VENTIS™ MX4

Multi-gas Monitor

Reference Guide

A companion resource for the Ventis MX4 Product Manual

INDUSTRIAL SCIENTIFIC

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Version 6

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WARNING: this is NOT a Product Manual. Prior to unpacking and using
the monitor, all Ventis MX4 users should **download, read, and understand the Product Manual** available online at the Ventis MX4 Resource Center at www.indsci.com/VentisMX4.

WARNING: The use of leather cases can produce inaccurate readings with diffusion (non-aspirated) gas detection instruments for specific monitoring applications. Leather cases should be used ONLY as carrying cases, and NOT for continuous monitoring, with diffusion instruments configured to measure gases **other than** O_2, CO, CO_2, H_2S, and combustible gases (LEL/CH_4).

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Ventis MX4 Resources

The Ventis MX4 **Product Manual** is the primary resource, within a full suite of learning tools, developed for the monitor user. Its step-by-step “walk through” format covers everything from unpacking to set-up, operation, and service. Available online at the Ventis MX4 Resource Center, **all Ventis MX4 users should download, read, and understand the Product Manual** prior to unpacking and using the monitor.

A companion to the manual, the Ventis MX4 **Reference Guide** ships with the monitor. It serves to announce all warnings and cautionary statements relevant to general monitor use. The guide also features process charts that provide an overview of four fundamental tasks: operation/start-up, configuration, calibration, and functional “bump” testing. These charts are tools for the user who is both familiar with the manual and proficient in the performance of the given task.

A collection of **audio-visual** learning tools is also available online at the Ventis MX4 Resource Center. Here the user can watch fully narrated step-by-step demonstrations of instruction sets outlined in the manual. These training modules allow the user to view the full presentation of a process, such as calibration, or to access a particular segment within that process. These Ventis MX4 product-specific resources are part of the organization’s broader **training** line-up, featuring face-to-face classroom programs for technicians, operators, first responders, trainers, and distributors. Courses combine theory with hands-on learning, and can be tailored to the customer’s unique requirements and gas monitoring applications.

The organization’s **customer and technical support** call centers provide product and order information, how-to product assistance, and guidance for in-depth technical applications. Its **service centers** offer comprehensive factory repair and maintenance services.

Industrial Scientific Corp. provides a full suite of resources to aid customers in the competent and safe use of its products and services. With 19 manufacturing, support, and service centers and hundreds of distributors worldwide, Industrial Scientific serves the globe’s gas detection needs.

►*Ventis MX4 Resource Center*

Product documentation.
Online training.
And more!
www.indsci.com/VentisMX4

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Warnings and Cautionary Statements

Resources	
⚠	**IMPORTANT** **Failure to perform certain procedures or note certain conditions may impair the performance of this product. For maximum safety and optimal performance, please download, read, and understand the Product Manual available online at the Ventis MX4 Resource Center at www.indsci.com/VentisMX4.**
Personnel	
⚠	CAUTION: For safety reasons, this equipment must be operated and serviced by qualified personnel only. Read and understand the instruction manual completely before operating or servicing. ATTENTION: Pour des raisons de sécurité, cet équipment doit étre utilesé entretenu et réparé uniquement par un personnel qualifié. Étudier le manuel d'instructions en entier avant d'utiliser, d'entretenir ou de réparer l'équipement.
Hazardous Conditions, Poisons, and Contaminants	
⚠	WARNING: Servicing the unit, replacing or charging battery packs, or using the communications port must only be done in an area known to be nonhazardous. Not for use in oxygen-enriched atmospheres.
⚠	WARNING: Power-off the monitor before servicing the unit or replacing the battery.
⚠	WARNING: Substitution of components may impair intrinsic safety and may cause an unsafe condition. AVERTISSEMENT: La substitution de composants peut compomettre la securite intrinseque.
⚠	CAUTION: High off-scale readings may indicate explosive gas concentration(s). ATTENTION: Des lectrures supérieures a l'échelle peuvent indiquer des concentrations explosives.
⚠	CAUTION: Any rapid up-scale reading followed by a declining or erratic reading may indicate gas concentration(s) beyond the upper scale limit which may be hazardous.
⚠	Silicone compound vapors or other known contaminants may affect the combustible gas sensor and cause readings of combustible gas to be lower than actual gas concentrations. If the monitor has been used in an area where silicone vapors were present, always calibrate the monitor before next use to ensure accurate measurements.

