DSX Comparison Chart

	DSX Standalone	DSX Cloud-connected	DSX Local Server
Record Storage	USB	Cloud	PC, Server
Bump and Cal	✓	✓	✓
Print Certificates	✓	✓	✓
6-Ports (Optional)	✓	✓	✓
Reports		✓	✓
Fleet Management		✓	✓
Event Scheduling		✓	✓
Email Alerts		✓	
Auto Software Updates		✓	
Auto Cal Gas Replenishment (Optional)		✓	
Price	$	$$	$$$
Software	Not Applicable	Included	Included

Learn more about the DSX at www.indsci.com/dsx

PART NO.	DESCRIPTION
INSTRUMENT CONFIGURATIONS	
18109327-ABC	Ventis® MX4, Ventis® Pro Series
18109329-ABC	MX6 iBrid®
18109330-ABC	Tango® TX1
18109331-ABC	GasBadge® Pro
18109396-ABC	SafeCore® Module
-ABC	A – DSX Mode:
	0 = DSX Standalone
	1 = DSXi Cloud-connected
	2 = DSX-L Local Server
	B – Number of Gas Inlet Ports:
	3 = 3 Ports
	6 = 6 Ports (for Ventis, MX6 iBrid, & SafeCore only)
	C – Power Cord Type: 1 = North America, 2 = EU, 3 = AUS, 4 = UK
KITS*	
18109400	DSX Standalone Kit: Tango TX1 (H_2S)
18109401	DSX Standalone Kit: Ventis MX4, Ventis Pro Series (LEL, CO, H_2S, O_2)
18109404	DSXi Cloud-connected Kit: Tango TX1 (H_2S)
18109405	DSXi Cloud-connected Kit: Ventis MX4, Ventis Pro Series (LEL, CO, H_2S, O_2)
ACCESSORIES	
18109406	DSX to DSXi Activation Certificate
18105684	iGas® Reader
18105924	5-Port Gas Regulator Manifold Clamp
18105932	6-Port Gas Regulator Manifold
17154813	3G / 4G Router
17113887	Ethernet Cable, 5 ft (Cat5E network cable)
17113895	Ethernet Cable, 10 ft (Cat5E network cable)
17113903	Ethernet Cable, 25 ft (Cat5E network cable)
17113945	5-Port Ethernet Hub

***DSX Docking Station Kits Include:** Choice of Standalone or Cloud-connected 3-port DSX Docking Station, 116L calibration gas (appropriate mix) with demand flow regulator with iGas® pressure switch, North American power cord, USB storage device (Standalone only).

****Specific terms of the Guaranteed for Life™ Program are included with all products and are available upon request.

*****DSX-L (Local Server) does not support Portuguese.

Auto Replenishment

The calibration gas auto replenishment program is the most efficient way for customers to manage their calibration gas usage and needs. For those who elect to have the program as part of their iNet subscription, a new cylinder of gas will automatically be sent when iNet Control detects a low gas cylinder.

Helping Achieve High Performance Safety using Intelligent Industrial Mobility

Drawing on the combined capabilities and experience of Accenture, AeroScout, Cisco and Industrial Scientific, the Accenture Life Safety Solution is a comprehensive approach of services, technologies and processes (see Figure 1) – which is differentiated from other safety solutions on the market by its breadth and innovative capabilities.

Accenture	AeroScout	Cisco	Industrial Scientific
Industry-specific experience	Exciter hardware	Wireless infrastructure	iNet® - Gas Detection as a Service
Integrated business processes	Integrated Wi-Fi tags		Multi-gas detector
Project management	Operator interface		
Unprecedented, design process			

Figure 1. Accenture Life Safety Solution built by strong capabilities and years of experience.

Accenture Life Safety Solution Works

Employees wear a single, multi-gas detector (within 10 inches of their breathing zone) that is able to detect multiple gases (see Figure 2). If abnormal levels of gas are detected, similar to traditional solutions, the device immediately alerts the employee. However, with the innovative Accenture Life Safety Solution, the device also simultaneously transmits the gas-level information and personnel location over a wireless infrastructure using an integrated Wi-Fi tag located in the Industrial Scientific device to control board operators. Until recently, wireless networks have been unable to provide reliable coverage, limiting the ability to determine an individual's exact location in the plant. Accenture has been able to demonstrate that this is now possible based on an actual refinerywide deployment. The gas detection information is sent to a control room that continuously monitors abnormal condition alarms 24 hours a day, 7 days a week. Additionally, the software indicates a separate alert if the individual either activates the panic button or exhibits lack of motion ("man down"). In the case of lack of motion, a local alert occurs first. The individual has the opportunity to acknowledge the alert and, if left unanswered, the alert is sent to the central control board operator.

Once alarms are wirelessly transmitted, the control room operator can pinpoint the location of the employee in danger within very close proximity of their exact location. If rescue is required, the control board operator is able to advise the rescue team, not only of the location of the individual, but also of the environmental conditions in that area before they enter.

Workers outside plant "boundaries" can also be covered with the wireless solution. Many plants have operators that need to go outside the plant to operate other remote facilities such as water intake facilities and tank farms. The Accenture Life Safety Solution is able to provide these personnel with the same coverage as if they were in the plant through a combination of Wi-Fi, global positioning systems and cellular communications within vehicles.

One of the most important features of the Accenture Life Safety Solution is assurance that all alarms get reported. When an alarm is sent to the control board, workflow is triggered through the automatic creation of an incident in the incident tracking system.

- Hydrogen sulfide (H_2S)
- Carbon monoxide (CO)
- Lower explosive limit (LEL) hydrocarbon gases
- Sulfur dioxide (SO_2)
- Nitrogen dioxide (NO_2)
- Oxygen (O_2)

Figure 2. Gases available in a single, multi-gas detector.

Benefits of a comprehensive approach to safety

The Accenture Life Safety Solution can help safety and operations managers—in industries such as oil and gas, chemicals, petrochemicals, metals, utilities and others—deliver more comprehensive and effective safety programs, including:

- Improved 24x7 safety monitoring and timely responses

For the individual:

- A gas detector alarms with abnormal exposure.
- A lack-of-motion sensor triggers when left unacknowledged.
- There is a "panic button" on the device.
- The alarm goes to the control board operator or others, as required. For the broader plant workforce:
- Gas-level monitoring is continuous and automatic, and thus notifies the rescue team of the environmental conditions before they enter the area.
- The automatic reporting helps to prevent placing other plant personnel at risk if an individual fails to report alerts.
- Greater and more accurate safety incident reporting
- Improved compliance through personnel location monitoring
- Optimized and more effective mustering procedures
- Ability to drive safety operational process improvement

Wireless solution for higher plant performance

Accenture uses a well-refined wireless network design approach for accurate location detection. With a location-based design, numerous workforce efficiency opportunities are possible to extend the return on the initial investment. Potential opportunities include:

- Improved contractor management and better maintenance planning
- Workforce enablement of handhelds, tablets and ruggedized notebooks
- Enablement of other technical benefits:
- Expansion of radio systems by using voice over internet protocols (VoIP) technology.
- Improvement of operator rounds and the transmission of local field information in real time.
- Installation of wireless video cameras for fence line surveillance.
- Establishment of lower-cost video collaboration methods through the reduced installation costs of underground hard wires for video cameras.
- Installation of motion sensors on the fence line to enhance security measures.
- Deployment of mobile video in the field to transmit continuous video feed to the control room and emergency control centers (ECC).

To learn more about the Accenture Life Safety Solution, visit
www.indsci.com/solutions/accenture-life-safety-solution/

iBRiD® MX6

- 24 "Plug-and-Play" field-replaceable sensors including PID and Infrared options
- Up to 6 gases monitored simultaneously
- Simple, user-friendly, customizable, menu-driven navigation
- Five-way navigation button
- Durable, concussion-proof overmold
- Optional integral sampling pump with strong 30.5 meter (100 feet) sample draw
- Full-color graphic LCD is highly visible in a variety of lighting conditions
- Powerful, 95 dB audible alarm
- iNet® ready and DSX™ Docking Station compatible

Get ready to see hazardous levels of oxygen, toxic and combustible gas, and volatile organic compounds (VOCs) like never before.

The MX6 iBrid® is more than an intelligent hybrid of Industrial Scientific's best monitoring technologies—it's the most adaptable six-gas monitor on the market. With hundreds of possible sensor combinations, and a robust list of available configuration settings, the MX6 iBrid is ready to monitor oxygen, toxic and combustible gas, and volatile organic compounds (VOCs).

The rugged MX6 iBrid carries our Guaranteed for Life™ warranty and is compatible with DSX™ Docking Stations. With a DSX Docking Station, maintenance is simplified and data becomes more than a spreadsheet filled with logged readings. Proactively manage your gas detection fleet—track trends, know when instrument maintenance will be required, and understand how your MX6 iBrid instruments are being used.

SPECIFICATIONS*

INSTRUMENT WARRANTY
Guaranteed For Life™ Program**

CASE MATERIAL
Lexan/ABS/Stainless Steel with protective rubber overmold

DIMENSIONS
135 x 77 x 43 mm (5.3 x 3.05 x 1.7 in) without pump
167 x 77 x 56 mm (6.6 x 3.1 x 2.2 in) with pump

WEIGHT
409 g (14.4 oz) typical, without pump; 511 g (18.0 oz) typical, with pump

DISPLAY/READOUT
Color Graphic Liquid Crystal Display

POWER SOURCE/RUN TIMES
Rechargeable, Extended-Range Lithium-ion Battery (36 hours) without pump
Replaceable AA Alkaline Battery (10.5 hours) without pump

OPERATING TEMPERATURE RANGE
-20 °C to 55 °C (-4 °F to 131 °F)

OPERATING HUMIDITY RANGE
15% to 95% non-condensing (continuous)

MEASURING RANGES

SENSOR	RANGE	RESOLUTION
CATALYTIC BEAD		
Combustible Gas	0-100% LEL	1%
Methane	0-5% vol	0.01%
ELECTROCHEMICAL		
Ammonia	0-500 ppm	1
Carbon Monoxide	0-1,500 ppm	1
Carbon Monoxide (High Range)	0-9,999 ppm	1
Carbon Monoxide (CO/H_2 low)	0-1,500 ppm	1
Chlorine	0-50 ppm	0.1
Chlorine Dioxide	0-1 ppm	0.01
Carbon Monoxide/ Hydrogen Sulfide (COSH)	CO: 0-1,500 ppm H_2S: 0-500 ppm	1 0.1
Hydrogen	0-2,000 ppm	1
Hydrogen Chloride	0-30 ppm	0.1
Hydrogen Cyanide	0-30 ppm	0.1
Hydrogen Sulfide	0-500 ppm	0.1
Nitric Oxide	0-1,000 ppm	1
Nitrogen Dioxide	0-150 ppm	0.1
Oxygen	0-30% vol	0.1%
Phosphine	0-5 ppm	0.01
Phosphine (High Range)	0-1,000 ppm	1
Sulfur Dioxide	0-150 ppm	0.1
INFRARED		
Hydrocarbons	0-100% LEL	1%
Methane (% vol)	0-100% vol	1%
Methane (% LEL)	0-100% LEL	1%
Carbon Dioxide	0-5% vol	0.01%
PHOTOIONIZATION		
VOC	0-2,000 ppm	0.1

CERTIFICATIONS
INGRESS PROTECTION IP64

ANZEx:	Ex ia s Zone 0 I; Ex ia s Zone 0 IIC T4
ATEX:	Ex ia IIC T4 Ga; II 1G (or Ex d ia IIC T4 Gb IR sensor); Ex ia I; Equipment Group and Category: I M1/II 1G
China CPC:	Metrology Approval
China Ex:	Ex ia d I/IIC T4
CMA:	Approval for Mining Products; CH_4, O_2, CO, CO_2
CSA:	Cl I, Gr A-D T4; Ex d ia IIC T4
EAC:	PBExiadI X; 1ExiadIICT4 X
IECEx:	Ex ia I (Ex ia d I IR sensor); Ex ia IIC T4 Ga; Ex d ia IIC T4 Gb
INMETRO:	Ex ia IIC T4 Ga
KC:	Ex d ia IIC T4
KIMM:	Ex d ia IIC T4
MDR:	Registration of Plant Design; CH_4, O_2, CO, H_2S, NO_2
MSHA:	30 CRF, Part 22, Intrinsically safe for methane/air mixtures
PA-DEP:	BFE 114-08 Permissible for PA Bituminous Underground Mines
UL:	Cl I, Div 1, Gr A-D, T4; Cl II, Groups F G; Cl I, Zone LEL 0, AEx ia d IIC T4 (or AEx ia d IIC T4 IR sensor)

* These specifications are based on performance averages and may vary by instrument.
**Specific terms of the Guaranteed for Life™ Program are included with all products and are available upon request.

SPECIFICATIONS* (CONTINUED)

SUPPLIED WITH MONITOR
Universal charger, nylon carrying case, belt clip, calibration cup, wrist strap, quick start guide, dust filter/water stop (with pump), sample tubing (with pump).

LANGUAGE OPTIONS
English, Portuguese, French, Indonesian, Spanish, Russian, German, Polish, Italian, Czech, and Dutch

COMMON INSTRUMENT CONFIGURATIONS

PART NO.	DESCRIPTION
MX6-K1230201	MX6 iBrid LEL (Pentane), CO, H_2S, O_2, Ext. Li-ion
MX6-K123R211	MX6 iBrid LEL (Pentane), CO, H_2S, O_2, PID, Ext. Li-ion, Pump
MX6-L1230211	MX6 iBrid LEL (Methane), CO, H_2S, O_2, Ext. Li-ion, Pump
MX6-M103Q211	MX6 iBrid Methane, CO, O_2, CO_2 IR, Ext. Li-ion, Pump
MX6-MDH34211	MX6 iBrid Methane, NO, CO high range, O_2, NO_2, Ext. Li-ion, Pump
MX6-K1235211	MX6 iBrid LEL (Pentane), CO, H_2S, O_2, SO_2, Ext. Li-ion, Pump
MX6-KJ635201	MX6 iBrid LEL (Pentane), CO/H_2S, NH_3, O_2, SO_2, Ext. Li-ion
MX6-MH23Q201	MX6 iBrid Methane, CO high range, H_2S, O_2, CO_2, Ext. Li-ion

COMMON INDUSTRY CONFIGURATIONS

MX6-KJ53R211	MX6 iBrid LEL, CO/H_2S, O_2, SO_2, PID, Ext. Li-ion, Pump Petroleum Refining
MX6-K103Q211	MX6 iBrid- LEL, CO, O_2, CO_2, Ext. Li-ion, Pump Brewing/Bottling/Wineries
MX6-KJ835201	MX6 iBrid LEL, CO/H2S, O_2, SO_2, ClO_2, Ext. Li-ion Pulp/Paper
MX6-K673R211	MX6 iBrid LEL, O_2, NH_3, Cl_2, PID, Ext. Li-ion, Pump HazMat
MX6-M1030501	MX6 iBrid CH_4 (%), CO, O_2, Ext. Li-ion (MSHA/AUS) Mining
MX6-M1D34501	MX6 - CH_4 (%), CO, O_2, NO_2, NO, Ext. Li-ion (MSHA/AUS) Mining (Diesel Applications)

Confined Space Kit

Choice of MX6 monitor, universal charger, nylon carrying case, belt clip, calibration cup, wrist strap, maintenance tool, quick start guide, calibration tubing, dust filter/water stop (with pump), calibration fitting (with pump), sample tubing (with pump), calibration gas (appropriate mix) with regulator, spare replaceable cell alkaline battery, rugged Pelican® case.

OPTIONAL ACCESSORIES

PART NO.	DESCRIPTION
MX6KIT-0000R211	MX6 iBrid Confined Space Kit, PID, Ext. Li-ion, pump
MX6KIT-K1230211	MX6 iBrid Confined Space Kit, LEL, O_2, CO, H_2S, pump
MX6KIT-K123R211	MX6 iBrid Confined Space Kit, LEL, O_2, CO, H_2S, PID, pump
18109329-ABC	DSX™ Docking Station for MX6 iBrid
-ABC	A – DSX Mode: 0 = DSX Standalone 1 = DSXi Cloud-connected 2 = DSX-L Local Server B – Number of Gas Inlet Ports: 3 = 3 Ports 6 = 6 Ports C – Power Cord Type: 1 = North America, 2 = EU, 3 = AUS, 4 = UK
18109406	DSXi Cloud-Connected Activation Certificate
18105684	iGas® Reader
18106765	SP6 Motorized Sampling Pump Module
18107086	MX6 Datalink assembly, software included
18106971	MX6 Replacement battery charger
18107094	MX6 Battery charger/Datalink, universal
18107011	MX6 Battery charger, 12V
18107136	MX6 Battery charger, 5-unit
18107243	MX6 Truck-mount charger, 12V
18107250	MX6 Truck-mount charger, (hard-wired)
17131038-2	Rechargeable Li-ion ext. battery (UL/CSA/ATEX/IECEx/INMETRO/GOST-R/KOSHA)
17131038-5	Rechargeable Li-ion ext. battery (MSHA/AUS)
17131046-3	Alkaline battery (UL/CSA/ATEX/IECEx/INMETRO/GOST-R/KOSHA)
17131046-6	Alkaline battery, MSHA/AUS
18106856-0	MX6 without pump hard leather carrying case
18106856-1	MX6 without pump hard leather case without display
18106880-0	MX6 with pump hard leather carrying case
18106880-1	MX6 with pump hard leather case without display
18106831	Nylon carrying case, supplied with MX6 without pump
18106864	Nylon carrying case, supplied with MX6 with pump
17095746	MX6/iTX maintenance tool
17128489	Calibration Cup, MX6 iBrid
17153749	MX6 Screen Protector, 10 Pack
17153760	MX6 Screen Protector, 100 Pack
17058157	Internal Dust Filter/Water Stop

Build and price your MX6 online with the MX6 Instrument Builder
www.indsci.com/MX6builder.aspx

VENTIS® MX4

When you need a 4-gas monitor that will adapt to meet your needs, Ventis® MX4 is there. The lightweight instrument offers the portability and size of a single-gas instrument while delivering multi-gas protection. Use the incredibly configurable Ventis MX4 with a DSXi Docking Station to unlock the management tools found only in Industrial Scientific's iNet® Control software.

Ventis MX4 adapts to meet your needs. Start by selecting from a long list of configuration options:

- Choose from one to four gases with a wide range of sensor options, including combustible gases, methane, oxygen, carbon monoxide, hydrogen sulfide, nitrogen dioxide, and sulfur dioxide.
- Whether you're performing daily confined space entries, wearing the instrument for personal protection, or anywhere in between, there is a Ventis MX4 that's right for you. Select from a pumped instrument, a non-pumped instrument, or use the Ventis Slide-on Pump to quickly convert back and forth.
- Select your run time thanks to your choice of three batteries. With 12-hour, 18-hour, or 20-hour batteries available for non-pumped instruments, Ventis MX4 fits your working conditions.
- Better manage your fleet by choosing a safety orange overmold or black overmold.
- Powerful settings options allow the Ventis MX4 to fit with your safety processes. Select your alarm set points, latch alarms, disable the ability to power off while the instrument it is in alarm, and more.

Once you've selected your Ventis MX4 options, use a DSXi Docking Station to simplify maintenance and better manage your fleet of instruments. With iNet Control, track alarm history, know if your instruments are properly maintained, and use data to prevent incidents while maximizing efficiencies. Let the gas detection professionals at Industrial Scientific show you a better way to manage gas detection.

SPECIFICATIONS*

WARRANTY
Two-year warranty, including sensors and battery

CASE MATERIAL
Polycarbonate w/ protective rubber overmold

DIMENSIONS
103 x 58 x 30 mm (4.1 x 2.3 x 1.2 in) without pump, lithium-ion battery version
172 x 67 x 66 mm (6.8 x 2.6 x 2.6 in) with pump, lithium-ion battery version

WEIGHT
182 g (6.4 oz) without pump, lithium-ion battery version
380 g (13.4 oz) with pump, lithium-ion battery version

POWER SOURCE/RUN TIME
Rechargeable slim extended lithium-ion battery (18 hours typical @ 20 °C) without pump
Rechargeable lithium-ion battery (12 hours typical @ 20 °C) without pump
Rechargeable extended-range lithium-ion battery
(20 hours typical @ 20 °C) without pump; (12 hours typical @ 20 °C) with pump
Replaceable AAA alkaline battery
(8 hours typical @ 20 °C) without pump; (4 hours typical @ 20 °C) with pump

ALARMS
Ultra-bright LEDs, loud audible alarm (95 dB at 30 cm), and vibrating alarm

DISPLAY/READOUT
Backlit Liquid Crystal Display (LCD)

TEMPERATURE RANGE
-20 °C to 50 °C (-4 °F to 122 °F) **

HUMIDITY RANGE
15% to 95% non-condensing (continuous)

SENSORS
Combustible gases/methane – Catalytic Bead
O_2, CO, CO/H_2 low, H_2S, NO_2, SO_2 – Electrochemical

MEASURING RANGES

Combustible Gases:	0 to 100% LEL in 1% increments
Methane (CH_4):	0 to 5% of vol in 0.01% increments
Oxygen (O_2):	0 to 30% of vol in 0.1% increments
Carbon Monoxide (CO):	0-1,000 ppm in 1 ppm increments
Carbon Monoxide (CO/H_2 low):	0-1,000 ppm in 1 ppm increments
Hydrogen Sulfide (H_2S):	0-500 ppm in 0.1 ppm increments
Nitrogen Dioxide (NO_2):	0-150 ppm in 0.1 ppm increments
Sulfur Dioxide (SO_2):	0-150 ppm in 0.1 ppm increments

CERTIFICATIONS
INGRESS PROTECTION IP66/67

ANZEx:	Ex ia s Zone 0 I/IIC T4
ATEX:	Ex ia IIC T4 Ga and Ex ia I Ma; Equipment Group and Category II 1G/I M1
China CMC:	Metrology approval
China CPC:	CPA 2017-C103
China Ex:	Ex ia IIC T4 Ga; Ex ia d I Mb
China KA:	Approved for Underground Mines with CO, H_2S, O_2 and CH_4
CMA:	Approved for Underground Mines with CO, H_2S, O_2 and CH_4 (Note: Diffusion 17144453 pack only)
CSA:	CI I, Div 1, G A-D, T4; Ex d ia IIC T4
EAC:	PBExdial X/1ExdiaIICT4 X
IECEx:	Ex ia IIC T4 Ga
INMETRO:	Ex ia IIC T4 Ga
KC:	Ex d ia IIC T4
KIMM:	Ex d ia IIC T4
MED:	Portable Multi-Gas Detector; Category 2 (MED 96/98/EC; MED 2012/32/EU Marine Directive) Li-ion
MSHA:	30 CFR Part 22; Permissible for underground mines; Li-ion
PA-DEP:	BFE 46-12 Permissible for PA Bituminous Underground Mines; Charger/docking station accessories; Category 1
SANS:	SANS 1515-1; Type A; Ex ia I/IIC T4; Li-ion
TIIS:	Ex ia IIC T4 X
UL:	CI I, Div 1, Groups A-D, T4; Zone 0, AEx ia IIC T4; CI II, Gr F-G (Carbonaceous and Grain dust)

SUPPLIED WITH MONITOR
Calibration Cup (without pump), Sample Tubing (with pump)

LANGUAGE
English (1), French (2), Spanish (3), German (4), Italian (5), Dutch (6), Portuguese (7), Russian (9), Polish (A), Czech (B), Chinese (C), Danish (D), Norwegian (E), Finnish (F), Swedish (G), Japanese (J)

*These specifications are based on performance averages and may vary by instrument.

**Operating temperatures above 50 °C (122 °F) may cause reduced instrument accuracy. Operating temperatures below -20 °C (-4 °F) may cause reduced instrument accuracy and affect display and alarm performance. See Product Manual for details.

MOST COMMON VENTIS MX4 INSTRUMENT CONFIGURATIONS

PART NO.	DESCRIPTION
VTS-K1234100y0z	Ventis MX4, LEL, CO, H_2S, O_2, Slim Extended Li-ion, Desktop Charger, Black
VTS-K1232111y0z	Ventis MX4 with pump, LEL, CO, H_2S, O_2, Extented Li-ion, Desktop Charger, Safety Orange
VTS-K1034100y1z	Ventis MX4, LEL, CO, O_2, Slim Extended Li-ion, Desktop Charger, Soft Case, Black
VTS-K1032110y1z	Ventis MX4 with pump, LEL, CO, O_2, Extended Li-ion, Desktop Charger, Soft Case, Black
VTS-K5234101y0z	Ventis MX4, LEL, SO_2, H_2S, O_2, Slim Extended Li-ion, Desktop Charger, Safety Orange
VTS-K1434100y1z	Ventis MX4, LEL, CO, NO_2, O_2, Slim Extended Li-ion, Desktop Charger, Soft Case, Black
VTS-K1432111y0z	Ventis MX4 with pump, LEL, CO, NO_2, O_2, Extended Li-ion, Desktop Charger, Safety Orange

y = Agency Certification: 1 = UL/CSA, 2 = ATEX/IECEx, 3 = MSHA, 4 = ANZEx, 5 = China Ex, 7 = EAC(GOST-R/GOST-K), 8 = KC(HOSHA), 9 = INMETRO, A = MED, D = TIIS

z = Language: 1 = EN, 2 = FR, 3 = ES, 4 = DE, 5 = ITA, 6 = DUT, 7 = PT, 9 = RUS, A = POL, B = CZE, C = CN, D = DAN, E = NOR, F = FIN, G = SWE, J = JPN

VENTIS MX4 REPLACEMENT SENSORS

PART NO.	DESCRIPTION
17134461	Replacement sensor, oxygen (O_2)
17155304-Y	Replacement sensor, long-life oxygen (O_2)
17134479	Replacement sensor, hydrogen sulfide (H_2S)
17134487	Replacement sensor, carbon monoxide (CO)
17155564	Replacement sensor, carbon monoxide/low hydrogen interference (CO/H_2 low)
17134495	Replacement sensor, combustible gas (LEL/CH_4)
17134503	Replacement sensor, nitrogen dioxide (NO_2)
17156917	Replacement sensor, combustible gas (%LEL/CH_4)*
17143595	Replacement sensor, Sulfur Dioxide (SO_2)
17156979	Replacement sensor, combustible gas (%LEL/Isobutane C_4H_{10})*

* For use with the DSX Standalone.

VENTIS MX4 REPLACEMENT FILTERS

PART NO.	DESCRIPTION
17152395	Internal Dust Filter/Water Stop for Ventis with Pump
17153750	Screen protector, 10 pack

VENTIS MX4 PUMP CONVERSION KIT

PART NO.	DESCRIPTION
Convert your pumped Ventis MX4 to a non-pumped instrument	
17152828-01	Ventis Conversion Kit, Ventis with pump to Ventis, Black, UL/CSA/ATEX/IECEx/EAC/KC
17152828-04	Ventis Conversion Kit, Ventis with pump to Ventis without pump, Black, ANZEx
17152828-11	Ventis Conversion Kit, Ventis with pump to Ventis, Safety Orange, UL/CSA/ATEX/IECEx/EAC/KC
17152828-14	Ventis Conversion Kit, Ventis with pump to Ventis without pump, Safety Orange, ANZEx

Build and price your Ventis online with the Ventis MX4 Instrument Builder
www.indsci.com/ventisbuilder

Ventis MX4 Confined Space Kits Include: Choice of Ventis MX4 with pump monitor, desktop charger, carrying case, calibration tubing, dust filter/water stop, calibration fitting, sample tubing, calibration gas (appropriate mix) with regulator, rugged carrying case.

VENTIS MX4 CONFINED SPACE KITS WITH INTEGRAL PUMP

PART NO.	DESCRIPTION
VK-K123211xy1z	Ventis Confined Space Kit - LEL, CO, H_2S, O_2
VK-K103211xy1z	Ventis Confined Space Kit - LEL, CO, O_2
VK-K023211xy1z	Ventis Confined Space Kit - LEL, H_2S, O_2
VK-K003211xy1z	Ventis Confined Space Kit - LEL, O_2

x = Instrument Color: 0 = Black, 1 = Safety Orange

y = Agency Certification: 1 = UL/CSA, 2 = ATEX/IECEx, 3 = MSHA, 4 = ANZEx, 5 = China Ex, 7 = EAC(GOST-R/GOST-K), 8 = KC(HOSHA), 9 = INMETRO, A = MED, D = TIIS

z = Language: 1 = EN, 2 = FR, 3 = ES, 4 = DE, 5 = ITA, 6 = DUT, 7 = PT, 9 = RUS, A = POL, B = CZE, C = CN, D = DAN, E = NOR, F = FIN, G = SWE, J = JPN

Ventis MX4 Confined Space Kits with Slide-on Pump Include: Ventis with LEL, CO, H_2S, and O_2 sensors, Ventis Slide-on Pump, 110 VAC desktop charger for each rechargeable instrument ordered (max of 2), calibration cup and tubing with T-fitting, dust filter/water stop, 10 feet of sample tubing, 34 liter cylinder of calibration gas, manual regulator, rugged hard plastic carrying case.

VENTIS MX4 CONFINED SPACE KITS WITH SLIDE-ON PUMP

PART NO.	DESCRIPTION
VKVSP4-ABCDEF	Ventis MX4 Confined Space Kit with Ventis Slide-on Pump (LEL, CO, H_2S, O_2)

A = LEL Sensor Calibration: K = Pentane, L = Methane
B = Instrument Color: 0 = Black, 1 = Safety Orange
C = Monitor Battery: 1 = Lithium-ion, 2 = Extended Range Lithium-ion, 3 = Alkaline
D = Pump Battery: 1 = Lithium-ion, 2 = Extended Range Lithium-ion
E = Agency Certification: 1 = UL/CSA, 2 = ATEX/IECEx, 3 = MSHA, 9 = INMETRO
F = Language: 1 = EN, 2 = FR, 3 = ES, 4 = DE, 5 = ITA, 6 = DUT, 7 = PT, 9 = RUS, A = POL, B = CZE, C = CN, D = DAN, E = NOR, F = FIN, G = SWE, J = JPN

COMMON CONFIGURATIONS OF CONFINED SPACE KITS WITH SLIDE-ON PUMP

VKVSP4-K11111	Ventis MX4 Confined Space Kit – LEL (Pentane), CO, H_2S, O_2, Orange, Li-ion Ventis Battery, Li-ion Pump Battery, UL/CSA, English
VKVSP4-L01111	Ventis MX4 Confined Space Kit – LEL (Methane), CO, H_2S, O_2, Black, Li-ion Ventis Battery, Li-ion Pump Battery, UL/CSA, English
VKVSP4-K11211	Ventis MX4 Confined Space Kit – LEL (Pentane), CO, H_2S, O_2, Orange, Li-ion Ventis Battery, Ext. Range Li-ion Pump Battery, UL/CSA, English

- Flexible sensor configurations detect up to five gases
- See gas readings and alarms from connected peers using LENS™ Wireless
- With integral pump for confined spaces or without integral pump for personal protection
- Man-down alarm and dedicated panic button
- User and site tracking with iAssign® Technology
- Rugged IP68 dust and water rating and Guaranteed for Life™ warranty
- Compatible with most Ventis® MX4 accessories
- Dock overdue and maintenance reminders

Raise the Bar on Worker Safety With the Ventis Pro Series

Stop carrying multiple instruments to meet your gas detection needs. The Ventis® Pro Series with LENS™ Wireless has you covered whether you need unique four-gas or expanded five-gas sensor options—all in the most configurable multi-gas monitors on the market.

Test drive the Ventis Pro with the Instrument Simulator
www.indsci.com/VentisProSimulator

SPECIFICATIONS*

WARRANTY
Guaranteed for Life™. Warranted for as long as the instrument is supported by Industrial Scientific Corporation (excludes sensors, batteries, and filters). O_2, LEL, CO, and H_2S sensors warranted for three years. All other sensors warranted for two years. Pumps and batteries are warranted for two years.

CASE MATERIAL
Polycarbonate with protective rubber overmold

DIMENSIONS
104 x 58 x 36 mm (4.1 x 2.3 x 1.4 in) without pump
172 x 67 x 65 mm (6.8 x 2.6 x 2.6 in) with pump

WEIGHT
200 g (7.05 oz), typical without pump
390 g (13.76 oz), typical with pump

POWER SOURCE/RUN TIME
Rechargeable slim extended lithium-ion battery
(18 hours typical @ 20 °C) without pump
Rechargeable lithium-ion battery with LEL
(12 hours typical @ 20 °C) without pump
Rechargeable extended-range lithium-ion battery with LEL
(23 hours typical @ 20 °C) without pump
(18 hours typical @ 20 °C) with pump
Rechargeable lithium-ion battery with IR
(36 hours typical @ 20 °C) without pump
Rechargeable extended-range lithium-ion battery with IR
(72 hours typical @ 20 °C) without pump
(32 hours typical @ 20 °C) with pump

ALARMS
Four visual alarm LEDs (two red, two blue);
95 decibel (dB) audible alarm at a distance of 10 cm (3.94 in);
Vibration alarm

DISPLAY/READOUT
Backlit liquid crystal display (LCD)

KEYPAD
Two buttons for operation. Dedicated panic button.

INGRESS PROTECTION
IP68 (submersion at 1.5 meters for 1 hour)

TEMPERATURE RANGE
-40 °C to 50 °C (-40 °F to 122 °F) **

HUMIDITY RANGE
15% to 95% non-condensing (continuous)

EVENT LOGGING
60 alarm events

SENSORS
Combustible Gases/Methane – Catalytic Bead
O_2, CO, CO/H_2 low, H_2S, HCN, NH_3, NO_2, PH_3, SO_2 – Electrochemical
CH_4, CO_2/HC, CO_2/CH_4 – Infrared

DATA LOG
At least 3 months at 10-second intervals

MEASURING RANGES

CATALYTIC BEAD

Combustible Gases:	0-100% LEL in 1% increments
Methane (CH_4):	0-5% of vol in 0.01% increments

ELECTROCHEMICAL

Ammonia (NH_3):	0-500 ppm in 1 ppm increments
Carbon Monoxide (CO):	0-2,000 ppm in 1 ppm increments
Carbon Monoxide (CO/H_2 low):	0-1,000 ppm in 1 ppm increments
Carbon Monoxide/Hydrogen Sulfide:	CO: 0-1,500 ppm in 1 ppm increments H_2S: 0-500 ppm in 0.1 ppm increments
Hydrogen Sulfide (H_2S):	0-500 ppm in 0.1 ppm increments
Hydrogen Cyanide (HCN):	0-30 ppm in 0.1 ppm increments
Nitrogen Dioxide (NO_2):	0-150 ppm in 0.1 ppm increments
Oxygen (O_2) (Standard/Long-Life):	0-30% of vol in 0.1% increments
Phosphine (PH_3)	0-10 ppm in 0.01 ppm increments
Sulfur Dioxide (SO_2):	0-150 ppm in 0.1 ppm increments

INFRARED

Methane (CH_4)	0-5% vol in 0.01% increments 5-100% vol in 0.1% increments
Carbon Dioxide/Combustible:	CO_2: 0-5% vol in 0.01% increments LEL: 0-100% LEL in 1% increments
Carbon Dioxide/Methane:	CO_2: 0-5% vol in 0.01% increments CH_4: 0-5% vol in 0.01% increments CH_4: 5-100% vol in 0.1% increments

CERTIFICATIONS

INGRESS PROTECTION IP69

ANZEx:	Ex ia I Ma/Ex ia IIC T4 Ga, -40 °C ≤ Ta ≤ 50 °C Ex d ia I Mb/Ex d ia IIC T4 Gb IR sensor, -20 °C ≤ Ta ≤ 50 °C IR sensor
ATEX:	Equipment Group and Category II 1G, Ex ia IIC, Ga, T4 Equipment Group and Category II 2G, Ex d ia IIC, Gb, T4, IR sensor
China CPC:	CPA 2017-C103
China Ex:	Ex ia IIC T4 Ga, -40 °C ≤ Ta ≤ 50 °C; Ex d ia IIC T4 Gb IR sensor, -20 °C ≤ Ta ≤ 50 °C IR sensor
CSA:	Cl I, Div 1, Gr A-D, T4; Cl I, Zone 1, Ex d ia IIC, T4 | C22.2 No. 152 for % LEL reading only
IECEx:	Cl I, Zone 0, Ex ia IIC, Ga, T4; Cl I, Zone 1, Ex d ia IIC, Gb, T4, IR sensor
INMETRO:	Ex ia IIC T4 Ga, -40 °C ≤ Ta ≤ 50 °C Ex d ia IIC T4 Gb IR sensor, -20 °C ≤ Ta ≤ 50 °C IR sensor
MSHA:	30 CFR Part 22; Permissible for underground mines
PA-DEP:	BFE 46-12 Permissible for PA Bituminous underground mines
UL:	Cl I, Div 1, Gr A-D, T4; Cl II, Div 1, Gr E-G, T4 Cl I, Zone 0, AEx ia IIC, T4; Cl I, Zone 1, AEx d ia II C, T4, IR sensor

See www.indsci.com/ventispro for all certifications.

WIRELESS

Optional LENS™ Wireless, proprietary mesh network
Frequency: ISM license-free band (2.405 - 2.480 GHz)
Max Peers: 25 devices per network group
Range: 100 m (300 ft) line of sight, face-to-face
Encryption: AES-128
Approvals: FCC Part 15, IC, CE/RED, others†

SUPPLIED WITH MONITOR

Calibration Cup (without pump), Sample Tubing (with pump)

LANGUAGE

English, French, Spanish, German, Italian, Dutch, Portuguese, Polish

*These specifications are based on performance averages and may vary by instrument.

** Operating temperatures above 50 °C (122 °F) may cause reduced instrument accuracy. Operating temperatures below -20 °C (-4 °F) may cause reduced instrument accuracy and affect display and alarm performance. See Product Manual for details.

† See www.indsci.com/wireless-certifications for country-specific wireless approvals and certifications.

Build and price your Ventis Pro online with the Instrument Builder
www.indsci.com/VentisProBuilder

Will You Use the Ventis Pro to Monitor Confined Spaces?

Ventis Pro Series Confined Space Kits Include: Ventis Pro Series instrument with integral pump, desktop charger, reference guide, calibration tubing with T-fitting, dust filter/water stop, sample tubing, calibration gas (appropriate mix) with manual regulator, and rugged hard plastic case.

VENTIS PRO CONFINED SPACE KITS WITH INTEGRAL PUMP

PART NO.	DESCRIPTION
V4K-K12Y211xywz	Ventis Pro4 Confined Space Kit – LEL (Pentane), CO, H_2S, O_2
V4K-KG2Y211xywz	Ventis Pro4 Confined Space Kit – LEL (Pentane), CO/H_2 low, H_2S, O_2
V4K-K10Y211xywz	Ventis Pro4 Confined Space Kit – LEL (Pentane), CO, O_2
V4K-K00Y211xywz	Ventis Pro4 Confined Space Kit – LEL (Pentane), O_2
V4K-K02Y211xywz	Ventis Pro4 Confined Space Kit – LEL (Pentane), H_2S, O_2
V4K-K1BY211xywz	Ventis Pro4 Confined Space Kit – LEL (Pentane), CO, HCN, O_2
V5K-KJ5Y211xywz	Ventis Pro5 Confined Space Kit – LEL (Pentane), CO/H_2S, SO_2, O_2
V5K-KJ4Y211xywz	Ventis Pro5 Confined Space Kit – LEL (Pentane), CO/H_2S, NO_2, O_2
V5K-KJ6Y211xywz	Ventis Pro5 Confined Space Kit – LEL (Pentane), CO/H_2S, NH_3, O_2

x = Instrument Color: 0 = Black, 1 = Safety Orange
y = Agency Certification: 1 = UL/CSA, 2 = ATEX/IECEx, 3 = MSHA, 9 = INMETRO
w = Wireless: 0 = Non-wireless, 1 = Wireless
z = Language: 1 = EN, 2 = FR, 3 = ES, 4 = DE, 5 = IT, 6 = DU, 7 = PT, A = PL

VENTIS PRO REPLACEMENT FILTERS

PART NO.	DESCRIPTION
18109435	External Dust Barrier Kit, Ventis Pro (10 pack) (Includes 10 each of the dust barriers for the upper sensors, lower sensors, and speaker)
18109436	Sensor Barrier Assembly, Ventis Pro (Includes gasket and membrane for both upper and both lower sensors)
17156945-0	Replacement Ventis Pro4/5 Integral Pump Door, Black
17156945-1	Replacement Ventis Pro4/5 Integral Pump Door, Orange
17152395	Replacement Dust Filter/Water Stop for Ventis with Pump
17129909	Replacement Inlet Cap

VENTIS PRO NAMEPLATES

PART NO.	DESCRIPTION
Better manage your fleet of instruments using color-coded nameplates on your Ventis Pro instruments.	
17156848	Ventis Pro5 Nameplate, Blue
17156849	Ventis Pro5 Nameplate, Yellow
17156850	Ventis Pro5 Nameplate, Green
17156851	Ventis Pro4 Nameplate, Blue
17156852	Ventis Pro4 Nameplate, Yellow
17156853	Ventis Pro4 Nameplate, Green

VENTIS PRO iASSIGN ACCESSORIES

PART NO.	DESCRIPTION
Use iAssign Tags and Beacons to manage the users and sites associated with your Ventis Pro instruments.	
18109417	iAssign Tag, Standard (10 pack)
18109418	iAssign Tag, Waterproof (10 pack)
18109419	iAssign Tag, All Weather Outdoor (10 pack)
18109420	iAssign Tag, Keychain (10 pack)
18109434	iAssign Tag, Sample Pack (1 each of the 4 tag types)
18109491	iAssign Beacon

VENTIS PRO LENS WIRELESS UPGRADES

PART NO.	DESCRIPTION
Upgrade your non-wireless Ventis Pro Series instrument to include LENS Wireless.	
18109494	LENS Wireless Twenty-instrument upgrade card
18109493	LENS Wireless Five-instrument upgrade card
18109492	LENS Wireless One-instrument upgrade card

VENTIS PRO PUMP CONVERSION KITS

PART NO.	DESCRIPTION
Convert your non-pumped Ventis Pro Series Instrument to an instrument with an integrated pump.	
VPP-0011	Ventis Pro Series Pump, No Battery, Black, UL/CSA, English
VPP-2011	Ventis Pro Series Pump, Lithium-ion Extended Range Battery, Black, UL/CSA, English
VPP-0111	Ventis Pro Series Pump, No Battery, Safety Orange, UL/CSA, English
VPP-2111	Ventis Pro Series Pump, Lithium-ion Extended Range Battery, Safety Orange, UL/CSA, English

VENTIS PRO REPLACEMENT SENSORS

PART NO.	DESCRIPTION
17155306-1	Replacement Sensor, Ventis Pro4/5, Carbon Monoxide, 6 Series
17155306-2	Replacement Sensor, Ventis Pro4/5, Hydrogen Sulfide, 6 Series
17155304-2	Replacement Sensor, Ventis Pro4/5, Hydrogen Sulfide, 4 Series
17155304-3	Replacement Sensor, Ventis Pro4/5, Oxygen (O_2), 4 Series
17155306-4	Replacement Sensor, Ventis Pro4/5, Nitrogen Dioxide, 6 Series
17155306-5	Replacement Sensor, Ventis Pro4/5, Sulfur Dioxide (SO_2), 6 Series
17155306-6	Replacement Sensor, Ventis Pro5, Ammonia (NH_3), 6 Series
17155306-B	Replacement Sensor, Ventis Pro4/5, Hydrogen Cyanide (HCN), 6 Series
17155306-G	Replacement Sensor, Ventis Pro4/5, Carbon Monoxide/Low Hydrogen Interference (CO/H_2 low), 6 Series
17155306-J	Replacement Sensor, Ventis Pro5, Carbon Monoxide/Hydrogen Sulfide (COSH), 6 Series
17155304-J	Replacement Sensor, Ventis Pro5, Carbon Monoxide/Hydrogen Sulfide (COSH), 4 Series
17155304-K	Replacement Sensor, Ventis Pro4/5, LEL (Pentane), 4 Series Catalytic
17155304-L	Replacement Sensor, Ventis Pro4/5, LEL (Methane), 4 Series Catalytic
17155304-M	Replacement Sensor, Ventis Pro4/5, CH_4 (0-5% vol), 4 Series Catalytic
17155304-U	Replacement Sensor, Ventis Pro5, Carbon Dioxide/Hydrocarbon (CO_2/LEL), 4 Series IR
17155304-V	Replacement Sensor, Ventis Pro5, Carbon Dioxide/Methane (CO_2/CH_4), 4 Series IR
17156919	Dualsense Pack, Ventis Pro5, Carbon Monoxide/Hydrogen Sulfide (COSH), 6 Series
17156920	Dualsense Pack, Ventis Pro4/5, Oxygen (O_2), 4 Series

17156852
Yellow Nameplate

17156851
Blue Nameplate

17156853
Green Nameplate

For a list of all accessories, visit:
www.indsci.com/ventispro

VENTIS®

Ventis Accessories

Ventis accessories are compatible with Ventis MX4 and Ventis Pro Series instruments.

What Gases Will You Need to Monitor?

DETECTION CAPABILITIES	VENTIS MX4	VENTIS PRO4	VENTIS PRO5
Simultaneous Gases	Four	Four	Five
LEL/CH_4	✓	✓	✓
CO	✓	✓	✓
H_2S	✓	✓	✓
SO_2	✓	✓	✓
NO_2	✓	✓	✓
CO/H_2 Low	✓	✓	✓
O_2 (Standard)	✓	✓	✓
O_2 (Long-Life)		✓	✓
HCN		✓	✓
PH_3			✓
NH_3			✓
CO/H_2S			✓
CH_4 IR			✓
CO_2/LEL IR			✓
CO_2/CH_4 IR			✓

VENTIS MAINTENANCE SOLUTIONS

Simplify instrument maintenance with a DSX Docking Station or V-Cal Calibration Station.