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Factors that Affect Instrument Performance	
	Oxygen-deficient atmospheres may cause combustible gas readings to be lower than actual concentrations.
	Oxygen-enriched atmospheres may cause combustible gas readings to be higher than actual concentrations.
	Sudden changes in atmospheric pressure may cause temporary fluctuations in the oxygen reading.
	Verify the calibration of the combustible gas sensor after any incident where the combustible gas content has caused the monitor to display an over-range condition.
	Sensor openings, water barriers, and the pump inlet must be kept clean. Obstruction of the sensor openings or pump inlet, and/or contamination of the water barriers may cause readings to be lower than actual gas concentrations.
	To avoid the potential of liquid being pulled into the sample tubing and pump assembly, it is recommended that Industrial Scientific filter (P/N 17027152) be used on the sample tubing when drawing samples using the aspirated monitor.
	WARNING: INSERT THE ALKALINE BATTERIES WITH THE CORRECT POSITIVE “+” AND NEGATIVE “-“ ORIENTATION. FAILURE TO FOLLOW PROPER BATTERY ORIENTATION WILL RESULT IN DAMAGE TO THE INSTRUMENT.
	WARNING: The Ventis MX4 is only approved for use with AAA battery types Energizer EN92 and Duracell MN2400. Do NOT mix battery types.
Recommended Practices	
	Industrial Scientific recommends the monitor be charged (when equipped with a rechargeable battery pack), configured, and calibrated before first time use.
	Industrial Scientific recommends a full instrument calibration be performed monthly with a certified concentration(s) of Industrial Scientific calibration gas(es) to help ensure monitor accuracy.
	Industrial Scientific recommends the monitor be bump tested before each use with a certified concentration(s) of Industrial Scientific calibration gas(es).

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⚠	Battery contacts are exposed on battery packs when they are removed from the monitor. Do not touch the battery contacts and do not stack battery packs on top of one another.

Process Overview

The following process charts provide an overview of four fundamental tasks: operation/startup, configuration, calibration, and functional “bump” testing. As noted previously, these charts are tools for the user who is both familiar with the manual and proficient in the performance of the given task.

The button symbols for ON/OFF/MODE and ENTER (as shown below) appear in the following charts. Where a button symbol appears, a press on that button will result in the next process step as indicated by the arrow symbol. When an arrow appears without a button symbol, no button presses are required to get to the next step.

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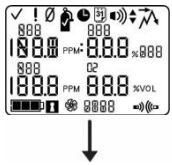
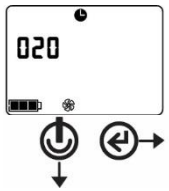
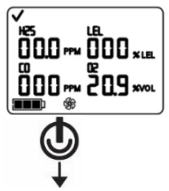
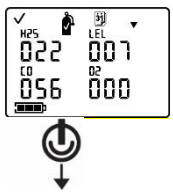
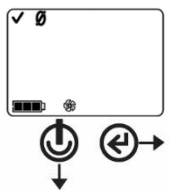
Operation/Start-up Figure 1		
Press and hold ON/OFF/MODE for three seconds, then release, to power-on.		--
Visual Test Screen Followed by brief displays of Pump Set-up Screen Software Version Screens		--
Countdown Screen		Simultaneously press and hold ON/OFF/MODE and ENTER buttons for 3 seconds, and release, to enter configuration mode. ►***Refer to Figure 2, Configuration.***
Gas Monitoring Screen		--
Calibration Days Screen ▲= days before *next* calibration due ▼= days since *last* calibration occurred		--
Zero Initiate Screen (if enabled) Press ON/OFF/MODE to bypass zero.		Press ENTER to begin the zero process. ►***Refer to Figure 3, Quick Calibration***.

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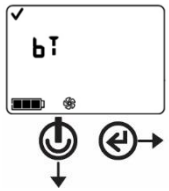
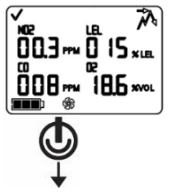
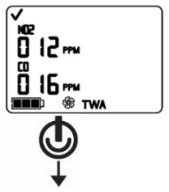
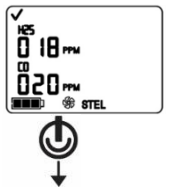
Bump Test Initiate Screen (if enabled) Press ON/OFF/MODE to bypass bump test.		Press ENTER to begin the bump test Process. ►***Refer to Figure 4, Quick Bump Testing.***
Peak Readings Screen Press ENTER to clear the peak values, if desired.		--
TWA Readings Screen Press ENTER to clear the readings, if desired.		--
STEL Readings Screen Press ENTER to clear the readings, if desired.		--

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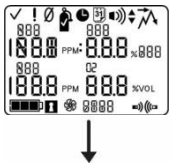
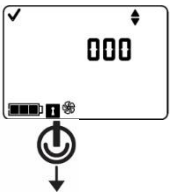
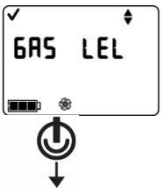
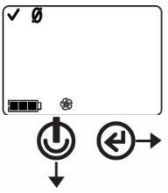
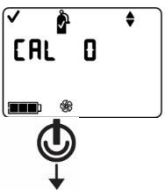
Configuration Figure 2		
Press and hold ON/OFF/MODE for three seconds, then release, to power-on.		--
Visual Test Screen Followed by brief displays of Pump Set-up Screen Software Version Screens		*NOTE:* if using an aspirated monitor, be sure the pump inlet is not blocked.
Countdown Screen **Simultaneously press and hold** ON/OFF/MODE and ENTER buttons for 3 seconds, and release, to enter ***configuration mode.***		--
Enter Security Code Screen If value is 000, screen will NOT show. If shown, press ENTER to edit value if needed.		--
LEL Type Set Screen Press ENTER to edit, if needed. *NOTE*: If the LEL is changed, a calibration fail event will occur; *refer to Figure 3, Calibration.*		Ⓐ
Zero Initiate Screen Press ON/OFF/MODE to bypass zero and calibration process.		Press ENTER to begin the zero and calibration process. ► ***Refer to Figure 3, Quick Calibration.***
Calibration Mode Selection Screen Press ENTER to edit value, if needed. 0 = standard calibration 1 = quick calibration		--

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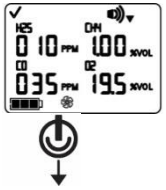
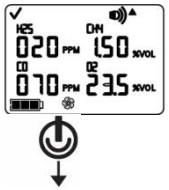
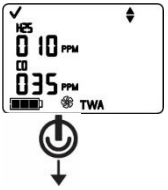
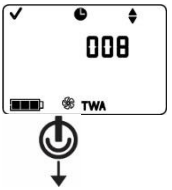
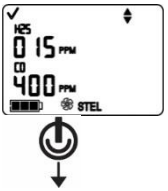
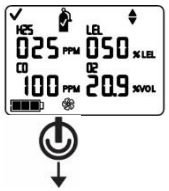
Low Alarm Set-point Screen Press ENTER to begin. For each flashing value: press ENTER to edit value, if needed; press ON/OFF/MODE to set.		--
High Alarm Set-point Screen Press ENTER to begin. For each flashing value: press ENTER to edit value, if needed; press ON/OFF/MODE to set.		--
TWA Alarm Set-point Screen Displays if toxic sensors installed. Press ENTER to begin. For each flashing value: press ENTER to edit value, if needed; press ON/OFF/MODE to set.		--
TWA Time Interval Press ENTER to edit value, if needed. Value range: 1-40 hours		--
STEL Alarm Set-point Screen Displays if toxic sensors installed. Press ENTER to begin. For each flashing value: press ENTER to edit value, if needed; press ON/OFF/MODE to set.		--
Calibration Gas Set Screen Press ENTER to begin. For each flashing value: press ENTER to edit value, if needed; press ON/OFF/MODE to set.		--