PART NO.	DESCRIPTION
18109327-ABC	DSX™ Docking Station for Ventis MX4, Ventis Pro Series A – DSX Mode: 0 = DSX Standalone 1 = DSXi Cloud-connected (Includes iNet Control software) 2 = DSX-L Local Server B– Number of Gas Inlet Ports: 3 = 3 Ports 6 = 6 Ports C – Power Cord Type: 1 = North America, 2 = EU, 3 = AUS, 4 = UK
18109405	DSXi Docking Station Kit for Ventis – Includes DSXi Cloud-Connected docking station (3-port, North American power cord), 116 liter gas cylinder (100 ppm CO, 25 ppm H_2S, 18% O_2, 25% LEL Pentane), and regulator.
18109401	DSX Docking Station Kit for Ventis – Includes DSX Standalone docking station (3-port, North American power cord), 58 liter gas cylinder (100 ppm CO, 25 ppm H_2S, 18% O_2, 25% LEL Pentane), and regulator.
18109406	DSXi Cloud-Connected Activation – Upgrade your DSX Standalone docking station to a DSXi Cloud-Connected docking station and activate access to iNet Control.
18105684	iGas Reader – Replacement cable and card reader used to establish connectivity between Industrial Scientific certified gas cylinder and a DSX docking station.
18109203	iNet Mobile Carrying Case – Carrying case designed to accommodate a DSX docking station, two 116 liter cylinders, regulator, and other accessories, allowing you to take your DSX on the go.
18108631-AB	V•Cal™ Calibration Station A = Instrument type: 0 = Ventis, 1 = Ventis with pump B = Power Cord Type: 0 = US, 1 = UK, 2 = EU, 3 = AUS, 4 = ITA, 5 = DEN, 6 = SWZ
18107664-ABC	V•Cal™ 6-Unit Calibration Station AB = Number of Ventis (A) and Ventis with pump (B) Instruments 06 = 0 Ventis and 6 Ventis with pump 33 = 3 Ventis and 3 Ventis with pump 60 = 6 Ventis and 0 Ventis with pump C = Power Cord Type: 0 = Universal with US, UK, EU, AUS Plug adapters
18107763	Serial data dot matrix printer for V•Cal™ – 5 volt printer powered by the calibration station enables calibration report printing
17135518	V•Cal Printer Paper

How Will You Maintain Your Ventis MX4?




SELECT A MONITOR	MONITOR PART #	DOCKING STATION	CALIBRATION GAS 116L	DEMAND FLOW REGULATOR
Ventis MX4, LEL (Pentane), CO, H_2S, O_2, Li-ion, Desktop Charger, Safety Orange	VTS-K1231101101	18109327-131	18109157	18105841
Ventis MX4, (Pentane), CO, H2S, O_2, Slim Extended Li-ion, Desktop Charger, Safety Orange	VTS-K1234101101	18109327-131	18109157	18105841
Ventis MX4, (Pentane), CO, H_2S, O_2, Li-ion, Desktop Charger, Black	VTS-K1231100101	18109327-131	18109157	18105841
Ventis MX4, (Pentane), CO, H_2S, O_2, Slim Extended, Li-ion, Desktop Charger, Black	VTS-K1234100101	18109327-131	18109157	18105841
Ventis MX4 with pump, (Pentane), CO, H_2S, O_2, Extended Li-ion, Desktop Charger, Black	VTS-K1232110101	18109327-131	18109157	18105841

How Will You Maintain Your Ventis Pro4?




SELECT A MONITOR	MONITOR PART #	DOCKING STATION	CALIBRATION GAS 116L	DEMAND FLOW REGULATOR
Ventis Pro4 – LEL (Pentane), CO, H_2S, O_2, Slim Extended Li-ion, Desktop Charger, Safety Orange	VP4-K12Y4101101	18109327-131	18109157	18105841
Ventis Pro4 with Pump – LEL (Pentane), CO, H_2S, O_2, Extended Li-ion, Desktop Charger, Black	VP4-K12Y2110101	18109327-131	18109157	18105841
Ventis Pro4 – LEL (Pentane), SO_2, H_2S, O_2, Slim Extended Li-ion, Desktop Charger, Safety Orange	VP4-K52Y4101101	18109327-131	18109234	18105841
Ventis Pro4 – LEL (Pentane), CO, NO_2, O_2, Slim Extended Li-ion, Desktop Charger, Safety Orange	VP4-K14Y4101101	18109327-131	18109236	18105841
Ventis Pro4 – LEL (Pentane), CO, HCN, O_2, Slim Extended Li-ion, Desktop Charger, Safety Orange	VP4-K1BY4101101	18109327-131	18109157 18109085	18105841 x2
Ventis Pro4 with Pump – LEL (Pentane), CO, HCN, O_2, Extended Li-ion, Desktop Charger, Safety Orange	VP4-K1BY2111101	18109327-131	18109157 18109085	18105841 x2

How Will You Maintain Your Ventis Pro5?




SELECT A MONITOR	MONITOR PART #	DOCKING STATION	CALIBRATION GAS 116L	DEMAND FLOW REGULATOR
Ventis Pro5 with Pump – LEL (Pentane), CO/H_2S, SO_2, O_2, Extended Li-ion, Desktop Charger, Safety Orange	VP5-KJ5Y2111101	18109327-131	18109234	18105841
Ventis Pro5 – LEL (Pentane), CO/H_2S, NO_2, O_2, Slim Extended Li-ion, Desktop Charger, Safety Orange	VP5-KJ4Y4101101	18109327-131	18109157 18109084	18105841 x2
Ventis Pro5 with Pump – LEL (Pentane), CO/H_2S, NH_3, O_2, Extended Li-ion, Desktop Charger, Black	VP5-KJ6Y2110101	18109327-131	18109157 18109081	18105841 x2
Ventis Pro5 with Pump – CO_2/LEL IR, CO, H_2S, O_2, Extended Li-ion, Desktop Charger, Black	VP5-U12Y2110101	18109327-131	18109188 18102913 and 18101584 both – (103L)	18105841 x3

y = Agency Certification: 1 = UL/CSA, 2 = ATEX/IECEx, 3 = MSHA, 9 = INMETRO | w = Wireless: 0 = Non-wireless, 1 = Wireless
z = Language: 1 = EN, 2 = FR, 3 = ES, 4 = DE, 5 = IT, 6 = DU, 7 = PT, A = PL
Charts show most common configurations. To build your custom order, visit our online instrument builder or contact your local distributor.

VENTIS BATTERIES

SLIM EXTENDED BATTERIES

Provide 18 hours of run time when used with a non-pumped instrument at room temperature with LEL, O_2, H_2S, and CO sensors.

PART NO.	DESCRIPTION	COMPATIBLE WITH:
VTSB-4XY	Ventis Slim Extended Li-ion Battery Kit	Ventis MX4 Instruments Ventis Pro Series Instruments
	X = Color: 0 = Black, 1 = Orange (Ventis MX4 only) Y = Certifications: 1 = UL/CSA/ATEX/IECEx	

STANDARD BATTERIES

Provide 12 hours of run time when used with a non-pumped instrument at room temperature with LEL, O_2, H_2S, and CO sensors.

PART NO.	DESCRIPTION	COMPATIBLE WITH:
VTSB-1XY	Ventis Li-ion Battery Kit	Ventis MX4 Instruments Ventis Pro Series Instruments Ventis Slide-on Pumps
	X = Color: 0 = Black, 1 = Orange (Ventis MX4 only) Y = Certifications: 1 = UL/CSA/ATEX/IECEx/EAC (GOST-R-GOST-K)/ KC (KOSHA)/MED/SANS 1515 2 = MSHA 3 = China EX 4 = ANZEx 5 = IMMETRO D = TIIS	

EXTENDED RUN TIME BATTERIES

Provide 12 hours of run time when used with pumped instrument at room temperature with LEL, O_2, H_2S, and CO sensors.

PART NO.	DESCRIPTION	COMPATIBLE WITH:
VTSB-2XY	Ventis Extended Li-ion Battery Kit X = Color Y = Certifications	Ventis MX4 Instruments Ventis Pro Series Instruments Ventis Slide-on Pumps
17148313-Y	Battery Pack, Li-ion, Extended, Ventis Y = Certifications	Ventis MX4 Instruments with pump Ventis Pro Series Instruments with pump
	X = Color: 0 = Black, 1 = Orange (Ventis MX4 only) Y = Certifications: 1 = UL/CSA/ATEX/IECEx/EAC (GOST-R-GOST-K)/ KC (KOSHA)/MED/SANS 1515 2 = MSHA 3 = China EX 4 = ANZEx 5 = IMMETRO D = TIIS	

ALKALINE BATTERIES

Uses 2 AAA batteries for a quick in-field battery replacement. Provides 8 hours of run time with a non-pumped instrument and 4 hours of run time with a pumped instrument. Run time estimates are made at room temperature using LEL, O_2, H_2S, and CO sensors.

PART NO.	DESCRIPTION	COMPATIBLE WITH:
VTSB-3XY	Ventis MX4 Alkaline Battery Kit X = Color Y = Certifications	Ventis MX4 Instruments
17150608	Battery Pack, AAA, Ventis MX4	Ventis MX4 Instruments with pump
17154577-XY	Kit, Battery, Alkaline, VSP X = Color Y = Certifications	Ventis Slide-on Pumps
	X = Color: 0 = Black, 1 = Orange (Ventis MX4 only) Y = Certifications: 1 = UL/CSA/ATEX/IECEx/EAC (GOST-R-GOST-K)/ KC (KOSHA)/MED/SANS 1515 2 = MSHA 3 = China EX 4 = ANZEx 5 = IMMETRO C = CHINA KA D = TIIS	

VTSB-1XY
Li-ion Battery

VTSB-4XY
Slim Extended Li-ion Battery

VTSB-2XY
Extended Li-ion Battery

18108191
Ventis Charger

18108653
Truck-mount charger, hard wired

18108651
Automotive charger

VENTIS CHARGERS

PART NO.	DESCRIPTION
Chargers are compatible with all standard, extended, or slim extended Li-ion batteries.	
18108191	Single-Unit Charger
18108209	Single-Unit Charger/Datalink (includes software)
18108651	Single-Unit Automotive Charger, 12VDC
18108652	Single-Unit Truck Mount Charger, 12VDC, with Cigarette Adapter
18108653	Single-Unit Truck Mount Charger, 12VDC, Hard Wired
18108650-A	6-Unit Charger: A – Power-Cord Type 0 = US 1 = UK 2 = EU 3 = AUS 4 = ITA 5 = DEN 6 = SWZ

18108175
Nylon Carrying Case

18108813
Leather Carrying Case with Display

VENTIS CASES

PART NO.	DESCRIPTION
Nylon carrying cases are soft fabric cases with a wrist strap.	
18108175	Nylon Carrying Case, Ventis without pump, Li-ion Battery
18108183	Nylon Carrying Case, Ventis without pump, Extended Li-ion Battery, Slim Extended Li-ion Battery, or Alkaline Battery
18108810	Nylon Carrying Case, Ventis with pump
Leather carrying cases feature rigid high-quality leather and provide protection for your instrument against scratches and impact.	
18108813	Leather Carrying Case with Display, Ventis without pump, Li-ion Battery
18108814	Leather Carrying Case with Display, Ventis without pump, Extended Li-ion Battery, Slim Extended Li-ion Battery, or Alkaline Battery
18108811	Leather Carrying Case with Display, Ventis MX4 with pump
18109517	Leather Carrying Case with Display, Ventis Pro with Pump (includes cutout for Panic Button)
18108815	Leather Carrying Case without Display, Ventis without pump, Li-ion Battery
18108816	Leather Carrying Case without Display, Ventis without pump, Extended Li-ion Battery, Slim Extended Li-ion Battery, or Alkaline Battery
18108812	Leather Carrying Case without Display, Ventis with pump

VENTIS® SLIDE-ON PUMP

The Ventis® Slide-on Pump is ideally suited for operators who wear their gas monitors for personal protection but occasionally require a pump for confined space entries. Available in black or safety orange and powered by its own battery, the slide-on pump is compatible with the Ventis® MX4 and Ventis® Pro Series Multi-Gas Monitors.

SPECIFICATIONS*

INSTRUMENT WARRANTY
Two-year warranty, excluding consumables (i.e. filters)

CASE MATERIAL
Polycarbonate with protective rubber overmold

SAMPLE DRAW CAPABILITY
Up to 15.2 meters (50 feet)

DIMENSIONS
143 x 81 x 68 mm (5.6 x 3.2 x 2.7 in) Lithium-ion battery version
143 x 81 x 85 mm (5.6 x 3.2 x 3.3 in) Extended range lithium-ion battery version
143 x 81 x 73 mm (5.6 x 3.2 x 2.9 in) Alkaline battery version

WEIGHT
270 g (9.5 oz) Lithium-ion battery version
316 g (11.2 oz) Extended range lithium-ion battery version
284 g (10.0 oz) Alkaline battery version

OPERATING TEMPERATURE RANGE
-20 °C to 50 °C (-4 °F to 122 °F)

OPERATING HUMIDITY RANGE
15% to 95% non-condensing (continuous)

POWER SOURCE/RUN TIME
Rechargeable lithium-ion battery, 18 hours @ 20 °C
Rechargeable extended range lithium-ion battery, 36 hours @ 20 °C
Replaceable AAA alkaline battery, 10 hours @ 20 °C

PUMP FAULT ALARMS
Ultra-bright LEDs
Loud audible alarm (90 dB at 30 cm)

IP RATING
Third-party certified IP67

CERTIFICATIONS
INGRESS PROTECTION: IP66/67

ATEX:	Ex ia I Ma/Ex ia IIC T4 Ga; Equipment Group/Category: I M1/II 1G
China Ex:	Ex ia IIC T4 Ga
CSA:	CI I, Div 1, Group A-D, T4; Ex ia IIC T4
GOST- EAC:	0 Ex ia IIC X T4; PO Ex ia I X
IECEx:	Ex ia IIC T4 Ga
INMETRO:	Ex ia IIC T4 Ga
UL:	CI I, Div 1, Gr A-D, T4; CI I, Zone 0, AEx ia IIC T4 Ga; CI II, Gr F-G (Carbonaceous and Grain Dust)

*All specifications are based on a typical instrument and typical performance of the instrument, and are subject to variability.

VENTIS SLIDE-ON PUMP – MODEL# VSP MATRIX

EXAMPLE: 18109162-1111 – Ventis Slide-on Pump, lithium-ion battery, Safety Orange, UL/CSA, EN-FR-ES-DE-CN	18109162-	1	1	1	1
DESCRIPTION	**Base**	**Battery**	**Color**	**Approvals**	**Language**
Ventis Slide-on Pump	18109162-				
Select options below in addition to base price					
BATTERY					
Lithium-ion battery		1			
Extended range lithium-ion battery		2			
Alkaline battery		3			
COLOR					
Black			0		
Safety Orange			1		
APPROVALS					
UL/CSA				1	
ATEX / IECEx				2	
China EX				5	
GOST-EAC				7	
INMETRO				9	
LANGUAGE					
English, French, Spanish, German, Chinese					1
Italian, Polish, Czech, Portuguese, Russian					2

VTSB101
Lithium-ion Battery Kit

VTSB-201
Extended Range Lithium-ion Battery Kit

17151184-11
Extended Range Lithium-ion Battery Cover

17157329-0
Replacement Door

17154577-11
Alkaline Battery Kit

BATTERY

PART NO.	DESCRIPTION
VTSB-1XY	Lithium-ion battery kit
VTSB-2XY	Extended range lithium-ion battery kit
17148313-Y	Extended range lithium-ion battery
17151184-XY	Cover, extended range lithium-ion
17154577-XY	Alkaline battery kit, VSP

PUMP ACCESSORIES

18109207-10	Urethane sample tubing kit 3.048 meters (10 feet)
17154853-5	Exhaust filter (5 pack)
17154581-5	Audible alarm filter (5 pack)
17157329-X	Replacement door, Ventis Pro/Ventis MX4 compatible

NOTE: Charger is not included with the Ventis Slide-on Pump. The Ventis Slide-on Pump uses the standard Ventis chargers (18108191, 18108209, 18108651, 18108652, 18108653, 18108650-A) shown on the Ventis MX4 page. "X" denotes color where 0 = Black, 1 = Safety Orange "Y" denotes approvals where 1 = UL, CSA, ATEX, IECEx, INMETRO, and GOST- EAC; 3 = China EX

When it comes to choosing equipment to protect your worksite from gas hazards, rely on the Radius® BZ1 Area Monitor. No other area monitor protects your workers longer in the field with less setup, user training, and time in the shop.

- Detect up to seven gases using 15 sensor options including PID
- Longest running area monitor with a typical run time of 7 days (168 hours)
- Extended Run Time Power Supply can extend battery run time to over 1 month
- Intrinsically Safe Extended Run Time Power Supply can provide indefinite run time in hazardous locations
- Ultra-bright blue and red lights and attention-grabbing alarms with distinctive tones
- Audible alarms sound at 108 dB at 1 m to cut through high-noise environments
- Largest display of any area monitor on the market
- Intuitive text-based navigation and configuration
- Customizable alarm action messages such as "EVACUATE" or "VENTILATE"
- LENS™ Wireless enables communication between area monitors and Ventis® Pro Series personal monitors
- All-weather sensor deployment and 360-degree gas path for more accurate detection
- DualSense® Technology increases worker safety by using two sensors to detect the same gas

Test drive the Radius BZ1 with the Instrument Simulator
www.indsci.com/radius-simulator

SPECIFICATIONS*

WARRANTY
Two-year warranty, including sensors and battery

KEYPAD
Three buttons

DATA LOG
At least 3 months at 10-second intervals

EVENT LOGGING
60 alarm events

INGRESS PROTECTION
IP66

CASE MATERIAL
Impact-resistant polycarbonate alloys

DIMENSIONS
29 x 29 x 55 cm (11.5 x 11.5 x 21.5 in)

WEIGHT
7.5 kg (16.5 lb)

TEMPERATURE RANGE
-20 °C to 55 °C (-4 °F to 131 °F)

HUMIDITY RANGE
15% to 95% non-condensing (continuous)

DISPLAY/READOUT
11.2 cm (4.4 in) monochrome backlit graphical liquid crystal display (LCD)

POWER SOURCE/RUN TIME
Rechargeable nickel-metal hydride (NiMH) battery
7 days (168 hours) typical @ 20 °C, without pump, with wireless
3.5 days (84 hours) typical @ 20 °C, with pump, with wireless
30 days (720 hours) typical @ 20 °C, electrochemical sensors only, without pump, with wireless
≤8 hour recharge time

ALARMS
108 decibel (dB) at 1 m (3.3 ft) redundant audible alarms
Redundant, visual alarm LEDs (red and blue)

SENSORS
Up to 6 sensors (catalytic bead, photoionization detector, and electrochemical)
Up to 7 simultaneous readings

MEASURING RANGES

CATALYTIC BEAD

Combustible Gases:	0-100% LEL in 1% increments

ELECTROCHEMICAL

Ammonia (NH_3):	0-500 ppm in 1 ppm increments
Carbon Monoxide (CO):	0-1,500 ppm in 1 ppm increments
Carbon Monoxide (CO High Range):	0-9,999 ppm in 1 ppm increments
Carbon Monoxide (CO/H_2 Low):	0-1,000 ppm in 1 ppm increments
Carbon Monoxide/Hydrogen Sulfide:	CO: 0-1,500 ppm in 1 ppm increments H_2S: 0-500 ppm in 0.1 ppm increments
Chlorine (Cl_2):	0-50 ppm in 0.1 ppm increments
Hydrogen (H_2):	0-2,000 ppm in 1 ppm increments
Hydrogen Sulfide (H_2S):	0-500 ppm in 0.1 ppm increments
Hydrogen Cyanide (HCN):	0-30 ppm in 0.1 ppm increments
Nitrogen Dioxide (NO_2):	0-150 ppm in 0.1 ppm increments
Oxygen (O_2):	0-30% vol in 0.1% increments
Sulfur Dioxide (SO_2):	0-150 ppm in 0.1 ppm increments

PHOTOIONIZATION

Volatile Organic Compounds (10.6 eV):	0-2,000 ppm in 0.1 ppm increments

PUMP

Optional integral pump, up to 30.48 m (100 ft) sample draw

WIRELESS

Optional LENS™ Wireless, proprietary mesh network
Frequency: ISM license-free band (2.405 - 2.480 GHz)
Max Peers: 25 devices per network group
10 independent, configurable network groups
Range: 300 m (~1,000 ft) line of sight
Encryption: AES-128
Approvals: FCC Part 15, IC, CE/RED, others**

CERTIFICATIONS

INGRESS PROTECTION IP66

ATEX:	Ex da ia IIC T4 Ga, Equipment Group and Category II 1G
China CPC:	Pending
China EX:	Ex d ia IIC T1 Ga; Ex d ia IIC T4 Gb IR sensor
CSA:	Cl I, Div 1, G A-D, T4 C22.2 No. 152 applies only to %LEL thermo-catalytic reading
IECEx:	Ex da ia IIC T4 Ga
INMETRO:	Ex da ia IIC T4 Ga; Ex db ia IIC T4 Gb IR sensor
UL:	Cl I, Div 1, Gr A-D, T4; Cl 1 Zone 0 AEx da ia IIC T4 Ga1

SUPPLIED WITH MONITOR

Calibration cup (without pump), sample tubing and pump inlet water barrier (with pump), hand tool, charging power supply, and region-specific cord

LANGUAGE

English, French, Spanish, German

* These specifications are based on performance averages and may vary by instrument.
** See www.indsci.com/wireless-certifications for country-specific wireless approvals and certifications.
*** ISCA does not have certificate to verify

LENS™ WIRELESS

The Radius BZ1 is available with optional LENS™ Wireless. With LENS Wireless, your instruments will connect seconds after being turned on—with no need for setup or additional infrastructure. You will instantly receive real-time gas readings from other connected instruments on the network, helping your team react faster in emergency situations.

Build and price your Radius BZ1
online with the Instrument Builder
www.indsci.com/radius-builder

SAFECORE®

With the Radius BZ1, all critical technology pieces such as sensors, software, pumps, and wireless, live inside the patent-pending SafeCore® Module. Smart sensors are positioned face down to prevent the elements from interfering with gas readings, resulting in fewer false alarms.

The module slides out from the Radius Base for easy docking and automated maintenance, ensuring that your sensors are always ready to provide accurate gas detection.

BZ1 RADIUS™

The Radius Base is made of a durable, weather-resistant plastic. The base has built-in audio and visual alarms that grab workers attention, even in high-noise environments. A large battery keeps the unit working as long as you do, and side-grip handles help make the base easy to move from location to location.