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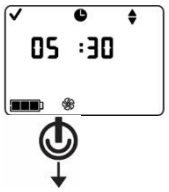
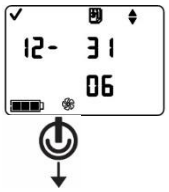
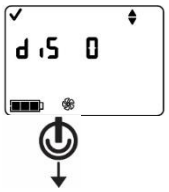
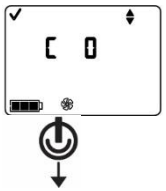
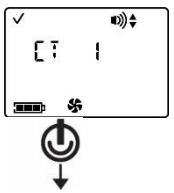
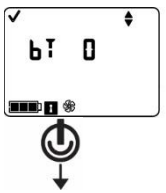
Clock Set Screen Press ENTER to begin. For each flashing value: press ENTER to edit value, if needed; press ON/OFF/MODE to set.		--
Date Set Screen Press ENTER to begin. For each flashing value: press ENTER to edit value, if needed; press ON/OFF/MODE to set.		--
Display Mode Set Screen Press ENTER to edit, if needed. 0 = Numeric Mode 1 = Text Mode		--
Confidence Indicator On-Off Screen Press ENTER to edit, if needed. 0 = disable/off 1 = enabled /on		--
Confidence Indicator Type Set Screen Options 1 = audible chirp 2 = LED flash 3 = combination audible chirp and LED flash		--
Bump Test In-field Option Screen Press ENTER to edit, if needed. 0 = disable/off 1 = enable/on If enabled, screens for the following settings will appear in the order listed. Valid value settings are noted. Bump Due Warning (0=disable/off ; 1=enable/on) Bump Test Time (.5-7.0 days) Bump Test Percentage (50-99%) Bump Test Response time (30-300 seconds)		--

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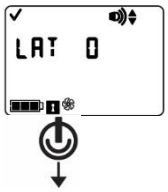
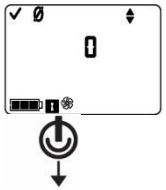
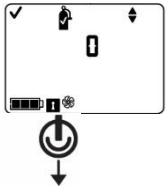
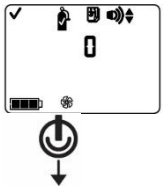
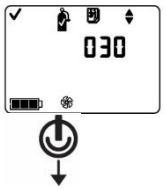
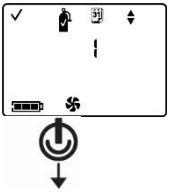
Alarm Latch Set Screen Press ENTER to edit, if needed. 0 = Normal 1 = Latching		--
Zero In-field Option Screen Press ENTER to edit, if needed. 0 = disable/off 1 = enable/on		--
Calibration In-field Option Screen Press ENTER to edit, if needed. 0 = disable/off 1 = enable/on		--
Calibration Due Alarm Press ENTER to edit, if needed. 0 = disable/off 1 = enable/on		--
Calibration Due Set-point Screen Press ENTER to edit, if needed. Value range: 1-365 days		--
Calibration Days Set Screen 0 = display days since *last* calibration (▼) 1 = display days until *next* calibration (▲)		--

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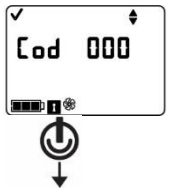
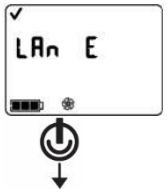
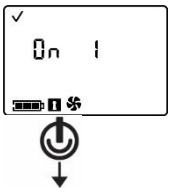
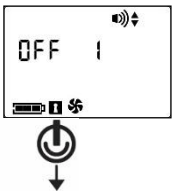
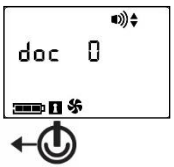
Security Code Set Screen Press ENTER to edit, if needed. Value range: 000-999		--
Language Selection Screen Press ENTER to edit, if needed. E = English F=French d = German		--
Always-on Set Screen 0 = Disable/off 1 = Enable/on		--
Shutdown In Alarm Screen 0 = Disallows shutdown 1 = Allows shutdown		--
Alarm on Dock Screen 0 = Disable/off 1 = Enable/on A		--

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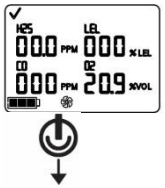
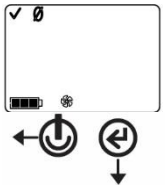
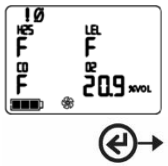
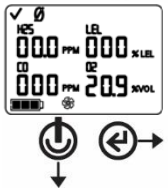
Quick Calibration Figure 3

Gas Monitoring Screen From the Gas Monitoring Screen (or from the configuration mode), a series of presses on the ON/OFF/MODE button advance the user to the Zero Initiate Screen.		--
Zero Initiate Screen Press ON/OFF/MODE to terminate the zero process. If in-field bump test is enabled, refer to *Figure 4,Quick Bump Testing.* If disabled, ► ***Refer to Figure 1, Operation/Start-up.***		Press ENTER to begin the zero process.
Zero In Process Screen Sensors zero; O2 sensor calibrates and span reserve value displays. Press ON/OFF/MODE to terminate the zero process and return to the Gas Monitoring Screen.		
Zero Results (Fail) Screen		Press ENTER (or wait ten seconds) to repeat the zero process.
Zero Results (Pass) Screen Press On/OFF/MODE to calibrate.		Press ENTER to repeat zero process.
Calibration Apply Gas Screen* Displays expected gas concentrations for toxic and LEL sensors installed; waits five minutes for gas. Press ON/OFF/MODE** to terminate calibration and return to the Gas Monitoring Screen. ►***Refer to Figure 1, Operation/Start-up.***		--

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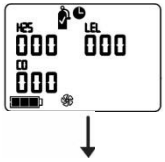
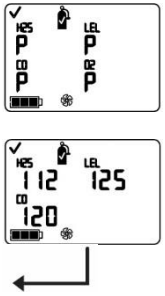
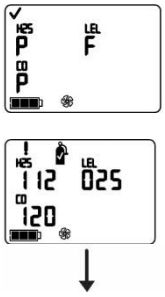
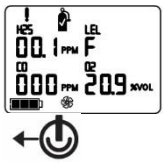
Calibration in Progress Screen* As toxic and LEL sensors calibrate, gas readings increase. ► After a manual calibration, be sure to **STOP THE FLOW OF GAS.**		*NOTE:* After calibration, one of two sensor results screen display (pass or fail as shown in the next two rows).
Sensor Results (Pass) Screens* Displays alternately final span values and pass status. ►***Refer to Figure 1, Operation/Start-up.***		--
Sensor Results (Fail) Screen* Displays alternately final span values and fail/pass status.		--
Calibration Failed Screen A system level alarm turns on. Any failed sensor stays in alarm/fail status until it passes calibration or is replaced. Press ON/OFF/MODE to reach Zero Initiate Screen and repeat the zero and calibration process.		--

*For a standard calibration, this series of display screens cycle for each toxic and LEL sensor as it calibrates: apply gas, in-progress, and results screens.

**For a standard calibration, press ON/OFF/MODE as each sensor flashes.

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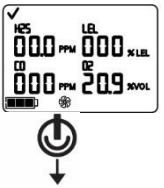
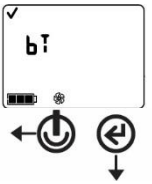
Bump Testing Figure 4

Gas Monitoring Screen
From the Gas Monitoring Screen, a series of presses on the ON/OFF/MODE button advance the user to the Bump Test Initiate Screen.



Bump Test Initiate Screen
Press ENTER to begin the bump test process.

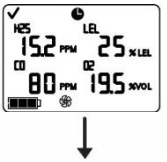
Press ON/OFF/MODE to bypass the bump test process.
►***Refer to Figure 1, Operation/Start-up.***



Bump Test Apply Gas Screen
Displays expected gas concentrations; waits five minutes for gas.

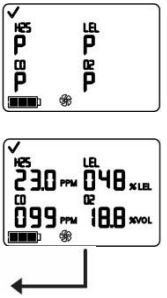
Press ON/OFF/MODE to terminate the bump test process**.
►***Refer to Figure 1, Operation/Start-up.***

Bump Test In-progress Screen
LEL and toxic sensor readings increase; O_2 reading decreases.



Bump Test Results (Pass) Screen
Alternately displays final sensor reading and pass status screens.