It is easier than ever to keep your area monitors running in the field. The SafeCore Module and Radius Base work together to provide maximum gas detection ability, while simplifying maintenance of your area monitors.

Jump-start your gas detection program by selecting the appropriate monitor configuration, docking station, calibration gas, and regulator.

How Will You Maintain Your Radius BZ1?




SELECT THE SENSORS	PUMP	WIRELESS	MONITOR PART #	DOCKING STATION	CALIBRATION GAS 116L	DEMAND FLOW REG.
LEL (Pentane), CO, H_2S, O_2			BZ1-K123000x0y	18109396-13z	18109157	18105841
LEL (Pentane), CO, H_2S, O_2		✓	BZ1-K123000x1y	18109396-13z	18109157	18105841
LEL (Pentane), CO, H_2S, O_2	✓		BZ1-K123001x0y	18109396-13z	18109157	18105841
LEL (Pentane), CO, H_2S, O_2	✓		BZ1-K123001x1y	18109396-13z	18109157	18105841
LEL (Pentane), CO, H_2S, O_2, SO_2			BZ1-K123500x0y	18109396-13z	18109234	18105841
LEL (Pentane), CO, H_2S, O_2, SO_2		✓	BZ1-K123500x1y	18109396-13z	18109234	18105841
LEL (Pentane), CO, H_2S, O_2, SO_2	✓		BZ1-K123501x0y	18109396-13z	18109234	18105841
LEL (Pentane), CO, H_2S, O_2, SO_2	✓	✓	BZ1-K123501x1y	18109396-13z	18109234	18105841
LEL (Pentane), CO, H_2S, O_2, SO_2, PID			BZ1-K1235R0x0y	18109396-13z	18109234, 18102939 (103L)	18105841 x2
LEL (Pentane), CO, H_2S, O_2, SO_2, PID		✓	BZ1-K1235R0x1y	18109396-13z	18109234, 18102939 (103L)	18105841 x2
LEL (Pentane), CO, H_2S, O_2, SO_2, PID	✓		BZ1-K1235R1x0y	18109396-13z	18109234, 18102939 (103L)	18105841 x2
LEL (Pentane), CO, H_2S, O_2, SO_2, PID	✓	✓	BZ1-K1235R1x1y	18109396-13z	18109234, 18102939 (103L)	18105841 x2

x = Agency Certification: 1 = UL/CSA, 2 = ATEX/IECEx | y = Language: 1 = EN, 2 = FR, 3 = ES, 4 = DE | z = Power Cord: 1 = North America, 2 = European, 3 = Australia, 4 = UK

What Accessories Will You Need?

CHECKLIST

- ☐ Docking Stations
- ☐ Extra Modules or Bases
- ☐ Accessory Labels for Asset Management
- ☐ Probes
- ☐ Alarm Muffler
- ☐ Filters
- ☐ Sample Tubes
- ☐ Replacement Sensors
- ☐ Extended Run Time Power Supply
- ☐ Intrinsically Safe Extended Run Time Power Supply

For a list of all accessories, visit
The Radius BZ1 PRoduct Page
www.indsci.com/radius

Extended Run Time Power Supply

MOST COMMON INSTRUMENT CONFIGURATIONS

PART NO.	DESCRIPTION
BZ1-K123000x0y	Radius BZ1, LEL (Pentane), CO, H_2S, O_2
BZ1-K123000x1y	Radius BZ1, LEL (Pentane), CO, H_2S, O_2, Wireless
BZ1-K123001x0y	Radius BZ1, LEL (Pentane), CO, H_2S, O_2, with Pump
BZ1-K123001x1y	Radius BZ1, LEL (Pentane), CO, H_2S, O_2, Wireless, with Pump
BZ1-K123500x0y	Radius BZ1, LEL (Pentane), CO, H_2S, O_2, SO_2
BZ1-K123500x1y	Radius BZ1, LEL (Pentane), CO, H_2S, O_2, SO_2, Wireless
BZ1-K123501x0y	Radius BZ1, LEL (Pentane), CO, H_2S, O_2, SO_2, with Pump
BZ1-K123501x1y	Radius BZ1, LEL (Pentane), CO, H_2S, O_2, SO_2, Wireless, with Pump
BZ1-K1235R0x0y	Radius BZ1, LEL (Pentane), CO, H_2S, O_2, SO_2, PID
BZ1-K1235R0x1y	Radius BZ1, LEL (Pentane), CO, H_2S, O_2, SO_2, PID, Wireless
BZ1-K1235R1x0y	Radius BZ1, LEL (Pentane), CO, H_2S, O_2, SO_2, PID, with Pump
BZ1-K1235R1x1y	Radius BZ1, LEL (Pentane), CO, H_2S, O_2, SO_2, PID, Wireless, with Pump
SC-K123000x0y	SafeCore Module, LEL (Pentane), CO, H_2S, O_2
SC-K123000x1y	SafeCore Module, LEL (Pentane), CO, H_2S, O_2, Wireless
SC-K123001x0y	SafeCore Module, LEL (Pentane), CO, H_2S, O_2, with Pump
SC-K123001x1y	SafeCore Module, LEL (Pentane), CO, H_2S, O_2, Wireless, with Pump
SC-K123500x0y	SafeCore Module, LEL (Pentane), CO, H_2S, O_2, SO_2
SC-K123500x1y	SafeCore Module, LEL (Pentane), CO, H_2S, O_2, SO_2, Wireless
SC-K123501x0y	SafeCore Module, LEL (Pentane), CO, H_2S, O_2, SO_2, with Pump
SC-K123501x1y	SafeCore Module, LEL (Pentane), CO, H_2S, O_2, SO_2, Wireless, with Pump
SC-K1235R0x0y	SafeCore Module, LEL (Pentane), CO, H_2S, O_2, SO_2, PID
SC-K1235R0x1y	SafeCore Module, LEL (Pentane), CO, H_2S, O_2, SO_2, PID, Wireless
SC-K1235R1x0y	SafeCore Module, LEL (Pentane), CO, H_2S, O_2, SO_2, PID, with Pump
SC-K1235R1x1y	SafeCore Module, LEL (Pentane), CO, H_2S, O_2, SO_2, PID, Wireless, with Pump

x = Agency Certification: 1 = UL/CSA, 2 = ATEX/IECEx
y = Language: 1 = EN, 2 = FR, 3 = ES, 4 = DE

ACCESSORIES

18109431-AB	Radius BZ1 Base (Without SafeCore) A = Approvals: 1 = UL/CSA, 2=ATEX/IECEx B = Language: 1 = English, 2 = French, 3 = Spanish, 4 = German
18109388-1A	Extended Run Time Power Supply A = Power Cord Type: 1 = North America, 2 = Europe, 3 = Australia, 4 = UK
18109516	Intrinsically Safe Extended Run Time Power Supply
17156261	50m Replacement Intrinsically Safe Cable
18109444	Speaker Grill
18109445	Speaker Dust Filter (Pack of 2)
18109442	Alarm Muffler (Pack of 2)
17155923	Charging Power Supply (Without Power Cord)
17155000	Power Cord (North America)
17155003	Power Cord (Europe)

ACCESSORIES (continued)

PART NO.	DESCRIPTION
17155001	Power Cord (Australia)
17155005	Power Cord (UK)
18109498	Calibration Cup and Tubing Kit
17155934	Charging Port Dust Cap
17155932	Intrinsic Safety Power Port Dust Cap
18109448	Boot
17155915-A	Printed Manual: A = Language, where 1 = English, 2 = French, 3 = Spanish, 4 = German
18109396-ABC -ABC	DSX™ Docking Station for SafeCore® A – DSX Mode: 0 = DSX Standalone 1 = DSXi Cloud-connected 2 = DSX-L Local Server B – Number of Gas Inlet Ports: 3 = 3 Ports 6 = 6 Ports C – Power Cord Type: 1 = North America, 2 = EU, 3 = AUS, 4 = UK
17156650-1	Replacement Sensor, SafeCore, Carbon Monoxide (CO)
17156650-2	Replacement Sensor, SafeCore, Hydrogen Sulfide (H_2S)
17156650-3	Replacement Sensor, SafeCore, Oxygen (O_2)
17156650-4	Replacement Sensor, SafeCore, Nitrogen Dioxide (NO_2)
17156650-5	Replacement Sensor, SafeCore, Sulfur Dioxide (SO_2)
17156650-6	Replacement Sensor, SafeCore, Ammonia (NH_3)
17156650-7	Replacement Sensor, SafeCore, Chlorine (Cl_2)
17156650-B	Replacement Sensor, SafeCore, Hydrogen Cyanide (HCN)
17156650-C	Replacement Sensor, SafeCore, Hydrogen (H_2)
17156650-G	Replacement Sensor, SafeCore, Carbon Monoxide/Hydrogen Low (CO/H_2 low)
17156650-H	Replacement Sensor, SafeCore, Carbon Monoxide (CO) High
17156650-J	Replacement Sensor, SafeCore, Carbon Monoxide/Hydrogen Sulfide (CO/H_2S)
17156650-K	Replacement Sensor, SafeCore, LEL, Pentane
17156650-L	Replacement Sensor, SafeCore, LEL, CH_4
17156650-R	Replacement Sensor, SafeCore, PID (VOCs)
18109472	DualSense Pack, SafeCore, Carbon Monoxide (CO)
18109473	DualSense Pack, SafeCore, Hydrogen Sulfide (H_2S)
18109474	DualSense Pack, SafeCore, Oxygen (O_2)
18109475	DualSense Pack, SafeCore, Nitrogen Dioxide (NO_2)
18109476	DualSense Pack, SafeCore, Sulfur Dioxide (SO_2)
18109486	DualSense Pack, SafeCore, Carbon Monoxide/Hydrogen Low (CO/H_2 low)
18109488	DualSense Pack, SafeCore, Carbon Monoxide/Hydrogen Sulfide (CO/H_2S)
18109489	DualSense Pack, SafeCore, LEL, Pentane
18109490	DualSense Pack, SafeCore, LEL, CH_4
17134701	Sensor Plug
17156465	Backup Battery
17155888	Sensor Collar
18109446	Module Cover
17156771	SafeCore Nameplate
17156983	Hand Tool
18109455	Pump Inlet Water Barrier (Pack of 3)
18109447	Pump Bottom Dust Filter (Pack of 2)

By wearing the Tango® TX1, workers will be the safest single gas monitor users in the world. Patented DualSense® Technology increases worker safety, regardless of bump test frequency, while reducing overall costs. iNet ready and DSX Docking Station compatible, let the Tango TX1 show you why two is better than one.

PART NO.	DESCRIPTION
TX1-1	Tango TX1, CO
TX1-2	Tango TX1, H_2S
TX1-4	Tango TX1, NO_2
TX1-5	Tango TX1, SO_2
TX1-G	Tango TX1, CO/H_2 low

ACCESSORIES

18109330-ABC	DSX™ Docking Station for Tango® TX1
-ABC	A – DSX Mode: 0 = DSX Standalone 1 = DSXi Cloud-connected 2 = DSX-L Local Server B – Number of Gas Inlet Ports: 3 = 3 Ports C – Power Cord Type: 1 = North America, 2 = EU, 3 = AUS, 4 = UK
18109406	DSXi Cloud-Connected Activation Certificate
18105684	iGas® Reader
17154367	Replacement battery
17155161	Replacement sensor, Carbon Monoxide, pack of two
17155164	Replacement sensor, Hydrogen Sulfide, pack of two
17155162	Replacement sensor, Nitrogen Dioxide, pack of two
17155163	Replacement sensor, Sulfur Dioxide, pack of two
17155823	Replacement sensor, Carbon Monoxide/low Hydrogen interference (CO/H_2 low), pack of two
18109171	Soft nylon case, Black
18109239	Soft nylon case, Orange
18109218	Dust barrier kit, 5 pack
18109230	Water barrier kit, 5 pack
18109238	CalCup and tubing kit
17120908	Belt clip
17154915-0	AlarmAmp®, Black
17154915-1	AlarmAmp®, Safety Orange
17154916	Black nameplate
17154917	Green nameplate
17154918	Yellow nameplate
17154919	Blue nameplate
17154920	White nameplate

SPECIFICATIONS*

INSTRUMENT WARRANTY
Guaranteed for Life™. Warranted for as long as the instrument is supported by Industrial Scientific Corporation (excludes sensors, batteries, and filters). CO and H_2S sensors are warranted for three years. All other sensors are warranted for two years.

DISPLAY
Segment liquid crystal display (LCD)

KEYPAD
Two buttons

CASE MATERIALS
Case top: Polycarbonate with a protective rubber overmold
Case bottom: Conductive polycarbonate

ALARMS
Three strobe-emitting visual alarm LEDs (two red; one blue); 100 decibel (dB) audible alarm at a distance of 10 cm (3.94 in); Vibration alarm

DIMENSIONS
99 x 51 x 35 mm (3.9 x 2.0 x 1.4 in)

WEIGHT
126.0 g (4.4 oz)

TEMPERATURE RANGE
-40 °C to 50 °C (-40 °F to 122 °F) **

HUMIDITY RANGE
15%-95% Non-condensing (continuous)

SENSORS
CO, CO/H_2 low, H_2S, NO_2, SO_2 – Electrochemical sensor technology

SENSOR MEASURING RANGES

Carbon Monoxide (CO):	0 to 1,000 ppm in 1 ppm increments
Carbon Monoxide (CO/H_2 low):	0 to 1,000 ppm in 1 ppm increments
Hydrogen Sulfide (H_2S):	0.0 to 500.0 ppm in 0.1 ppm increments
Nitrogen Dioxide (NO_2):	0.0 to 150.0 ppm in 0.1 ppm increments
Sulfur Dioxide (SO_2):	0.0 to 150.0 ppm in 0.1 ppm increments

BATTERY
3.6 V Primary lithium-thionyl chloride (Li-SOCl2); 1.5AH, 2/3AA; replaceable; non-rechargeable; always on; up to 2-year run time depending on operating conditions

DATA LOGGING
3 months at 10-second intervals

EVENT LOGGING
60 alarm events

CERTIFICATIONS
INGRESS PROTECTION IP66/67

-40 °C to 50 °C (-40 °F to 122 °F)

ATEX:	Ex ia I Ma; Ex ia IIC T4 Ga; Equipment Group/Category: I M1/II 1G
CSA :	CI I, Gr A-D, T4; Ex ia IIC T4
IECEx:	Ex ia I Ma; Ex ia IIC T4 Ga
INMETRO:	Ex ia I Ma; Ex ia IIC T4 Ga
UL (C-US):	CI I, Gr A-D, T4; CI II, Gr E-G; CI I, Zone 0, AEx ia IIC T4

-20 °C to 50 °C (-4 °F to 122 °F)

China Ex:	Ex ia IIC T4 Ga
CMA:	Ex ia I Ma; H_2S, CO
EAC:	PO Ex ia I X; 0 Ex iX IIC T4 X
KC:	Ex ia IIC T4

* These specifications are based on performance averages and may vary by instrument.
** Operating temperatures above 50 °C (122 °F) may cause reduced instrument accuracy. Operating temperatures below -20 °C (-4 °F) may cause reduced instrument accuracy and affect display and alarm performance. See Product Manual for details.

DualSense® Technology

The Tango TX1, Ventis Pro Series, Radius BZ1 and SafeCore Module incorporate revolutionary patented DualSense Technology, which includes two of the same type of sensor to detect a single gas. The two sensor readings are processed through a proprietary algorithm and displayed as a single reading to the user. DualSense Technology was developed to address the major challenge of making sure workers are always using fully functioning, reliable instruments in the field. DualSense Technology ensures that regardless of your current bump test policy, you will be significantly safer than you would be using an instrument without redundant sensors*.

*Based on iNet data

AlarmAmp™

For higher-noise environments, the Tango TX1 alarm volume, typically 100dB at 10 cm, can be increased nearly 10dB with the addition of the optional patented AlarmAmp™. The Tango TX1 alarm is louder than that of any other single gas instrument on the market.

Patent No. 9,000,910 – DualSense Technology
Patent No. 9,064,386 - AlarmAmp

New Bump Test Recommendation

Instruments without DualSense Technology:

Based on the data in the chart, Industrial Scientific recommends that a bump (functional) test be performed prior to each day's use for all instruments without DualSense Technology. If conditions do not permit daily testing, bump tests may be done less frequently based on instrument use, exposure to gas and environmental conditions.

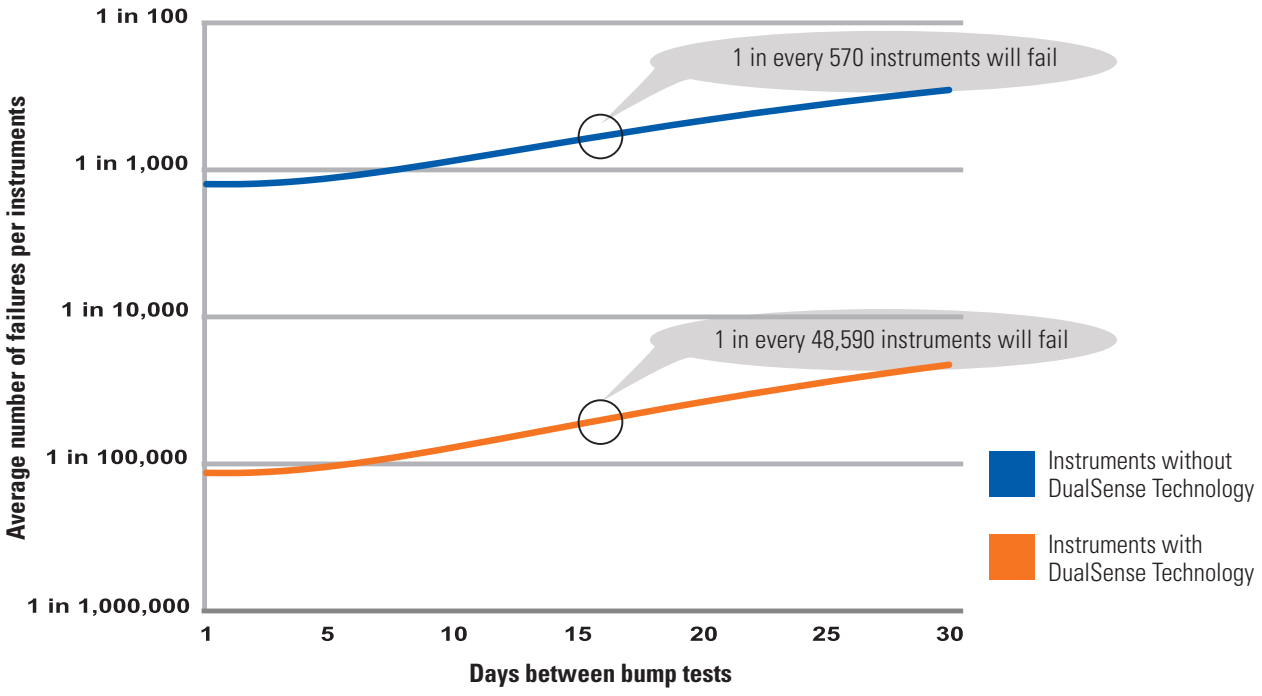
The frequency of testing of instruments without DualSense Technology is best determined by company policy or local regulatory agencies.

Instruments with DualSense Technology:

Regardless of bump test frequency (from daily to monthly), Industrial Scientific's instruments with DualSense Technology are safer than traditional instruments without the technology. The frequency of bump testing for instruments with DualSense Technology is best determined by company policy or local agencies based upon regulatory, environmental and other company-specific factors.

These conclusions and recommendations are based on field data, safe work procedures, industry best practices and regulatory standards to ensure worker safety.

DualSense Technology Increases Gas Detector Reliability



GasBadge Pro®

- Interchangeable "smart" sensors monitor oxygen or any one of many toxic gases
- One year datalogging capacity (minimum)
- Standard STEL and TWA
- iNet® ready and DSX™ Docking Station compatible

Built to Industrial Scientific's highest quality and reliability standards, GasBadge® Pro provides a lifetime of gas hazard protection with more features than any other single gas monitor available. Interchangeable "smart" sensors enable the GasBadge Pro to be quickly adapted to monitor unsafe levels of oxygen or any one of the following toxic gases: carbon monoxide, hydrogen sulfide, nitrogen dioxide, sulfur dioxide, chlorine, chlorine dioxide, phosphine, ammonia, hydrogen cyanide, and hydrogen.

GasBadge Pro communicates directly via an infrared interface to optional accessories like the DSX™ Docking Station, Datalink and infrared printer to further simplify and automate calibration, function (bump) testing and data downloading. Standard STEL and TWA readings, and datalogging of up to one year of survey data are featured along with an event-logger that records the past 15 alarm events.

Housed in a rugged enclosure, the monitor is immune to RF, water resistant and extremely durable. A protective concussion-proof overmold protects the unit from extreme abuse in a variety of harsh industrial environments. Its simple and intuitive four-button navigation allows easy access to setup, operation and calibration functions.

SPECIFICATIONS*

INSTRUMENT WARRANTY
Guaranteed for Life™: Instrument is warranted for as long as supported by Industrial Scientific Corporation (excluding sensors, batteries, and filters). CO, H_2S, and O_2 sensors are warranted for 2 years. All other sensors warranted for 1 year.

CASE
Rugged, water-resistant polycarbonate shell with protective concussion-proof overmold. RFI resistant.

DIMENSIONS
9.4 x 5.08 x 2.79 mm (3.7 x 2 x 1.1 in)

WEIGHT
85 g (3 oz)

SENSORS
CO, H_2S, O_2, NO_2, SO_2, NH_3, Cl_2, ClO_2, PH_3, HCN, H_2, CO/H_2 low

MEASURING RANGES

CO:	0-1,500 ppm in 1 ppm increments
CO/H_2 low:	0-1,500 ppm in 1 ppm increments
H_2S:	0-500 ppm in 0.1 ppm increments
O_2:	0-30% by volume in 0.1% increments
NO_2:	0-150 ppm in 0.1 ppm increments
SO_2:	0-150 ppm in 0.1 ppm increments
NH_3:	0-500 ppm in 1 ppm increments
Cl_2:	0-100 ppm in 0.1 ppm increments
ClO_2:	0-1 ppm in 0.01 ppm increments
PH_3:	0-10 ppm in 0.01 ppm increments
HCN:	0-30 ppm in 0.1 ppm increments
H_2:	0-2,000 ppm in 1 ppm increments

DISPLAY
Custom LCD with graphical icons for easy use
Segmented display for direct gas readings
Backlight for low light conditions
"Go/No Go" display mode
Peak reading indication

ALARMS
User selectable low and high alarms
Ultra-bright LEDs, loud audible alarm (95 dB) and vibrating alarm

BATTERY RUN TIME
User replaceable 3V, CR2 Lithium battery, 2,600 hour run time, typical

DATA LOGGING
1 year continuous storage of data

EVENT LOGGER
Continually on. Logs last 15 alarm events, stamping how long ago the event occurred, the duration of the event, and the peak reading seen during the event Event-logger can be viewed on PC or printed directly from the instrument to an infrared printer.

TEMPERATURE RANGE
-40 °C to 60 °C (-40 °F to 140 °F), typical

HUMIDITY RANGE
0% to 99% RH (non-condensing), typical

IP RATING
Third-party certified IP64

CERTIFICATIONS

ANZEx:	Ex ia I/IIC T4
ATEX:	Ex ia I/Ex ia IIC T4; Equipment Group/Category I M1/II 1G
China Ex:	Ex ia I/IIC T4
CMA:	Ex ia I
CSA:	Cl I, Gr A-D, T4; Ex ia IIC T4
IECEx:	Ex ia I/IIC T4
INMETRO:	Ex ia IIC T4
KC:	Ex ia I/IIC T4
UL:	Cl I, Div 1, Gr A-D, T4; Cl II, Gr E-G

SUPPLIED WITH MONITOR
Attached suspender clip, calibration adapter and tubing

* These specifications are based on performance averages and may vary by instrument.

Standard GasBadge® Pro configurations are listed below. To order the Australian-approved version, add an "A" as a suffix to the part number.

PART NO.	DESCRIPTION
18100060-1	GasBadge Pro – Carbon Monoxide (CO)
18100060-2	GasBadge Pro – Hydrogen Sulfide (H_2S)
18100060-3	GasBadge Pro – Oxygen (O_2)
18100060-4	GasBadge Pro – Nitrogen Dioxide (NO_2)
18100060-5	GasBadge Pro – Sulfur Dioxide (SO_2)
18100060-6	GasBadge Pro – Ammonia (NH_3)
18100060-7	GasBadge Pro – Chlorine (Cl_2)
18100060-8	GasBadge Pro – Chlorine Dioxide (ClO_2)
18100060-9	GasBadge Pro – Phosphine (PH_3)
18100060-B	GasBadge Pro – Hydrogen Cyanide (HCN)
18100060-C	GasBadge Pro – Hydrogen (H_2)
18100060-G	GasBadge Pro – Carbon Monoxide/Low Hydrogen Interference (CO/H_2 Low**)

ACCESSORIES

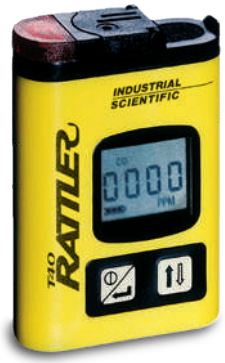
18109331-ABC	DSX™ Docking Station for GasBadge Pro
-ABC	A – DSX Mode: 0 = DSX Standalone 1 = DSXi Cloud-connected 2 = DSX-L Local Server B – Number of Gas Inlet Ports: 3 = 3 Ports C – Power Cord Type: 1 = North America, 2 = EU, 3 = AUS, 4 = UK
18109406	DSXi Cloud-Connected Activation Certificate
18105684	iGas® Reader
18106260	GasBadge Datalink - Software included
17121963	GasBadge Neck Lanyard with Safety Release
18106484	GasBadge Pro Nylon Carrying Case
18106492	GasBadge Pro 2-unit Nylon Carrying Case
17124504	Replacement water/dust sensor barriers (5 count)
17124033	GasBadge Pro Calibration Cup
17123019	GasBadge Pro CR2 Lithium Battery, 3V
17124983-1	Replacement sensor, Carbon Monoxide (CO)
17124983-2	Replacement sensor, Hydrogen Sulfide (H_2S)
17124983-3	Replacement sensor, Oxygen (O_2)
17124983-4	Replacement sensor, Nitrogen Dioxide (NO_2)
17124983-5	Replacement sensor, Sulfur Dioxide (SO_2)
17124983-6	Replacement sensor, Ammonia (NH_3)
17124983-7	Replacement sensor, Chlorine (Cl_2)
17124983-8	Replacement sensor, Chlorine Dioxide (ClO_2)
17124983-9	Replacement sensor, Phosphine (PH_3)
17124983-B	Replacement sensor, Hydrogen Cyanide (HCN)
17124983-C	Replacement sensor, Hydrogen
17124983-G*	Replacement sensor, Carbon Monoxide (H_2 Low**)

* Low Hydrogen Interference

GasBadge® Datalink

- Instantly download alarm events and instrument details
- Quickly and easily configure instrument preferences

Nylon Carrying Case



T40 RATTLER™

The T40 Rattler™ is a low-cost, maintenance-free single gas monitor designed to protect personnel from dangerous hydrogen sulfide or carbon monoxide gas exposure in the most extreme conditions. Despite its compact size, the T40 Rattler includes features usually found only in larger multi-gas monitors – including a large, liquid crystal display (LCD), internal vibrating alarm, audible/visual alarms and simple push-button operation.

The monitor continuously displays ambient CO or H_2S readings in PPM and will alert the user when gas concentrations exceed the preset low or high levels. Added features include adjustable alarm setpoints, calibration gas values, and choice of text-only display selected by the user through a simple, push-button routine. The T40 Rattler™ also has a peak/hold feature to show the highest reading during a shift and includes a patented flip-cap calibration adapter for quick and simple calibration. The T40 Rattler operates for up to 1,500 hours on a single "AA" battery (included) and is covered by a two-year warranty from the date of manufacture.

www.indsci.com/t40

SPECIFICATIONS*

INSTRUMENT WARRANTY
Two-year warranty from the date of shipment

CASE
High visibility, impact-resistant composite with radio frequency interference (RFI) protection

DIMENSIONS
86 x 58 x 19 mm (3.375 x 2.3 x .75 in)

WEIGHT
98 g (3.5 oz)

SENSORS
CO, H_2S – Electrochemical

MEASURING RANGES
Carbon Monoxide, 0-999 ppm in 1 ppm increments
Hydrogen Sulfide, 0-500 ppm in 1 ppm increments

ALARMS
Adjustable low and high alarm setpoints

POWER SOURCE (RUN TIME)
Replaceable "AA" alkaline battery (approx. 1,500 hours typical)

TEMPERATURE RANGE
-20 °C to 50 °C (-4 °F to 122 °F) typical

HUMIDITY RANGE
15 to 95% RH typical

CERTIFICATIONS
INGRESS PROTECTION IP66/67

-40 °C to 50 °C (-40 °F to 122 °F)

ATEX:	Ex ia I Ma; Ex ia IIC T4 Ga; Equipment Group/Category: I M1/II 1G
CSA :	Cl I, Gr A-D, T4; Ex ia IIC T4
IECEx:	Ex ia I Ma; Ex ia IIC T4 Ga
INMETRO:	Ex ia I Ma; Ex ia IIC T4 Ga
UL (C-US):	Cl I, Gr A-D, T4; Cl II, Gr E-G; Cl I, Zone 0, AEx ia IIC T4

-20 °C to 50 °C (-4 °F to 122 °F)

China Ex:	Ex ia IIC T4 Ga
CMA:	Ex ia I Ma; H_2S, CO
EAC:	PO Ex ia I X; 0 Ex iX IIC T4 X
KC:	Ex ia IIC T4

PART NO.	DESCRIPTION
18105247	T40 Rattler – Hydrogen Sulfide (H_2S)
18105254	T40 Rattler – Carbon Monoxide (CO)
18105874	T40 Nylon Carrying Case

All Rattler T40 Monitors Include: Battery (installed), additional battery, and maintenance tool.

Industrial Scientific Corporation is committed to continually developing new products that provide our customers with new capabilities, improvements, and enhancements to meet their ever evolving needs in portable gas detection instruments. To best focus these development efforts, we must periodically streamline our product offerings so that we can continue to provide our customers with the highest quality product and services. Industrial Scientific remains deeply committed to supporting our customers' evolving portable gas detection needs while providing the highest quality instruments, customer service, and support available in the industry today.

For our older products, we will continue to make every effort possible to provide repair services, replacement components, and spare parts for as long as reasonably possible for our discontinued products. The chart below identifies the types of support levels available and timeframes for the identified portable instruments.

PORTABLE GAS DETECTORS OLDER PRODUCT AVAILABILITY & SUPPORT SUMMARY

Product Available	No longer available; Service/Repair and all replacement parts available	Batteries, sensors, and filters available; Service/Repair subject to parts availability	All parts and service subject to parts availability
DS2 Docking Station	1-Sept-2015		31-Dec-2019
iNet DS Docking Station	1-June-2015		31-Dec-2019
			MX4 iQuad
			M40-M
			iTX
			M40
			MCAL
			GasBadge® Plus

For all other discontinued instruments, please contact Industrial Scientific for availability.

LENS™ WIRELESS

Experience the Power of the Connected Worker

LENS Wireless is the first gas detection solution that allows personal monitors and area monitors to share gas readings and alarms with one another. Now when a gas hazard, man-down, or panic situation causes an instrument to alarm, all peers in the connected group will instantly be notified of the hazard and the person in danger. When seconds matter, you can rely on help from workers nearby, rather than a control room or call center hundreds of miles away.

The LENS Wireless Difference

- Share gas readings and alarms between Ventis Pro Series personal monitors and Radius BZ1 Area Monitors
- Enjoy out-of-the-box operation with no site surveys, IT setup, licenses, or additional infrastructure needed
- Identify peer alarm types in real time, enabling a faster, more appropriate response
- View gas readings from other peers in your group on any monitor without needing a central controller to relay the information
- Receive readings from up to 1.5 km (~1 mi) away with wireless hopping between instruments
- Activate the panic alarm on your personal monitor to notify all peers in your group of an emergency
- Depend on self-healing mesh networks to always stay connected, even if a single unit drops off

Safety Made Simple

Many wireless gas detection products on the market require site surveys, IT setup, extra equipment and license purchases, and extensive training. It's no wonder why many organizations have not even considered wireless as an option.

With LENS Wireless, forming a connected group of monitors is as simple as tapping two Ventis® Pro instruments together, or a Ventis Pro to a Radius™ BZ1 Area Monitor. Connect up to 25 devices to create a dynamic safety web across your worksite. LENS Wireless adapts for organizations large and small within minutes. No IT setup. No infrastructure. No configuration.

Average time to deploy 25 LENS Wireless instruments
(Joining 25 instruments into a group)

2 minutes

Average time to implement other wireless solutions
(Instrument, IT, and central controller setup)

2 hours – 2 days

Start Communicating with
LENS Wireless at
www.indsci.com/LENS

SPECIFICATIONS*

Optional LENS™ Wireless, proprietary mesh network
Frequency: ISM license-free band (2.4 GHz)
Max Peers: 25 devices per network group
Range: Ventis Pro: 100 m (300 ft) line of sight, face-to-face
Radius BZ1: 300 m (~1,000 ft) line of sight
Encryption: AES-128
Approvals: FCC Part 15, IC, CE/RED, others

VENTIS PRO WIRELESS UPGRADE CARD

PART NO.	DESCRIPTION
18109494	Twenty-instrument upgrade card
18109493	Five-instrument upgrade card
18109492	One-instrument upgrade card

*See www.indsci.com/wireless-certifications for country-specific wireless approvals and certifications.

Gas detectors record basic information about gas hazards, but they don't help you understand who was exposed and where. iAssign® Beacons continuously broadcast a programmable site identifier and permission level, which enables Ventis Pro Series Multi-Gas Monitors to automatically record locations in real time.

iAssign Beacons allow you to send out real-time, site-specific reminders to your team, set access permission reminders, and automatically track data logged events, making it easier to analyze your data and prevent hazards in the future.

Spend less time investigating problems by knowing who & where

- Locate problem sites across your facility
- Add worker and location names to your data logs
- Stay compliant with clear and accurate record keeping
- Collect consistent site recordings when technology like GPS is not available

Keep workers out of restricted areas

- Alert workers when entering restricted areas with simple-to-program proximity alarms
- Reduce the need for separate devices, extra signage, or physical barriers to manage worker clearances

Install & maintain iAssign Beacons with ease

- Configure the coverage areas of your beacons from 1 to 30 m
- Install intrinsically safe beacons in indoor or outdoor locations

iAssign Tags

Allow workers to assign their names to their gas monitors with a simple tap.

iAssign Beacons

Automatically assign location names to Ventis Pro Series Multi-Gas Monitors based on proximity, helping safety managers see where hazards occurred and who was involved.

Using tags and beacons, anyone reviewing the data can easily see who had the instrument and where the measurements were taken, making the information more actionable.

iASSIGN BEACON SPECIFICATIONS*

PART NUMBER
18109491

RUN TIME
Four years

WARRANTY
One year

INGRESS PROTECTION
IP65

TEMPERATURE RANGE
-40 °C to 50 °C

HUMIDITY RANGE
0% to 100% RH

DIMENSIONS
125 x 85 x 43mm (5 x 3.3 x 1.68 in)

WEIGHT
9 oz (250 g)

RANGE
Configurable from 1 to 3 m (3 to 100 ft)

TECHNOLOGY
Bluetooth, Near Field Communication (NFC)

PROGRAMMING METHOD
iAssign app available in Google Play store

ACCESSORIES
Instruction card, drywall anchors, screws

APPLICATION
iAssign Beacons may be used to track locations only

CERTIFICATIONS

ATEX:	Pending
CSA:**	Cl I, Div 1, Gr A-D, T4; Cl I, Zone 0, Ex d ia IIC T4
IECEx:	Pending
UL:	Cl I, Div 1, Gr A-D, T4; Cl II, Gr E-G; Cl I, Zone 0, AEx ia IIC T4
Wireless:	FCC Part 15, IC

* These specifications are based on performance averages and may vary by instrument.

** Certified by UL to CSA standards.

iAssign Tag Specifications

Tag Type	Standard Tag	Waterproof Tag	All Weather Tag	Keychain Tag
Part Number	18109417	18109418	18109419	18109420
Thickness	0.7 mm	1.5 mm	3 mm	4 mm
Adhesive Back	Yes	Yes	No	No

iASSIGN TAG SPECIFICATIONS

TECHNOLOGY
Near Field Communication (NFC)

PROGRAMMING METHOD
iAssign app available in Google Play store

APPLICATION
iAssign tags may be used to track workers and locations

Portable Instrument Sensor Options

SENSOR	MULTI-GAS MONITORS				SINGLE-GAS MONITORS		
	Ventis MX4	Ventis Pro Series	MX6 iBrid	SafeCore	GasBadge Pro	Tango TX1	T40 Rattler
Oxygen (O_2) Standard	•	•	•	•	•		
Oxygen (O_2) Long-Life		•					
LEL Sensor (%LEL) – Catalytic Bead [HP]	• ★ [HP1]	• ★ [HP1]	• ★ [HP2]	• ★ [HP2]			
Ammonia (NH_3)		•	•	•	•		
Arsine (AsH_3)							
Carbon Monoxide (CO)	•	•	•	•	•	•	•
Carbon Monoxide (CO High)			•	•			
CO/H_2 Low		•	•	•	•		
CO/H_2S (COSH)		•	•	•	•		
Chlorine (Cl_2)			•	•	•		
Chlorine Dioxide (ClO_2)			•		•		
Ethylene Oxide (ETO)							
Hydrogen (H_2)			•	•	•		
Hydrogen Chloride (HCl)			•				
Hydrogen Cyanide (HCN)		•	•	•	•		
Hydrogen Sulfide (H_2S)	•	•	•	•	•	•	•
Methane (0-5% vol) – Catalytic Bead [HP]	• ★ [HP1]	• ★ [HP1]	• ★ [HP2]				
Nitric Oxide (NO)			•				
Nitrogen dioxide (NO_2)	•	•	•	•	•	•	
Phosphine (PH_3)		• (Pro5)	•		•		
Phosphine High (0-1,000 ppm)			•				
Silane (SiH_4)							
Sulfur Dioxide (SO_2)	•	•	•	•	•	•	
INFRARED							
Carbon Dioxide (CO_2) [HP]			• ☐ [HP2]				
Carbon Dioxide/LEL (CO_2/LEL) [HP]		• ☐ [HP1]					
Carbon dioxide/methane (CO_2/CH_4) [HP]		• ☐ [HP1]					
Combustibles (0-100% LEL) [HP]			• ☐ [HP2]				
Methane (0-100% vol) [HP]		• ☐ [HP1]	• ☐ [HP2]				
Methane (0-100 %LEL) [HP]			• ☐ [HP2]				
PHOTOIONIZATION							
PID for VOCs (Volatile Organic Compounds) [HP]			•	• [HP2]			

NOTES:

- Sensor Not Available
- • Sensor Available
- ☐ Maximum of one Infrared (IR) Sensor per instrument
- ★ Factory calibrated to Pentane (typically) or Methane (optionally)
- [HP1] Maximum of one High Power Sensor per instrument
- [HP2] Maximum of two High Power Sensors per instrument, but just one IR sensor (MX6 iBrid)

Certain limits apply to the number of sensor configurations.

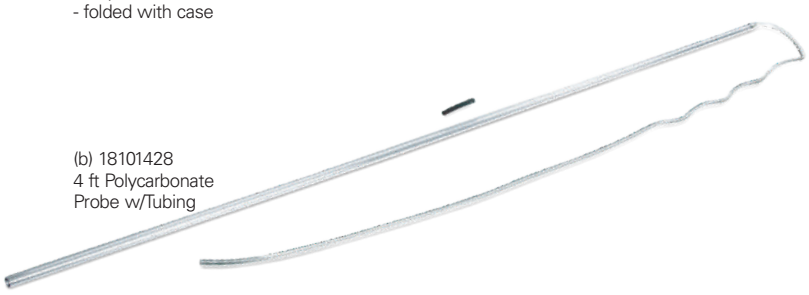
	MULTI GAS MONTIORS				SINGLE GAS MONITORS	
Gas	**Ventis MX4**	**Ventis Pro Series**	**MX6 iBrid**	**SafeCore**	**Tango TX1**	**GasBadge Pro**
CATALYTIC BEAD						
%LEL / Isobutane (C_4H_{10})	17156979†					
%LEL / Pentane (C_5H_{12})	17134495	17155304-K	17124975-K	17156650-K 18109489^		
%LEL / Methane (CH_4)	17134495 17156917††	17155304-L	17124975-L	17156650-L 18109490^		
Methane (Ch_4 0-5%)	17134495	17155304-M	17124975-M			
ELECTROCHEMICAL STANDARD						
Carbon Monoxide (CO)	17134487	17155306-I	17124975-1	17156650-1 18109472^	17155161^	17124983-1
Carbon Monoxide (CO High)			17124975-H $330.00	17156650-H		
Carbon Monoxide (H_2 Low)	17155564	17155306-G	17124975-G	17156650-G 18109486^	17155823^	17124983-G
Carbon Monoxide / Hydrogen Sulfide (CO/H_2S)		17155306-J (6 series) 17155304-J (4 series) 17156919^	17124975-J	17156650-J 18109488^		17124983-C
Hydrogen Sulfide (H_2S)	17134479	17155306-2 (6 series) 17155304-2 (4 series)	17124975-2	17156650-2 18109473^	17155164^	17124983-2
Oxygen (O_2)	17134461	17155304-3 17156920^	17124975-3	17156650-3 18109474^		17124983-3
Nitrogen Dioxide (NO_2)	17134503	17155306-4	17124975-4	17156650-4 18109475^	17155162^	17124983-4
Sulfur Dioxide (SO_2)	17143595	17155306-5	17124975-5	17156650-5 18109476^	17155163^	17124983-5
ELECTROCHEMICAL EXOTICS						
Ammonia (NH_3)		17155306-6	17124975-6	17156650-6		17124983-6
Chlorine (Cl_2)			17124975-7			17124983-7
Chlorine Dioxide (ClO_2)			17124975-8	17156650-7		17124983-8
Hydrogen (H_2)			17124975-C			
Hydrogen Chloride (HCl)			17124975-A			
Hydrogen Cyanide (HCN)		17155306-B	17124975-B	17156650-C		17124983-B
Nitric Oxide (NO)			17124975-D			
Phosphine (PH_3 High)			17124975-E	17156650-B		
Phosphine (PH_3)			17124975-9			17124983-9
INFRARED						
Carbon Dioxide (CO_2)			17124975-Q			
Combustibles			17124975-P			
Carbon Dioxide / LEL (CO_2/LEL)		17155304-U				
Carbon Dioxide / Methane (CO_2/CH_4)		17155304-V				
Methane (CH_4 0-100% vol)			17124975-N			
Methane (CH_4 0-100% LEL)			17124975-S			
PHOTOIONIZATION						
PID (VOCs)			17124975-R	17156650-R		

^ Dual sensors are packaged in random pairs | † For use with the DSX Standalone to calibrate %LEL (Isobutane) | †† For use with the DSX Standalone to calibrate %LEL (Methane)

(c) 18101386 6 ft Extendible Stainless Steel Probe
Shown:
- not extended
- partially extended
- fully extented

(a) 18102111
4.5 ft Folding Probe w/Tubing
Shown:
- fully extended
- folded with case

(d) 18102309
1.5 ft Polycarbonate Probe
w/Filter

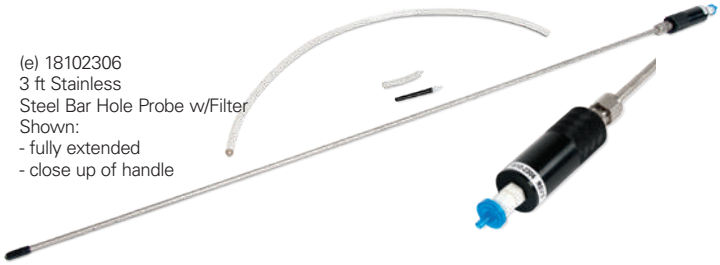


(b) 18101428
4 ft Polycarbonate
Probe w/Tubing

(f) 18102276
1.5 ft Stainless Steel Flue Gas
Probe w/Filter (to 1,500 °F)

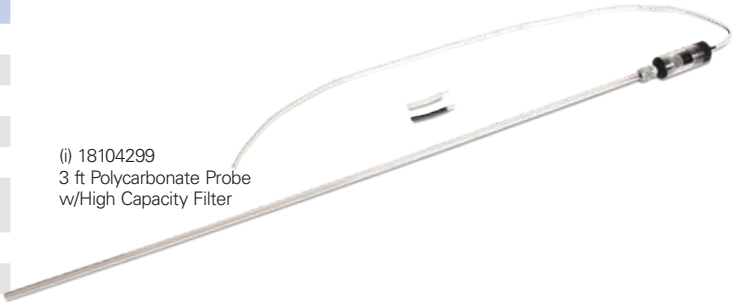
(h) 18103309
Aluminum Coiled Probe
(800-900 °F)

(e) 18102306
3 ft Stainless
Steel Bar Hole Probe w/Filter
Shown:
- fully extended
- close up of handle



SAMPLING PROBES

PART NO.	DESCRIPTION
18102111	(a) 4.5 ft Folding Probe w/Tubing
18101428	(b) 4 ft Polycarbonate Probe w/Tubing
18101386	(c) 6 ft Extendible Stainless Steel Probe
18102309	(d) 1.5 ft Polycarbonate Probe w/Filter
18102306	(e) 3 ft Stainless Steel Bar Hole Probe w/Filter
18102276	(f) 1.5 ft Stainless Steel Flue Gas Probe w/Filter (to 1,500° F)
18102246	3-Foot Sampling Probe
18103309	(h) Aluminum Coiled Probe (800-900° F)
18104299	(i) 3 ft Polycarbonate Probe w/High Capacity Filter



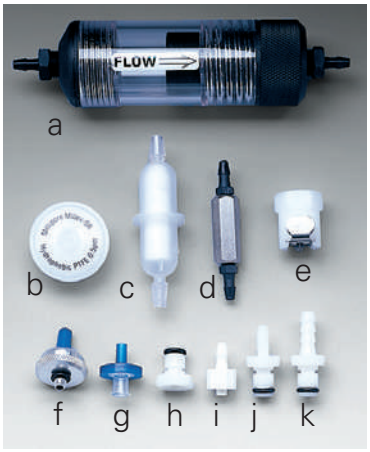
(i) 18104299
3 ft Polycarbonate Probe
w/High Capacity Filter

MX6 PROBE ADAPTERS – *17136540 filter cap is required

Extention Table:	**18105155** MX6 Inlet Probe Adapter*
0 = 1/8 in Female NPT Connection	18105155-0
1 = 1/8 in Hose Barb Fitting	18105155-1
2 = Female Quick Connect Coupling	18105155-2
3 = 8 in Teflon Probe	18105155-3
4 = 10 in Stainless Steel Probe	18105155-4
5 = 18 in Polycarbonate Probe	18105155-5

(g) 18102246
3 ft Extendible Probe w/Teflon Tubing Insert
Shown:
- fully extended
- not extended

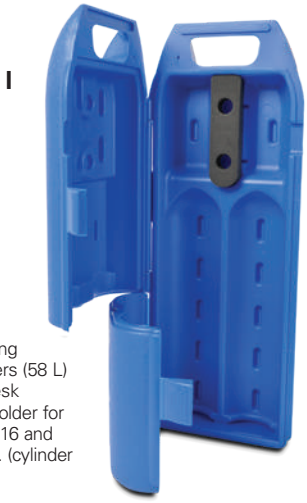
Adequate air flow is critical for proper remote sampling. All filters should be replaced when dirt or water inhibits air flow. Quick disconnect fittings allow easy, no-fuss connection to secure tubing to sampling pumps.