►***Refer to Figure 1, Operation/Start-up.***



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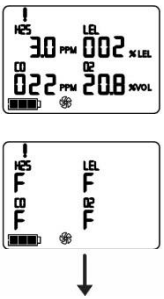
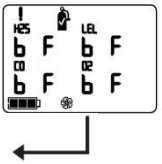
Bump Test Results (Fail) Screen Alternately displays final sensor reading and fail status screens.	
Bump Test Fail Screen The monitor must pass a calibration after a failed bump test ►***Refer to Figure 3, Quick Calibration.***	

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MANUFACTURER DECLARATION OF CONFORMITY

Déclaration de Conformité Constructeur

CE

The company **Industrial Scientific Corporation**, Pittsburgh, Pennsylvania USA, declares that the following new material intended for use in Explosive Atmospheres:
*(La société **Industrial Scientific Corporation**, Pittsburgh, Pennsylvania USA, atteste que le matériel neuf destiné à être utilisé en Atmosphères Explosives désigné ci-après:)*

Gas detector *(Détecteur de gaz)* VENTIS MX4

comply with the requirements of the following European Directives :
(est conforme aux exigences des Directives Européennes suivantes:)

I) The European Directive ATEX 94/9/EC of 23/03/94: Explosive Atmospheres

Directive Européenne ATEX 94/9/EC du 23/03/94: Atmosphères Explosives

No. of EC type examination certificate: *(N° Attestation CE de Type du matériel:)*	**DEMKO 10 ATEX 1006410** **INERIS 13 ATEX 0068X**
Issued by the Notified Body no. 0539: *(Délivrés par l' Organisme notifié sous le numéro 0539)* Issued by the Notified Body no. 0080: *(Délivrés par l' Organisme notifié sous le numéro 0080)*	UL International DEMKO A/S, LYSKEAR 8 P.O. Box 514, DK – 2730, HERLEV, DENMARK INERIS Parc Technologique BP 2 F-60550 Verneuil-en-Halatte, FRANCE
Reference European Standards *(Normes européennes de référence)*:	
Rules of construction *(Règles de construction)*:	EN 60079-0 :2009; EN 60079-11: 2007 EN 60079-26 :2007; EN 50303 :2000 EN 60079-29-1 :2007; EN 50104 :2010 EN 50271 :2010
Category *(Catégorie)*:	Ex II 1G / I M1 Ex ia IIC T4 Ga / Ex ia I Ma Tamb -20°C to +50°C IP66/IP67 EN 60079-29-1, EN 50104
Production Quality Assurance Notification No. of the Pittsburgh factory *(N° de la Notification Assurance Qualité de Production de l'usine de Pittsburgh)*	SIRA 00 ATEX M0080
Issued by the Notified Body no. 0518: *(Délivrés par l'Organisme notifié sous le numéro 0518)*	SIRA Certification Services, Rake Lane Eccleston, Chester CH4 9JN, UK

II) The European Directive EMC 2004/108/EC of 15/12/2004: Electromagnetic Compatibility

Directive Européenne CEM 2004/108/EC du 15/12/2004: Compatibilité Electromagnétique

Harmonised applied standards: *(Normes harmonisées appliquées)*	EN 50270

On behalf of the manufacturer
Pour le fabricant

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Tom Henson
Global Senior Director, Portable Instruments
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31 March 2015

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The company **Industrial Scientific Corporation**, Pittsburgh, Pennsylvania USA, declares that the following new material intended for use in Marine Equipment:

Gas detector VENTIS MX4
Docking Station iNetDS
VENTIS MX4 Chargers and Charger Datalinks

comply with the requirements of the following Marine Equipment Directive :

I) The Council Directive 96/98/EC Annex A.1/3.30 on Marine Equipment as amended by Commission Directive 2012/32/EU MED

EC Type Examination (module B) certificate No.:	**DBI CMC10035**
Production-Quality Assurance certificate No. module D:	**DBI CMA10011**
Issued by the Notified Body no. 2531:	DBI Certification A/S Jernholmen 12 DK-2650 Hvidovre Denmark

Reference European Standards :

Rules of construction:	EN 60079-0 :2009; EN 60079-11 :2007 EN 60079-26 :2007; EN 50303 :2000 EN 60079-29-1 :2007; EN 50104 :2010 EN 50271 :2010 EN 60945 :2002, including Corrigendum 1: 2008 IEC 60092-504 :2001, including Corrigendum 1: 2011 IEC 60533 :1999

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