Additional Remote Sampling Equipment:

(a) Inline High Capacity Water Stop
(b) Dust Filter/WaterStop for Docking Station Fresh Air Inlet
(c) Inline Dust Filter for iSP/ SP402/SP202/SP100 Pumps
(d) Dilution Tube
(e) Quick Disconnect Fitting, Female
(f) Replacement Filters (Package of 5)
(g) Internal Dust Filter/WaterStop for MX6/ATX Series
(h) Quick Disconnect Fitting, Male, Threaded
(i) Luer Fitting, Male, 1/8 in or 3/16 in Barb
(j) Quick Disconnect Fitting, Male, 1/8 in Barb
(k) Quick Disconnect Fitting, Male, 3/16 in Barb

For best results, use only Industrial Scientific calibration equipment for regular instrument calibration and maintenance.



(l) 17037961 - Carrying Case for 2 Cylinders (58 L)
(m) 17124348 Wall/Desk Mount Cylinder Holder for use with 34, 58, 116 and 552 liter cylinders. (cylinder not included)

ADDITIONAL REMOTE SAMPLING EQUIPMENT

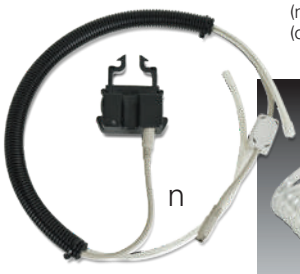
PART NO.	DESCRIPTION
18102277	(a) Inline High Capacity Water Stop
17057803	Replacement Gortex Filter Insert for 18102277
17027152	(b) Dust Filter/ Water Stop for Motorized Sampling Pumps
17050908	(c) Inline Dust Filter 10 micron, w/adaptors for MX6, Ventis, VSP pumps
17041740	(d) Dilution Tube (for use w/Sampling Pumps)
17050688	(e) Quick Disconnect Fitting, Female
17024597	(f) Replacement Filter for iSP, SP402, SP202, SP100 Pumps
17024191	(f) Replacement Filters (Package of 5)
17058157	(g) Internal Dust Filter/ WaterStop for MX6/ATX Series
17051611	(h) Quick Disconnect Fitting, Male, Threaded
17048273	(i) Luer Fitting, Male, 3.175 mm (1/8 in) Barb
17050698	(i) Luer Fitting Male, 4.7625 mm (3/16 in) Barb
17050689	(j) Quick Disconnect Fitting, Male, 3.175 mm (1/8 in) Barb
17050775	(k) Quick Disconnect Fitting, Male, 4.7625 mm (3/16 in) Barb
17051319	Dust Filter/WaterStop for Docking Station Fresh Air Inlet
17051701	Replacement Probe Fitting for 18101386
17136540	SP6 Filter Cap (used w/18105155-X)
17152395	Internal Dust Filter/Water Stop for Ventis with pump

PROBE TUBING KITS – for use with 18101386 probe

18108043	(o) Probe Tubing Kit for MX6/Ventis – Urethane (Not for use with Cl_2, ClO_2, HCl, or PID sensors)
18108093	Probe Tubing Kit for MX6/Ventis – Teflon lined (For use with all sensors)

MISCELLANEOUS CALIBRATION EQUIPMENT

PART NO.	DESCRIPTION
18105684	(n) iGas® Reader
17041807	Calibration Log, (tablet of 50 sheets)
17045873	Calibration Label
17037961	(l) Carrying Case for 2 Cylinders (58/103 L)
18100149	Carrying Case for 2 Cylinders (34 L) w/0.5 LPM Regulator
17154096	Carry Case for 2 Cylinder (116L)
17124348	(m) Wall/Desk Mount Cylinder Holder
17113275	Cylinder Recycling Tool (58L, 103L steel)
17113283	Cylinder Recycling Tool (34L)



(n) 18105684 - iGas® Reader
(o) 18108043 - Probe Tubing Kit for MX6/Ventis

Universal Urethane Sample Tubing Kit with Dust Filter/Water Stop

PART NO.	LENGTH	PART NO.	LENGTH
18109207-10	3 m / 10 ft	18109207-60	18.3 m / 60 ft
18109207-20	6.1 m / 20 ft	18109207-70	21.3 m / 70 ft
18109207-30	9.1 m / 30 ft	18109207-80	24.4 m / 80 ft
18109207-40	12.2 m / 40 ft	18109207-90	27.4 m / 90 ft
18109207-50	15.2 m / 50 ft	18109207-100	30.5 m / 100 ft

NOTE: Not for use with Cl_2, ClO_2, HCl, or PID Sensors

Universal Teflon Lined Sample Tubing Kit with Dust Filter/Water Stop

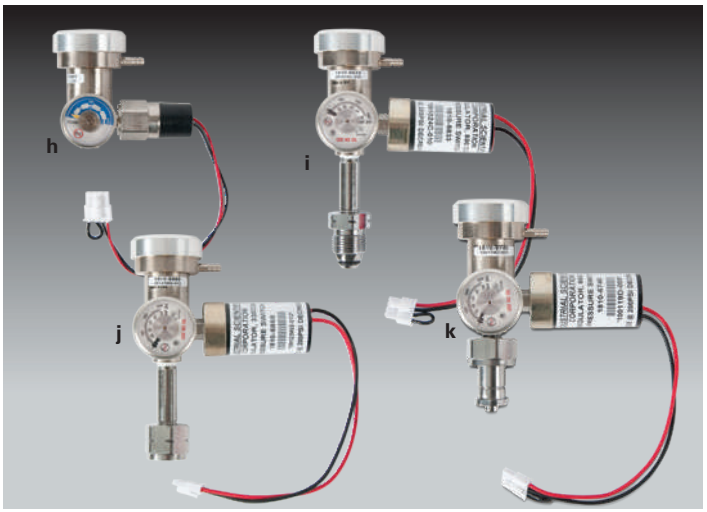
PART NO.	LENGTH	PART NO.	LENGTH
18109206-10	3 m / 10 ft	18109206-60	18.3 m / 60 ft
18109206-20	6.1 m / 20 ft	18109206-70	21.3 m / 70 ft
18109206-30	9.1 m / 30 ft	18109206-80	24.4 m / 80 ft
18109206-40	12.2 m / 40 ft	18109206-90	27.4 m / 90 ft
18109206-50	15.2 m / 50 ft	18109206-100	30.5 m / 100 ft

NOTE: For use with all sensors

Regulators provide the proper flow rate for calibrating your Industrial Scientific instrument. Always make certain to use the appropriate regulator for the application as recommended in the Instruction Manual.

(a) 18100933 - 34 L Regulator (1/2 L/min flow)
(b) 18102509 - 58/103 L Demand Flow Regulator
(c) 18103564 - 34 L Demand Flow Regulator
(d) 18102260 - 552 L Regulator (1/2 L/min flow)
(e) 18100883 - 58/103 L Regulator (1/2 L/min flow)
(f) 18102155 - 58/103 L Ammonia Regulator
(g) 18103580 - 58/103 L Bump Test Regulator

MX6 DSX Docking Station shown with a Demand Flow Regulator (18105841) and cylinder connected to an iGas® Reader (18105684).



(h) 18105841 - 58/103/34L Demand Flow Regulator w/iGas Pressure Switch
(i) 18105833 - 552L Demand Flow Regulator, 590 CGA w/iGas Pressure Switch
(j) 18105858 - 650L Demand Flow Regulator, 330 CGA w/iGas Pressure Switch
(k) 18106740 - Demand Flow Regulator, 660 CGA w/iGas Pressure Switch

(l) 18105924 - 5-port Clamp-on Gas Manifold

REGULATORS

PART NO.	DESCRIPTION
18100933	(a) 34L Regulator (1/2L/min flow)
18102509	(b) 58/103L Demand Flow Regulator (and 34L Aluminum Cylinders)
18103564	(c) 34L Demand Flow Regulator, CGA 600
18103549	552L Demand Flow Regulator, CGA 590
18103556	650L Demand Flow Regulator, CGA 330
18104158	Demand Flow Regulator, CGA 660
18106708	Demand Flow Regulator, CGA 705
18102260	(d) 552L Regulator (1/2 L/min flow), CGA 590
18100883	(e) 58/103L Regulator (and 34L Aluminum Cylinders) (1/2 L/min flow)
18102155	(f) 58/103L Ammonia Regulator (1 L/min flow)
18103580	(g) 58/103L Bump Test Regulator w/Trigger
18103374	650L Regulator (1/2L/min flow), CGA 330
18104695	Regulator w/Bump Test Trigger, CGA 330
18104356	Regulator w/Bump Test Trigger, CGA 590
18105924	5-Port Clamp-on Gas Manifold
18105932	6-Port Gas Regulator Manifold

DEMAND FLOW REGULATORS

PART NO.	DESCRIPTION
18105841	(h) 58/103/34L Demand Flow Regulator w/iGas 150 PSI Pressure Switch
18109244	(h) 58/103/34L Demand Flow Regulator w/iGas 250 PSI Pressure Switch
18105866	34L Demand Flow Regulator, 600 CGA w/iGas 150 PSI Pressure Switch
18109243	34L Demand Flow Regulator, 600 CGA w/iGas 250 PSI Pressure Switch
18105833	(i) 552L Demand Flow Regulator, 590 CGA w/iGas 200 PSI Pressure Switch
18109241	(i) 552L Demand Flow Regulator, 590 CGA w/iGas 500 PSI Pressure Switch
18105858	(j) 650L Demand Flow Regulator, 330 CGA w/iGas 200 PSI Pressure Switch
18109242	(j) 650L Demand Flow Regulator, 330 CGA w/iGas 500 PSI Pressure Switch
18106740	(k) Demand Flow Regulator, 660 CGA w/iGas 200 PSI Pressure Switch
18109246	(k) Demand Flow Regulator, 660 CGA w/iGas 500 PSI Pressure Switch
18106757	Demand Flow Regulator, 705 CGA w/iGas Pressure Switch
18101766	58/103L Regulator (1 L/min flow)

Calibration gas cylinders from Industrial Scientific are manufactured with the highest quality standards. Each cylinder has NIST-traceable blend techniques and undergoes analytical leak testing. The cylinders include certified component concentrations and have clearly marked lot numbers and expiration dates.

Industrial Scientific's calibration gas cylinders are available in a variety of sizes and concentrations, including convenient multi-gas blends orsingle gas cylinders.

Use the following chart to order replacement cylinders.

To view a complete listing, visit our online calibration gas cross reference chart at www.indsci.com/cal-gas

				DEMAND FLOW REGULATORS	
PART NO.	DESCRIPTION	Vol	0.5LPM Regulator	Demand Flow	w/ iGas Pressure Switch
18105825	CYL, 200 ppm CO, 75 ppm H_2S, 15% O_2, 25% LEL Methane (For bump testing only)	116L	18100883	18102509	18105841
18109173	CYL, 18% O_2, 25% LEL Pentane	103L	18100883	18102509	18105841
18109174	CYL, 100 ppm CO, 18% O_2, 2.5% Methane	103L	18100883	18102509	18105841
18109187	CYL, 100 ppm CO, 18% O_2, 2.5% Methane	552L	18102260	18103549	18105833
18109199	CYL, 100 ppm CO, 18% O_2, 2.5% Methane	4,000L	n/a	18103556	18105858
18109165	CYL, 100 ppm CO, 18% O_2, 25% LEL Pentane	103L	18100883	18102509	18105841
18109161	CYL, 100 ppm CO, 18% O_2, 25% LEL Pentane	552L	18102260	18103549	18105833
18109156	CYL, 100 ppm CO, 25 ppm H_2S, 18% O_2, 2.5% Methane	58L	18100883	18102509	18105841
18109158	CYL, 100 ppm CO, 25 ppm H_2S, 18% O_2, 2.5% Methane	116L	18100883	18102509	18105841
18109160	CYL, 100 ppm CO, 25 ppm H_2S, 18% O_2, 2.5% Methane	650L	18103374	18103556	18105858
18109198	CYL, 100 ppm CO, 25 ppm H_2S, 18% O_2, 50% LEL Methane	4,000L	n/a	18103556	18105858
18109155	Calibration gas, CO, H_2S, O_2, LEL Pentane	58L	18100883	18102509	18105841
18109157	CYL, 100 ppm CO, 25 ppm H_2S, 18% O_2, 25% LEL Pentane	116L	18100883	18102509	18105841
18109159	CYL, 100 ppm CO, 25 ppm H_2S, 18% O_2, 25% LEL Pentane	650L	18103374	18103556	18105858
18109194	CYL, 100 ppm CO, 25 ppm H_2S, 18% O_2, 25% LEL Pentane	4,000L	n/a	18103556	18105858
18109176	CYL, 100 ppm CO, 2.5% CO_2, 18% O_2, 25% LEL Pentane	103L	18100883	18102509	18105841
18109186	CYL, 100 ppm CO, 2.5% CO_2, 18% O_2, 25% LEL Pentane	552L	18102260	18103549	18105833
18109269	CYL, 250 ppm CO, 2.5% CO_2, 18% O_2, 50% LEL Methane	103L	18100883	18102509	18105841
18109251	CYL, 100 ppm CO, 25 ppm H_2S, 2.5% CO_2, 18% O_2, 2.0% (40% LEL) Methane	116L	18100883	18102509	18105841
18109363	CYL, 100 ppm CO, 25 ppm H_2S, 2.5% CO_2, 18% O_2, 2.0% (40% LEL) Methane	650L	18103374	18103556	18105858
18109250	CYL, 100 ppm CO, 25 ppm H_2S, 2.5% CO_2, 18% O_2, 25% LEL Pentane	116L	18100883	18102509	18105841
18109362	CYL, 100 ppm CO, 25 ppm H_2S, 2.5% CO_2, 18% O_2, 25% LEL Pentane	650L	18103374	18103556	18105858
18109236	CYL, 100 ppm CO, 5 ppm NO_2, 18% O_2, 25% LEL Pentane	116L	18100883	18102509	18105841
18109235	CYL, 100 ppm CO, 5 ppm NO_2, 18% O_2, 25% LEL Pentane	650L	n/a	n/a	18106740
18109184	CYL, 100 ppm CO, 5 ppm NO_2, 18% O_2, 2.5% Methane	58L	18100883	18102509	18105841
18109324	CYL, 5 ppm SO_2, 18% O_2, 2.5% Methane	116L	18100883	18102509	18105841

				DEMAND FLOW REGULATORS	
PART NO.	DESCRIPTION	Vol	0.5LPM Regulator	Demand Flow	w/ iGas Pressure Switch
18102151	CYL, 25 ppm Ammonia (NH_3)	58L	18100883	18102509	18105841
18109081	CYL, 25ppm Ammonia (NH_3)	116L	18100883	18102509	18105841
18106658	CYL, 25 ppm Ammonia (NH_3)	650L	n/a	n/a	18106740
78103868	CYL, 50 ppm Ammonia (NH_3)	58L	18100883	18102509	18105841
18109106	CYL, 50 ppm Ammonia (NH_3)	116L	18100883	18102509	18105841
18109392	CYL, 50 ppm Ammonia (NH_3)	650L	n/a	n/a	18106740
18102913	CYL, 2.5% Carbon Dioxide (CO_2)	103L	18100883	18102509	18105841
18104208	CYL, 5.0% Carbon Dioxide (CO_2)	103L	18100883	18102509	18105841
18102163	CYL, 100 ppm Carbon Monoxide (CO)	103L	18100883	18102509	18105841
18103101	CYL, 100 ppm Carbon Monoxide (CO)	552L	18102260	18103549	18105833
18101758	CYL, 10 ppm Chlorine (Cl_2)	58L	18100883	18102509	18105841
18109082	CYL, 10 ppm Chlorine (Cl_2)	116L	18100883	18102509	18105841
18106955	CYL, 10 ppm Chlorine (Cl_2)	650L	18103374	18103556	18105858
18102996	CYL, 500 ppm Hydrogen (H_2)	103L	18100883	18102509	18105841
18102154	CYL, 10 ppm Hydrogen Chloride (HCl)	58L	18100883	18102509	18105841
18109088	CYL, 10 ppm Hydrogen Chloride (HCl)	116L	18100883	18102509	18105841
18106963	CYL, 10 ppm Hydrogen Chloride (HCl)	650L	18103374	18103556	18105858
18100859	CYL, 25 ppm Hydrogen Sulfide (H_2S)	58L	18100883	18102509	18105841
18109078	CYL, 25 ppm Hydrogen Sulfide (H_2S)	116L	18100883	18102509	18105841
18106633	CYL, 25 ppm Hydrogen Sulfide (H_2S)	650L	18103374	18103556	18105858
18109132	CYL, 25 ppm Hydrogen Sulfide (H_2S)	4,000L	n/a	18103556	18105858
18102152	Calibration gas, HCN	58L	18100883	18102509	18105841
18109085	CYL, 10 ppm Hydrogen Cyanide (HCN)	116L	18100883	18102509	18105841
18107839	CYL, 10 ppm Hydrogen Cyanide (HCN)	650L	n/a	n/a	18106740
18102939	CYL, 100 ppm Isobutylene	103L	18100883	18102509	18105841
18107375	CYL, 100 ppm Isobutylene	552L	18102260	18103549	18105833
18101378	CYL, 2.5% Methane (CH_4)	103L	18100883	18102509	18105841
18104778	CYL, 99% Methane (CH_4)	34L	18100883	18102509	18105841
18102153	CYL, 25 ppm Nitric Oxide (NO)	58L	18100883	18102509	18105841
18109091	CYL, 25 ppm Nitric Oxide (NO)	116L	18100883	18102509	18105841
18107722	CYL, 25 ppm Nitric Oxide (NO)	650L	n/a	n/a	18106740
18102219	CYL, 5 ppm Nitrogen Dioxide (NO_2)	58L	18100883	18102509	18105841
18109087	CYL, 5 ppm Nitrogen Dioxide (NO_2)	116L	18100883	18102509	18105841
18105882	CYL, 5 ppm Nitrogen Dioxide (NO_2)	650L	n/a	n/a	18106740
18101477	CYL, 25 ppm Nitrogen Dioxide (NO_2)	58L	18100883	18102509	18105841
18109084	CYL, 25 ppm Nitrogen Dioxide (NO_2)	116L	18100883	18102509	18105841
18107730	CYL, 25 ppm Nitrogen Dioxide (NO_2)	650L	n/a	n/a	18106740
18104059	CYL, 1.0 ppm Phosphine (PH_3)	58L	18100883	18102509	18105841
18102222	CYL, 5 ppm Sulfur Dioxide (SO_2)	58L	18100883	18102509	18105841
18109086	CYL, 5 ppm Sulfur Dioxide (SO_2)	116L	18100883	18102509	18105841
18108126	CYL, 5 ppm Sulfur Dioxide (SO_2)	650L	n/a	n/a	18106740
18101220	CYL, 10 ppm Sulfur Dioxide (SO_2)	58L	18100883	18102509	18105841
18109079	CYL, 10 ppm Sulfur Dioxide (SO_2)	116L	18100883	18102509	18105841
18105817	CYL, 10 ppm Sulfur Dioxide (SO_2)	650L	n/a	n/a	18106740
18109414	CYL, 10 ppm Sulfur Dioxide (SO_2)	4,000L	n/a	n/a	18106740
18101584	CYL, Zero Grade Air (20.9% Oxygen)	103L	18100883	18102509	18105841
18102320	CYL, Zero Grade Air (20.9% Oxygen)	552L	18102260	18103549	18105833
18109247	CYL, Zero Grade Air (20.9% Oxygen)	4,000L	n/a	18103549	18105833

NOTE: Calibration gas cylinder expiration times vary due to gas type. Please contact Industrial Scientific for detailed information.

Industrial Scientific's calibration kits come equipped with everything necessary to keep your gas monitors operating accurately and reliably. Kits contain certified NIST-traceable gases for safe, reliable instrument calibration. Calibration cups and tubing are supplied with the instrument and are not included in the kit. Complete kits are available for all installed sensors and include:

- Non-refillable cylinders
- Flow regulator
- Convenient carrying case

Calibration gas kits are available in a variety of sizes and concentrations, including convenient multi-gas blends or single gas cylinders. Use the following chart to order complete kits.

To view a complete listing, visit our online calibration gas cross reference chart at
www.indsci.com/cal-gas

Calibration Kit shown with case, cylinder and flow regulator.
NOTE: Compressed air cylinders must not be shipped with the regulator attached.

PART NO.	DESCRIPTION	Vol
18102269	KIT, 100 ppm CO, 19% O_2, 25% LEL Pentane	103L
18102270	KIT, 100 ppm CO, 19% O_2, 2.5% Methane	103L
18109137	KIT, 100 ppm CO, 25 ppm H_2S, 19% O_2, 25% LEL Pentane	116L
18109139	KIT, 100 ppm CO, 25 ppm H_2S, 19% O_2, 25% LEL Pentane with Demand Flow Regulator	116L
18109138	KIT, 100 ppm CO, 25 ppm H_2S, 19% O_2, 2.5% Methane	116L
18103317	KIT, 100 ppm CO, 2.5% CO_2, 19% O_2, 25% LEL Pentane	103L
18102147	KIT, 25 ppm Ammonia (NH_3)	58L
18103275	KIT, 5.0% Carbon Dioxide (CO_2)	34L
18102162	KIT, 100 ppm Carbon Monoxide (CO)	103L
18101741	KIT, 10 ppm Chlorine (Cl_2)	58L
18102148	KIT, 10 ppm Hydrogen Chloride (HCl)	58L
18102149	KIT, 10 ppm Hydrogen Cyanide (HCN)	58L
18109135	KIT, 25 ppm Hydrogen Sulfide (H_2S)	116L
18101303	KIT, 2.5% Methane	34L
18102491	KIT, 99% Methane	34L
18102150	KIT, 25 ppm Nitric Oxide (NO)	58L
18102238	KIT, 5 ppm Nitrogen Dioxide (NO_2)	58L
18101469	KIT, 25 ppm Nitrogen Dioxide (NO_2)	58L
18101261	KIT, 25% LEL Pentane	34L
18102239	KIT, 5 ppm Sulfur Dioxide (SO_2)	58L
18101212	KIT, 10 ppm Sulfur Dioxide (SO_2)	58L

Stop Worrying About Calibration Gas

The optional auto replenishment program provides an efficient way to manage your calibration gas usage and needs. New cylinders will be shipped to you when you need them. Contact Industrial Scientific for more details.

NOTE: Calibration gas cylinder expiration times vary due to gas type. Please contact Industrial Scientific for detailed information.

Industrial Scientific provides more than just the highest quality gas detection instruments and accessories. We also offer rental and convenient maintenance and repair solutions. Our ongoing commitment to customers is to provide them reliable gas detection equipment that is consistently prepared to keep workers safer in potentially hazardous environments.

Rental

Industrial Scientific's rental service is ideal for customers who need gas detection equipment for short-term situations such as turnarounds, outages, special projects, emergencies, and more. Several Industrial Scientific instruments are available for rent with flexible rental period options ranging from weeks, to months, to longer term.

Gas detectors arrive ready to use ...

- Guaranteed reliable out of the box
- Fully inspected
- Certified calibrated to NIST standards
- Chargers are supplied at no cost with all rechargeable gas monitors

There are many advantages for customers to rent from Industrial Scientific. As an iNet customer, you are eligible for additional rental benefits as well. This is Industrial Scientific's way of ensuring that you have the complete package when it comes to your gas detections needs.

Here are just some of the features and benefits to our rental program:

- Fast Service – Most orders can ship the same day the order is placed.
- Factory Serviced – Each gas detector was serviced and calibrated by factory trained technicians to NIST traceable gas.

- Pre-Paid Return Shipping – Free FedEx shipping labels are included with each order to expedite returns and save on shipping costs.
- Availability – Over 5,000 portable gas detection products are available including the MX6 iBrid, Ventis MX4, Ventis Pro Series, Radius BZ1, GasBadge Pro, and Tango TX1 monitors. Docking stations and other accessories are available as well.
- Variety – From multi-gas monitors with integral pumps for confined space entry to single gas personal monitors, we have a wide variety of gas monitor types and sensors to fit your application.
- Flexibility – Both weekly and monthly rates are available to fit your short-term rental need.

As an iNet customer, you automatically receive these additional features and benefits:

- As an iNet customer, you will receive a discount off the regularly published rental rates
- ISC Rental Tag – "ISC Rental" will appear in the "User" field on your iNet Control software which will make it easy to distinguish the rental units from your existing iNet fleet monitors – therefore increasing organization.
- Monitoring Service – The rental equipment is monitored by iNet. The reporting and alerting features of iNet will also give you in-depth visibility into the usage of your rental equipment like it does with your existing iNet fleet.
- Exchange Service – When iNet detects an instrument failure, an exchange monitor is sent out immediately to replace the monitor that failed. Since the rental units will be monitored by iNet, customers will no longer need to worry about servicing their rental monitors as well.
- Customized Settings – We pre-set the alarm and display settings of the rental units to match your custom settings within your existing iNet fleet. This will save you time in the set-up process and help to ensure that the monitors are compliant to your company's recommendations.

To learn more, email: rental@indsci.com
or visit www.indsci.com/rental

Repair Solutions

Industrial Scientific designs and manufactures the highest quality gas detection equipment in the industry. To ensure your instruments remain at their highest quality over time, Industrial Scientific provides preventive maintenance and repair solutions through its mobile service programs and regional service centers.

Maintenance Solutions

Industrial Scientific's products are manufactured to provide unparalleled reliability and designed to be simple for the user to maintain. With Industrial Scientific's docking station solutions and extended warranty program, you can be sure your equipment is maintained to factory standards and is consistently in optimum working condition.

Extended Warranty Program

These Extended Warranty Programs are designed to provide the End User with additional warranty coverage after their initial product warranty has expired. These plans are all inclusive and are designed to provide consistent maintenance costs for the length of the program.

PART NO.	DESCRIPTION
Extended Warranty Programs for the MX6 Multi-Gas Monitor Requires purchase at the time of the sale.	
1800-MX6-EXW	2 Year Extended Warranty, MX6 all sensor options except PID sensor*; This plan does not cover the SP6 sampling pump or the PID sensor.
1800-MX6-EXWA	2 Year Extended Warranty, MX6 with sampling pump and all sensor options except PID sensor; This plan does not cover the PID sensor.
1800-MX6-EXWPA	2 Year Extended Warranty, MX6 all sensor options including PID and sampling pump; This plan covers all sensor options and the SP6 sampling pump.
Extended Warranty Program for the MX4 Ventis Requires purchase within the first six months of instrument ownership.	
1800-VTS-EXW1	1 Year Extended Warranty, Ventis without Pump
1800-VTS-EXWA1	1 Year Extended Warranty, Ventis with Pump
1800-VTS-EXW2	2 Year Extended Warranty, Ventis without Pump
1800-VTS-EXWA2	2 Year Extended Warranty, Ventis with Pump
18008631-EXW	2 Year Extended Warranty, Single-Unit V-Cal, Ventis
18007664-EXW	2 Year Extended Warranty, 6-Unit V-Cal, Ventis
Extended Warranty Program for the GasBadge Pro Monitor Requires purchase at the time of the sale.	
18000060-EXW	2 Year Extended Warranty, GasBadge Pro all sensors

Does your instrument need repair?
Go to our service-repair form to start the process.
www.indsci.com/services/repair

Start-up and Commissioning Services Solutions

- Docking station set up and software installation
- Employee instruction

The same company that manufactures your quality gas detection equipment can provide commissioning services. Industrial Scientific's Start-up and Commissioning Services will quickly have your gas detection program up and running while eliminating the need for you to reassign employees or search for specialized technicians to perform commissioning procedures. Our expertly trained technicians ensure that your systems are installed correctly and in proper operating order; we even provide the necessary training so that employees are never left guessing about proper maintenance tasks. Our Commissioning Services are easily customized to your company's specific needs, giving you the flexibility to create a program that works with your employees, resources and budget.

With Commissioning Services for Industrial Scientific docking stations, customers receive:

- All hardware installations and connections
- Operational testing
- Basic end-user training

Contact your local distributor or Industrial Scientific for a customized quote for your specific start-up and commissioning needs.

"The main objective of our training department is to provide a complete, expedient program that increases your awareness about safety. We work with you to develop a training plan that corresponds to the specific needs of your organization's gas detection program. Our specialists are happy to guide you through the training process with a program that far exceeds your expectations."

- Customer Operations, Training

Training Services

How does an electrochemical sensor work? What do I need to know if I work with toxic gases? How will new regulations impact my daily activities? How can proper maintenance make it easier to use my instruments and save money? Industrial Scientific's training department can answer all of these questions, and more.

Industrial Scientific holds training workshops designed specifically to make gas detection easier for its users. The courses are led by a team of Industrial Scientific trainers who are experts in instrument use, regulations, fire prevention, hazardous materials and confined spaces.

These workshops provide participants the skills needed to identify potential hazards that may exist in their workplace including the characteristics of gases. The calibration and maintenance of gas detection equipment are also covered.

Whom are these courses designed for?

- Safety and health professionals
- Firefighters and emergency responders
- Contractors

Face to Face Training

Gas Detection Made Easy Program
Whether you are a novice or have years of gas detection experience, GDME training courses are for you. Instruments from Industrial Scientific are provided to participants for use during the training sessions.

Hazardous gases
Instruction in commonly used gases, their properties and effects; Overview of gases specific to confined spaces and hazards related to oxygen and to combustible and toxic gases.

Use of instruments in confined spaces
Overview of applicable laws; Instruction in the use of gas detection instruments in compliance with government regulations.

Sensor technology
Instruction on how the instruments work; Description of catalytic bead sensors, electrochemical sensors, infrared sensors, and more.

Presentation of the instruments
Overview of the entire range of Industrial Scientific's portable instruments and docking stations; Description of each monitor's set of features.

Calibration and maintenance
Instruction in all aspects of calibration and maintenance – the most important component of a safe, reliable gas detection program; Provides the knowledge and skills needed to manage your instruments including troubleshooting and sensor replacement.

Hands-on activities
Learning by doing – Conduct instrument testing and calibration using instruments provided in the training or using your own Industrial Scientific monitors; Participants in our Gas Detection Made Easy™ courses have the opportunity to receive a certificate of qualification, required by certain regulatory standards and earned by passing the course exam.

GDME
GAS DETECTION MADE EASY

Participants in our Gas Detection Made Easy™ courses have the opportunity to receive a certificate of competency. More than just a certificate of your attendance, you must pass a test to earn this "Certificate of Competency" required by certain regulatory standards.

End User Training Classes
Portable Instrument Operations Level Training
Portable Instrument Technician Level Training
iNet Control Training
Confined Space Metering Training
Gas Detection for the First Responder
On-site Custom Courses
T3 - Train the Trainer

Distributor Training Classes
Distributor Basic Training
Distributor Portable Instrument Sales Training
Distributor Fixed Instrument Sales Training

Visit www.indsci.com/training to learn more.

PART NO.	DESCRIPTION
17046848	Confined Space Booklet (English)
16000029	Gas Detection Made Easy™ (Class Book)

Online Training

Our online training courses transform the classroom experience into an online format. These courses combine videos, lectures and recommended readings in practical modules that can be accessed 24/7. This format allows students to learn at their own pace. To learn more, visit www.indsci.com/online-training/.

The current list of products covered by our online training is as follows:

DS2 Docking Station
iNet Control
DSX Docking Station
MX4 iQuad
MX6 iBrid
GasBadge Pro
Radiuis BZ1
Ventis Pro Series
Ventis MX4
Tango TX1

Online Video Training

Industrial Scientific's Free Online Video Training allows the end user to learn at their own pace. Videos are chaptered so that the end user can hone in on the elements that are important to them.

ATX612 (English)
LTX312 (English)
M40 (English)
M40 (Espanol)
MX6 iBrid (English)
MX6 iBrid (Espanol)
Ventis MX4 (French)
Ventis MX4 (German)
Ventis MX4 (Portuguese)
MX4 iQuad (English)
MX4 iQuad (Deutsch)
MX4 iQuad (Chinese)
TMX412 (English)
ATX620 (English)
iTX (English)
M40 (Francais)
MG140 (English)
MX6 iBrid (Francais)
Ventis MX4 (English)
Ventis MX4 (Spanish)
Ventis MX4 (Chinese)
Ventis Pro Series (English)
MX4 iQuad (Francais)
MX4 iQuad (Espanol)
T40 Rattler (English)
Radius BZ1 (English)

General Gas Education

Get to know the basics of gas detection. Review detailed information about toxic gas hazards, sensor technologies and reference materials.

Each day, Industrial Scientific Corporation receives hundreds of phone calls requesting information on everything from exposure limits to the definition of intrinsic safety. Remember, anytime you have a question involving monitoring or safety, simply call 1-412-788-4353, or visit our Web site at www.indsci.com.

Our customer service representatives helped us pull together a library of the questions we're asked most often. Use this section as a quick reference when you have a question. And, if you don't find your answer here, give us a call. There's never a charge for a question.

Glossary of Occupational Safety and Health Terms

dB: Decibel – A unit used to measure the relative power of sound. A 3 dB increase in sound output power represents a doubling of the perceptible volume.

eV: Electron Volt – A measurement of energy equal to the amount of energy it takes to move 1 electron through 1 volt of potential.

IDLH: Immediately Dangerous to Life and Health – The maximum concentration of gas (in ppm) from which a worker could escape within 30 minutes with-out experiencing any escape-impairing or irreversible health effects.

LEL/LFL: Lower Explosive Limit/Lower Flammable Limit – The minimum concentration at which a gas will explode. A common unit of measurement is a percent of the LEL.

mA: Milliamp – A unit of electric current expressed in amperes. 4-20 mA signals are commonly used analog signals in industrial electronics, where 4 represents the lowest value, for instance 0 ppm, and 20 represents the maximum, for instance, 999 ppm.

PEL: Permissible Exposure Limit – Level of gas (in ppm) a worker can be exposed to 8 hours a day/40 hours a week for the rest of their life with no long term health effects.

PID: Photolonization Detector – An instrument that utilizes ultra-violet light energy to ionize and detect the presence of an unknown gas or vapor.

ppm: Part Per Million – A common unit of measurement for toxic gases. This term literally means one part out of one million possible parts.

TLV-STEL: Short Term Exposure Limit – The average amount of gas (in ppm) a worker can be exposed to in a 15 minute period with no long term health effects. This may occur 4 times a shift with one hour between 15 minute exposures.

TLV-TWA: Time Weighted Average – The average amount of gas (in ppm) a worker can be exposed to over a certain time period. This time is defined as 8 hours to represent a normal work day.

TLV: Threshold Limit Value – A term used to signify limits in gas exposure. TLV is used as a prefix for TWA and STEL.

UEL/UFL: Upper Explosive Limit/Upper Flammable Limit – The maximum concentration at which a gas will explode.

VAC: Volts Alternating Current – An electric current that reverses direction at regular intervals.

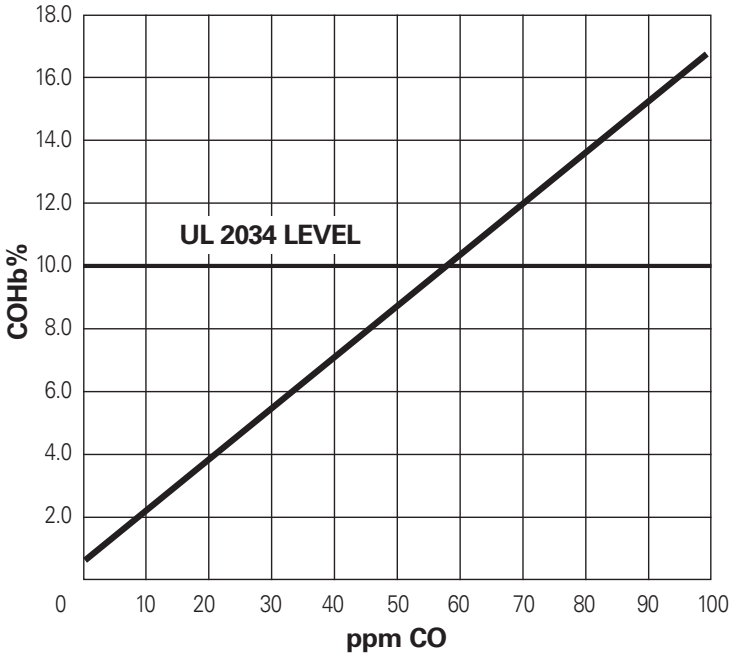
VDC: Volts Direct Current – An electric current of constant direction.

VOC: Volatile Organic Compound – Any compound containing carbon, except methane, that can be readily vaporized.

Lower Explosive Limits of Combustible Gases

The following are the lower explosive limits of selected gases which should be useful:

Acetone	2.5% of volume	Hydrogen	4.0% of volume
Acetylene	2.5% of volume	Isopropyl Alcohol (Isopropanol)	2.0% of volume
Benzene	1.2% of volume	Methane	5.0% of volume
Butane	1.9% of volume	Methyl Alcohol (Methanol)	6.0% of volume
Butyl Alcohol (Butanol)	1.4% of volume	Methyl Ethyl Ketone	1.4% of volume
Diethyl Ether	1.9% of volume	n-Pentane	1.4% of volume
Ethane	3.0% of volume	Propane	2.1% of volume
Ethyl Alcohol (Ethanol)	3.3% of volume	Propylene	2.0% of volume
Ethylene	2.7% of volume	Styrene	0.9% of volume
Ethylene Oxide	2.7% of volume	Toluene	1.1% of volume
Hexane	1.1% of volume	Xylene	1.1% of volume



The carboxyhemoglobin level is a measure of the amount of Carbon Monoxide which has been absorbed into the blood stream. The chart converts the amount of Carbon Monoxide measured in the exhaled breath to the percentage carboxyhemoglobin level in the blood. The UL 2034 level (10% carboxyhemoglobin) depicted on the chart shows the average carboxyhemoglobin concentration after a fifteen minute exposure to 400 ppm Carbon Monoxide. At this exposure level, the average person will begin to experience the symptoms of Carbon Monoxide poisoning.

Weight of Various Gases Compared to Air

The following gases are lighter than air:

Acetylene
Ammonia
Carbon Monoxide
Ethylene
Hydrogen
Hydrogen Cyanide
Methane

The following gases are heavier than air:

Argon
Butane
Carbon Dioxide
Chlorine
Ethane
Hexane
Hydrogen Chloride
Hydrogen Sulfide
Methyl Ethyl Ketone
Methyl Mercaptan
Nitrogen Dioxide
Nitrous Oxide
Oxygen
Phosphine
Sulfur Dioxide
Propane

Intrinsic Safety

What is intrinsic safety?

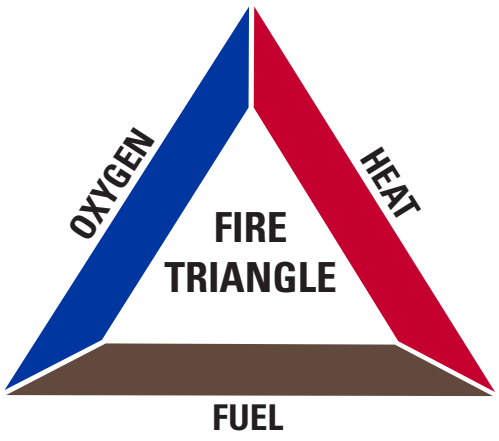
Intrinsic safety is a design technique applied to electrical equipment and wiring for hazardous locations. The technique is based on limiting energy, electrical and thermal, to a level below that required to ignite a specific hazardous atmospheric mixture.

How is intrinsic safety defined?

Intrinsically safe equipment and wiring shall not be capable of releasing sufficient electrical or thermal energy under normal or abnormal conditions to cause ignition of a flam mable or combustible atmospheric mixture in its most easily ignitable concentration.

Who verifies intrinsic safety?

Equipment is tested and certified for intrinsic safety by independent third party agencies, such as Underwriters Laboratories (UL), Canadian Standards Association (CSA), Factory Mutual Research Corporation (FM) and the Mine Safety and Health Administration (MSHA). Independent testing ensures that your gas monitoring equipment is not only designed to be intrinsically safe, but meets all required standards for intrinsic safety.



Ref: R. Stahl – Intrinsic Safety Primer ©1988

National Electrical Code Article 504-2
Definition of a Intrinsically Safe Circuit © 1996

A circuit in which any spark or thermal effect is incapable of causing ignition of a flammable or combustible material in air under prescribed test conditions.

LEL Correlation Factors

The following chart outlines LEL correlation factors for combustible gas sensors.

GAS BEING SAMPLED	LEL (% vol)	CALIBRATION GAS					
		Butane	Hexane	* Hydrogen	* Methane	* Pentane	* Propane
Acetone	2.5%	1.06	0.70	1.70	1.70	0.90	1.10
Acetylene	2.5%	0.74	0.60	1.30	1.30	0.70	0.80
Benzene	1.2%	1.16	0.80	1.90	1.90	1.00	1.20
Butane	1.8%	1.00	0.55	1.69	1.58	0.79	0.98
Ethane	3.0%	0.84	0.60	1.30	1.30	0.70	0.80
Ethanol	3.3%	0.94	0.52	1.59	1.49	0.74	0.92
Ethylene	2.7%	0.84	0.60	1.40	1.30	0.70	0.90
Hexane	1.1%	1.81	1.00	3.04	2.86	1.42	1.77
Hydrogen	4.0%	0.59	0.33	1.00	0.94	0.47	0.58
Isopropanol	2.0%	1.16	0.90	2.00	1.90	1.00	1.20
Methane	5.0%	0.63	0.35	1.06	1.00	0.50	0.62
Methanol	6.0%	0.63	0.50	1.10	1.10	0.60	0.70
Nonane	0.8%	2.34	1.30	3.95	3.71	1.84	2.29
Pentane	1.4%	1.28	0.71	2.15	2.02	1.00	1.25
Propane	2.1%	1.02	0.57	1.72	1.62	0.80	1.00
Styrene	0.9%	1.30	1.00	2.20	2.20	1.10	1.40
Toluene	1.1%	1.62	0.89	2.71	2.55	1.26	1.57
Xylene	1.1%	1.58	1.10	2.60	2.50	1.30	1.60
JP-4	—	—	—	—	—	1.20	—
JP-5	—	—	—	—	—	0.90	—
JP-8	—	—	—	—	—	1.50	—

Accuracy +/- 25% error

NOTE: Calibration gases available from Industrial Scientific Corporation

1. The correlation factors in the table are averaged results for estimation use only. It's not recommended for analytical application with high accuracy expectation.
2. The correlation factors may vary from sensor to sensor with tolerance of +/- 25% for new sensors. The number could further shift for old sensors.
3. To get a more accurate result, it's recommended to calibrate the instrument with a gas that has CF close to 1. The closer, the better.
4. It's not recommended to use correlation factors if the target gas is methane and the sensor is old.
5. Expect more deviation when an old sensor is calibrated with methane gas.

* Prefered gases

Sensor Cross Interference Table

GAS \ SENSOR	Carbon Monoxide	Hydrogen Sulfide	Sulfur Dioxide	Nitrogen Dioxide	Chlorine	Chlorine Dioxide	Hydrogen Cyanide	Hydrogen Chloride	Phosphine	Nitric Oxide	Hydrogen	Ammonia
Carbon Monoxide	100%	1%	1%	0%	0%	0%	0%	0%	0%	0%	20%	0%
Hydrogen Sulfide	5%	100%	1%	-40%	-3%	-25%	10%	300%	25%	10%	20%	25%
Sulfur Dioxide	0%	1%	100%	0%	0%	0%	—	40%	-1	0%	0%	-40%
Nitrogen Dioxide	-5%	-24%	-165%	100%	45%	—	-70%	—	-11	30%	0%	-10%
Chlorine	-10%	-17%	-25%	10%	100%	60%	-20%	6%	-20%	0%	0%	-50%
Chlorine Dioxide	—	—	—	—	20%	100%	—	—	—	—	—	—
Hydrogen Cyanide	15%	10%	50%	1%	0%	0%	100%	35%	4%	0%	30%	5%
Hydrogen Chloride	3%	0%	5%	0%	2%	0%	0%	100%	0%	15%	0%	0%
Phosphine	—	—	—	—	—	-100%	425%	300%	100%	—	—	—
Nitric Oxide	25%	-0.2%	1%	5%	—	—	-5%	—	—	100%	30%	0%
Hydrogen	22%	0.1%	0.5%	0%	0%	0%	0%	0%	0%	0%	100%	0%
Ammonia	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	100%
Acetylene	202%	0%	138%	0%	—	—	—	—	—	0%	—	—

NOTES:

1. The table above reflects the percentage response provided by the sensor listed across the top of the chart when exposed to a known concentration of the target gas listed in the left hand column. "—" means no data available.
2. The specified cross interference numbers apply to new sensors only and may vary from sensor to sensor.
3. The numbers are measured under environment of 20 °C, 50% RH and 1 atm.
4. This table is given as a reference only and is subject to change.

Common Chemical Names and Symbols

Ammonia	NH_3	Hydrogen Fluoride	HF
Arsine	AsH_3	Hydrogen Sulfide	H_2S
Benzene	C_6H_6	Methane	CH_4
Bromine	Br_2	Nitric Acid	HNO_3
Carbon Dioxide	CO_2	Nitric Oxide	NO
Carbon Monoxide	CO	Nitrogen	N_2
Chlorine	Cl_2	Nitrogen Dioxide	NO_2
Chlorine Dioxide	ClO_2	Oxygen	O_2
Ethylene Oxide	ETO	Ozone	O_3
Fluorine	F_2	Phosgene	$COCl_2$
Hydrogen	H_2	Phosphine	PH_3
Hydrogen Bromide	HBr	Silane	SiH_4
Hydrogen Chloride	HCl	Sulfur Dioxide	SO_2
Hydrogen Cyanide	HCN	Sulfuric Acid	H_2SO_4

Hazardous Gases Found in Common Industrial Environments

(All values listed are established by HSE unless otherwise noted.)

Ammonia: NH_3
Colorless toxic gas with a pungent suffocating odor
PEL/TWA: 25.0 ppm STEL: 35.0 ppm
IDLH: 300.0 ppm LEL: 15.0% of volume
- Fertilizer Plants
- Water and Wastewater Treatment Plants
- Refrigeration Facilities and Cold Storage
- Semiconductor Industry

Carbon Dioxide: CO_2
Colorless, odorless gas
PEL/TWA: 5,000.0 ppm STEL: 30,000.0 ppm
IDLH: 40,000.0 ppm
- Breweries and Wineries
- Carbonated Beverage Bottling Plants
- Food Processing Plants
- Landfills

Carbon Monoxide: CO
Colorless, odorless gas – most abundant toxic gas
OSHA PEL/TWA: 50.0 ppm NIOSH PEL/TWA: 35.0 ppm
STEL: 200.0 ppm IDLH: 1,200.0 ppm
LEL: 12.5% of volume
- Fire Fighting
- Steel Mills
- Mining and Minerals
- Parking Garages

Chlorine: Cl_2
Green-yellow gas with a pungent, irritating odor
PEL/TWA: 0.5 ppm STEL: 1.0 ppm
IDLH: 30.0 ppm
- Pulp and Paper Mills
- Water Treatment Plants
- Swimming Pools and Chlorinization Plants
- Nuclear Reactors

Chlorine Dioxide: ClO_2
Red-yellow or orange-green, irritating odor
PEL/TWA: 0.1 ppm STEL: 0.3 ppm
IDLH: 5.0 ppm
- Pulp and Paper Mills
- Wastewater Treatment Plants

Hydrogen: H_2
Colorless, odorless gas
PEL/TWA: No limit set by OSHA STEL: N/A
IDLH: No limit set by NIOSH LEL: 4% by volume
- Chemical Manufacturing
- HazMat Operations
- Power Generation

Hydrogen Chloride: HCl
Colorless to slight yellow corrosive gas with a pungent, irritating odor
OSHA PEL/TWA: 5.0 ppm STEL: N/A
LEL: 12.5% of volume IDLH: 50.0 ppm
- Vinyl Production
- Cotton Production
- Petroleum and Gas Wells
- Steel Manufacturing

Hydrogen Cyanide: HCN
Colorless toxic gas with a bitter, almond-like odor
OSHA PEL/TWA: 10.0 ppm ACGIH PEL/TWA: 4.7 ppm
STEL: 4.7 ppm IDLH: 50.0 ppm
LEL: 5.6% of volume
- Gold Plating Industries
- Precious Metal Mining and Recovery
- Nylon Manufacturing

Hydrogen Sulfide; H_2S
Colorless toxic gas with a strong odor of rotten eggs
PEL/TWA: 10.0 ppm STEL: 15.0 ppm
IDLH: 100.0 ppm LEL: 4.0% of volume
TWA value by the ACGIH: 1 ppm
STEL value by the ACGIH: 5 ppm
- Oil Fields and Refineries
- Mining and Metals Industries
- Paper Mills and Leather Tanneries
- Water Treatment and Sewer Maintenance

Nitric Oxide: NO
Colorless toxic gas
PEL/TWA: 25.0 ppm STEL: N/A
IDLH: 100.0 ppm
- Diesel Emissions
- Underground Mining
- Agriculture – Silos
- Semiconductor Plants

Nitrogen Dioxide: NO_2
Reddish-brown toxic gas with a pungent odor
PEL/TWA: 3.0 ppm STEL: 5.0 ppm
IDLH: 20.0 ppm
- Boilers and Furnaces
- Diesel Emissions
- Underground Mining
- Semiconductor Plants

Ozone: O_3
Colorless, blue gas with a very pungent odor
PEL/TWA: 0.1 ppm STEL: 0.3 ppm
IDLH: 5.0 ppm
- Wastewater Treatment Plants
- Power Generation
- Welding

Phosphine: PH_3
Colorless gas, garlic-like odor
PEL/TWA: 0.3 ppm STEL: 1.0 ppm
IDLH: 5.0 ppm LEL: 1.79% of volume
- Pesticides-Agricultural Fumigant
- Doping Agent

Sulfur Dioxide: SO_2
Colorless toxic gas with a pungent odor
PEL/TWA: 2.0 ppm STEL: 5.0 ppm
IDLH: 100.0 ppm
STEL value by the ACGIH: 0.25 ppm
- Pulp and Paper Mills
- Coal Fired Generation Stations
- Water Treatment
- Circuit Board (Etching) Industry

HAZARDOUS GAS

INDUSTRY	Combustible Gases	O_2 Deficient /Enrichment	Ammonia (NH_3)	Carbon Dioxide (CO_2)	Carbon Monoxide (CO)	Chlorine (Cl_2)	Chlorine Dioxide (ClO_2)	Hydrogen (H_2)	Hydrogen Chloride (HCl)	Hydrogen Cyanide (HCN)	Hydrogen Sulfide (H_2S)	Nitric Oxide (NO)	Nitrogen Dioxide (NO_2)	Ozone (O_3)	Phosphine (PH_3)	Sulfer Dioxide (SO_2)	Volatile Organic Compounds (VOCs)
Agriculture	•	•	•	•	•						•	•	•		•		
Aviation	•	•		•	•												
Chemical	•	•	•		•	•		•	•		•	•	•			•	
Construction	•	•			•						•	•	•				
Electric Utilities	•	•			•						•			•		•	
Fire Service	•	•		•						•	•						
Food & Beverage Processing	•	•	•	•	•				•	•	•				•		
Gas Utilities	•	•			•						•						
HAZMAT	•	•	•		•	•		•	•	•	•				•	•	
Iron & Steel Production	•	•			•					•	•	•	•			•	
Manufacturing	•				•				•								
Marine Shipyard	•	•		•	•						•						
Mining	•	•		•	•					•	•	•	•				
Oil & Gas Production	•	•	•		•						•						
Petrochemical	•	•	•		•						•						
Paper & Pulp	•	•			•	•	•				•					•	
Pharmaceutical/Research Labs	•	•	•			•			•		•					•	
Power Plants	•	•			•			•			•					•	
Public Works	•	•			•						•	•	•	•		•	
Water/Wastewater Treatment	•	•	•		•	•					•			•		•	•
Welding	•	•			•				•			•	•	•			

Volatile Organic Compounds Detected by a PID <10.6 eV

10.6 eV lamp

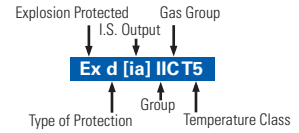
Acetaldehyde
(Acetic acid)
Acetic anhydride
Acetone
Acrolein
Acrylamide
Allyl alcohol
Allyl chloride
Allyl glycidyl ether
Allyl propyl disulfide
Amino pyridine
Amyl acetate
Aniline
Benzene
Benzyl chloride
Bromoform
Butadiene
Butoxyethanol
Butyl acetate
Butyl alcohol
Butyl mercaptan
Butylamine
Butyl glycidyl ether
Butyl toluene
Camphor vapor
Carbon disulfide
Chloroacetaldehyde
Chloroacetophenone
Chlorobenzene
Chloromethyl methyl ether
Chloronitropropane
Chloroprene
Chrysene
Cresol
Crotonaldehyde
Cumene
Cyclohexane
Cyclohexanol
Cyclohexanone
Cyclohexene
Cyclopentadiene
Di-ethylhexyl phthalate
Diacetone alcohol
Diazomethane
Dibutylphthalate
Dichlorobenzene
Dichloro ethyl ether
Dichloroethylene
Dichlorvos
Diesel
Diethylamino ethanol
Diethylamine
Diglycidyl ether
Diisobutyl ketone
Diisopropylanmine
Dimethylamine
Dimethylaniline
Dimethylformamide
Dimethylhydrazine
Dimethyloacetamide
Dimethylphthalate
Dinitrotoluene
Dinitro cresol
Dinitro analine
Dinitro benzene
Dioxane
Diphenyl
Dipropylene glycol methyl ether
(Epichlorohydrin)
(Ethanol)
Ethanolamine
Ethoxyethyl acetate
Ethyl acetate
Ethyl acrylate
Ethyl amyl ketone
Ethyl benzene
Ethyl bromide
Ethyl butyl ketone
Ethyl ether
Ethyl mercaptan
Ethyl silicate
Ethylamine
Ethylene dibromide
Ethylenediamine
Ethyleneimine
Furfural
Furfuryl alcohol
Gasoline
Glycidol
Heptane
Hexane
Hexanone
Hexone
Hexylacetate
Hydroquinone
Isoamyl acetate
Isobutyl acetate
Isobutyl alcohol
Isophorone
Isopropyl acetate
Isopropyl alcohol
Isopropyl ether
Isopropylamine
Isopropyl glycidyl ether
JP 4, 6, 8
Ketene
Mesityl oxide
Methyl acetate
Methyl acetylene
Methyl acrylate
Methyl amyl ketone
Methyl bromide
Methyl cellosolve acetate
Methyl ethyl ketone
Methyl hydrazine
Methyl iodide
Methyl mercaptan
Methyl methacrylate
Methyl styrene
Methylamine
Methylcyclohexane
Methylcyclohexone
Methylcyclohexanol
Monomethylaniline
Morpholine
Naphthalene
Naphthylamine
Nitroaniline
Nitrobenzene
Nitromethane
Nitrosodimethylamine
Nitrotoluene
Octane
Pentaborane
Pentane
Pentanone
Perchloroethylene
Phenol
Phenyl ether
Phenylene diamine
Phenylhydrazine
Propyl acetate
Propyl alcohol
Propylene dichloride
Propylene imine
Propylene oxide
Pyridine
Quinone
Stibine
Stoddard solvent vapor
Styrene
Terphenyls
Tetrachloroethylene
Tetrachloronaphthelene
Tetrahydrofuran
Tetramethyl lead
Toluene
Toluidine
Toner fluid vapor
Trichloroethylene
Triethylamine
Turpentine vapor
Vinyl chloride
Vinyl toluene
White spirit
Xylene

Not Detected by a PID

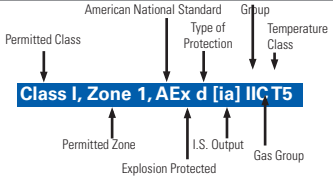
Acetonitrile
Carbon dioxide
Carbon monoxide
Ethane
Freons
Hydrogen
Hydrogen bromide
Hydrogen chloride
Hydrogen cyanide
Hydrogen fluoride
Methane
Nitric acid
Nitrogen
Oxygen
Ozone
Sulfur dioxide
Water

Ex Marking

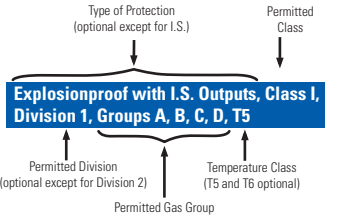
IEC



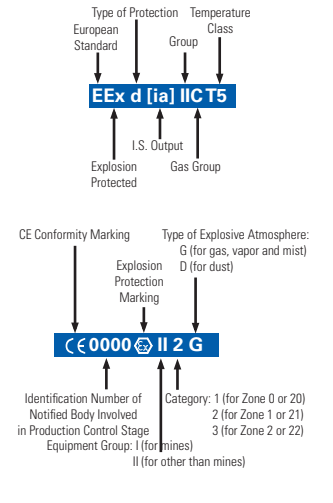
U.S. NEC®505



U.S. NEC®500



EU (Directive 94/9/EC) – ATEX (from July 1, 2003)



Acronyms

ATEX – Atmosphère Explosible
CENELEC – European Committee for Electrotechnical Standardization
EU – European Union
IEC – International Electrotechnical Commission
I.S. – Intrinsically Safe
MSHA – Mine Safety and Health Administration
NEC® – National Electric Code®

Types of Protection

Type of Protection	Code	Permitted Use	Standard	Protection Principle
Increased Safety	AEx e	Class I, Zone 1	FM 3600 (ISA 12.16.01*)	No arcs, sparks or hot surfaces
	EEx e	Zone 1	EN 50 019 (until July 2006)	
			or EN 60079-7	
	Ex e	Zone 1	IEC 60079-7	
Non-Incendive	(NI)	Class I, Div 2	FM 3611	
Non-Sparking	AEx nA	Class I, Zone 2	FM 3600 (ISA 12.12.02)	
	EEx nA	Zone 2	EN 50 021	
	Ex nA	Zone 2	IEC 60079-15	
Explosionproof	(XP)	Class I, Div 1	FM 3615	Contain the explosion and extinguish the flame
Flameproof	AEx d	Class I, Zone 1	FM 3600 (ISA 12.22.01*)	
	EEx d	Zone 1	EN 50 018	
	Ex d	Zone 1	IEC 60079-1	
Powder-Filled	AEx q	Class I, Zone 1	FM 3600 (ISA 12.25.01*)	
	EEx q	Zone 1	EN 50 017	
	Ex q	Zone 1	IEC 60079-5	
Enclosed Break	AEx nC	Class I, Zone 2	FM 3600 (ISA 12.12.02)	
	EEx nC	Zone 2	EN 50 021	
	Ex nC	Zone 2	IEC 60079-15	
Intrinsic Safety	(IS)	Class I, Div 1	FM 3610†	Limit energy of sparks and surface temperature
	AEx ia	Class I, Zone 0	FM 3610†	
	AEx ib	Class I, Zone 1	FM 3610†	
	EEx ia	Zone 0	EN 50 020/39	
	EEx ib	Zone 1	EN 50 020/39	
	Ex ia	Zone 0	IEC 60079-11	
	Ex ib	Zone 1	IEC 60079-11	
Note 1: For associated intrinsically safe apparatus suitable for installation in a hazardous area, the symbols for the type of protection ia or ib are enclosed within square brackets, for example, AEx d[ia] IICT4. *Note 2: For associated intrinsically safe apparatus not suitable for installation in a hazardous area, both the symbol Ex /AEx /EEx and the symbol for the type of protection ia or ib are enclosed within the same square brackets, for example, [AEx ia] IIC; In this case, a temperature class is not included.*				
Limited Energy	AEx nA	Class I, Zone 2	FM 3600 (ISA 12.12.02)	
	EEx nA	Zone 2	EN 50 021	
	Ex nA	Zone 2	IEC 60079-15	
	EEx nL	Zone 2	EN 50 021	
	Ex nL	Zone 2	IEC 60079-15	
Pressurized	Type X	Class I, Div 1	FM 3620	Keep flammable gas out
	Type Y	Class I, Div 1	FM 3620	
	Type Z	Class I, Div 2	FM 3620	
	EEx p	Zone 1	EN 50 016	
	EEx nP	Zone 2	EN 50 021	
	Ex px	Zone 1	IEC 60079-2	
	Ex py	Zone 1	IEC 60079-2	
	Ex pz	Zone 2	IEC 60079-2	
	Ex nZ	Zone 2	IEC 60079-15	
Restricted Breathing	AEx nR	Class I, Zone 2	FM 3600 (ISA 12.12.02)	
	EEx nR	Zone 2	EN 50 021	
	Ex nR	Zone 2	IEC 60079-15	
Encapsulation	AEx m	Class I, Zone 1	FM 3600 (ISA 12.23.01*)	
	EEx m	Zone 1	EN 50 028	
	Ex m	Zone 1	IEC 60079-18	
Oil Immersion	AEx o	Class I, Zone 1	FM 3600 (ISA 12.16.01*)	
	EEx o	Zone 1	EN 50 015	
	Ex o	Zone 1	IEC 60079-6	

**Also shall comply with ISA 12.00.01 † Based on ISA 12.02.01*

Classification of Gases and Vapours into EXPLOSION GROUPS and TEMPERATURE CLASSES

	T1	T2	T3	T4	T5
I	Methane				
IIA	Acetone Ethane Ammonia Benzol (pure) Acetic acid Methane (natural gas) Methanol Propane Toluene	Ethanol i-Amyl acetate n-Butane n-Butyl alcohol	Benzene Diesel fuel Aircraft fuel Heating oil n-Hexane	Acetylaldehyde Ethylether	
II B	Coal gas (lighting gas)	Ethylene			
II C	Hydrogen	Acetylene			Carbon disulphide

Area Classification

	Flammable Material Present Continuously	Flammable Material Present Intermittently	Flammable Material Present Abnormally
IEC/EU	Zone 0 (Zone 20 - dust)	Zone 1 (Zone 21 - dust)	Zone 2 (Zone 22 - dust)
U.S. NEC®505	Zone 0	Zone 1	Zone 2
NEC®500	Division 1	Division 1	Division 2

IEC classification per IEC 60079-10
EU classification per EN 60 079-10
U.S. classification per ANSI/NFPA 70 National Electric Code (NEC) Article 500 or Article 505

Explosion Groups

Typical Gas/Dust/Fiber	U.S. (NEC®505) IEC EU	U.S. (NEC®500)
Acetylene	Group IIC	Class I/ Group A
Hydrogen	(Group IIB + H_2)	Class I/ Group B
Ethylene	Group IIB	Class I/ Group C
Propane	Group IIA	Class I/ Group D
Methane	Group I*	Mining*
Metal Dust	None	Class II/ Group E
Coal Dust	None	Class II/ Group F
Grain Dust	None	Class II/ Group G
Fibers	None	Class III

**Not within scope of NEC. Under jurisdiction of MSHA.*

Temperature Class

Maximum Surface Temperature	U.S. (NEC®505) IEC EU	U.S. (NEC®500)
450° C		T1
300° C	T2	T2
280° C		T2A
260° C		T2B
230° C		T2C
215° C		T2D
200° C	T3	T3
180° C		T3A
165° C		T3B
160° C		T3C
135° C	T4	T4
120° C		T4A
100° C	T5	T5
85° C	T6	T6

Ingress Protection (IP) Codes

First Number		Second Number
	Protection Against Solid Bodies	Protection Against Liquid
0	No protection	No protection
1	Objects greater than 50 mm	Vertically dripping water
2	Objects greater than 12 mm	75° to 90° dripping water
3	Objects greater than 2.5 mm	Sprayed water
4	Objects greater than 1 mm	Splashed water
5	Dust-protected	Water jets
6	Dust-tight	Heavy seas
7		Effects of immersion
8		Indefinite immersion

Approximate U.S. Enclosure Type Equivalent to IPXX

Type	⟶IP	Type	⟶IP	Type	⟶IP
1	10	3S	54	6 and 6P	67
2	11	4 and 4X	55	12 and 12K	52
3	54	5	52	13	54
3R	14				

Ref: • FM Approvals – Expert Guide to Hazardous Locations © 2004 FM Global Technologies LLC
• R. STAHL Inc. – Explosive Facts

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8:00am - 6:00pm EST, Friday

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1-800-DETECTS (338-3287)
Fax: +1 412-788-8353
Email: info@indsci.com
Service Email: serviceapproval@indsci.com
Website: www.indsci.com

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Fax: +1 713-475-2002
Email: houstonservice@indsci.com
Website: www.indsci.com

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Fax: +1 780-467-2105
Email: edmontonservice@indsci.com
Website: www.indsci.com

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Industrial Scientific Pty.
Millers Junction
15 Cabot Drive
Altona North VIC 3025 AU

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Phone: +61-3-96447777
1800 809 606
Fax: +61-3-96447709
Email: auscustomerservice@ap.indsci.com
Website: www.indsci.com

Manufacturing
Industrial Scientific has two manufacturing plants – one located at corporate headquarters near Pittsburgh, PA, USA, and another in Shanghai, China.

Sales Offices
Our sales support teams are ready to help you with all your gas detection needs. Contact us for a detailed quote, or if you just want some help selecting the right gas detector.

Customer and Technical Support
We offer a wide variety of support services to help you. Contact us with your order, product application, service or technical questions. Our friendly and knowledgeable professionals are ready to help you!

For after-hours emergencies, you may call the Corporate Headquarters at 1-800-DETECTS or +1 412-788-4353. You will be instructed to press the number "3" and follow the prompts. Your call will be returned as quickly as possible.

Service Centers
Contact us for all levels of factory repair and maintenance. We provide fast turnaround and excellent value. We repair exactly to your requirements and offer software upgrades at no cost.
Instrument Return Instructions can be dowloaded from each office listing.

Connect to Industrial Scientific

Scan the QR Codes with your mobile device.

the MONITOR BLOG

Get our monthly roundup of educational articles and submit questions to the gas detection experts.
www.indsci.com/the-monitor-blog/

Available on the App Store
Google play

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