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INDUSTRIAL SCIENTIFIC

CORPORATION

M40

MULTI-GAS MONITOR

Instruction Manual

OUR MISSION

Design - Manufacture - Sell:
Highest quality products
for the preservation of
life and property.

Provide:
Best customer service
available.

Dear Valued Customer,

Thank you for buying and using Industrial Scientific's M40 Multi-Gas Monitor.

Your M40 can be relied upon for dependable service, day after day. It has been designed, manufactured, tested and proven under the most scrutinizing conditions possible. With the minimal care and maintenance described in this Instruction Manual, it will provide you with years of reliable monitoring.

I am most concerned that you be pleased with the performance of your M40 in the months and years ahead. I urge you to call us with any questions or comments you may have. Often times a phone call and a question can save you hours of frustration. Please never hesitate to contact me at 1-800-DETECTS (338-3287).

All of us at Industrial Scientific appreciate the opportunity to serve you.

Sincerely,

Kent D. McElhattan
President & CEO
Industrial Scientific Corporation

M40 MULTI-GAS MONITOR

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WARNINGS AND CAUTIONARY STATEMENTS

Failure to perform certain procedures or note certain conditions may impair the performance of the instrument. For maximum safety and performance, please read and follow the procedures and conditions outlined below.

⚠ 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.

⚠ Verify the calibration of the combustible gas sensor after any incident where the combustible gas content has caused the instrument to display an OVER-RANGE condition.

⚠ 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 instrument has been used in an area where silicone vapors were present, always calibrate the instrument before next use to ensure accurate measurements.

⚠ Sensor openings and water barriers must be kept clean. Obstruction of the sensor openings and/or contamination of the water barriers may cause readings to be lower than actual gas concentrations.

⚠ Sudden changes in atmospheric pressure may cause temporary fluctuations in the oxygen reading.

⚠ Charge battery, service unit, and use its communication port only in non-hazardous locations. Not for use in oxygen enriched atmospheres.

⚠ WARNING: SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY AND MAY CAUSE AN UNSAFE CONDITION.

AVERTISSEMENT: LA SUBSTITUTION DE COMPOSANTS PEUT COMPOMETTRE LA SECURITE INTINSEQUE!

⚠ 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.

⚠ CAUTION: HIGH OFF-SCALE READINGS MAY INDICATE EXPLOSIVE CONCENTRATION.

ATTENTION: DES LECTRURES SUPÉRIEURES A L'ÉCHELLE PEUVENT INDIQUER DES CONCETRATOINS EXPLOSIVES.

⚠ CAUTION: ANY RAPID UP-SCALE READING FOLLOWED BY A DECLINING OR ERRATIC READING MAY INDICATE A GAS CONCENTRATION BEYOND THE UPPER SCALE LIMIT WHICH MAY BE HAZARDOUS.

⚠ CANADIAN STANDARDS ASSOCIATION (CSA) HAS ASSESSED ONLY THE COMBUSTIBLE GAS DETECTION PORTION OF THIS INSTRUMENT FOR PERFORMANCE WITHIN AN AMBIENT TEMPERATURE RANGE OF 0ºC TO 40ºC.

⚠ WARNING: THE ALARMS ON THE MODEL M40 ARE NON-LATCHING ALARMS.

⚠ CAUTION: BEFORE EACH DAY'S USAGE, SENSITIVITY MUST BE TESTED ON A KNOWN CONCENTRATION OF PENTANE OR METHANE EQUIVALENT TO 25%-50% OF FULL SCALE CONCENTRATION. ACCURACY MUST BE WITHIN +/- 20% OF ACTUAL CONCENTRATION. ACCURACY MAY BE CORRECTED BY REFERRING TO THE ZERO/CALIBRATION SECTION OF THE INSTRUCTION MANUAL.

⚠ THE MODEL M40 IS CERTIFIED FOR USE WITHIN AN AMBIENT TEMPERATURE RANGE OF -20°C TO 40°C ONLY.

⚠ THE MODEL M40/SP40 COMPLIES WITH RELEVANT PROVISIONS OF EUROPEAN ATEX DIRECTIVE 94/9/EC AND EMC DIRECTIVE 89/336/EEC, AMENDED BY DIRECTIVES 92/31/EEC AND 93/68/EEC.

⚠ THE EC TYPE EXAMINATION CERTIFICATE IS DEMKO 03 ATEX 0324154X; WITH MARKING CODE EEx ia d IIC T4; FOR EQUIPMENT GROUP AND CATEGORY II 2G.

⚠ THE MODEL M40 MULTI-GAS MONITOR (P/N 1810-5437) AND MODEL SP40 SAMPLING PUMP (P/N 1810-5460) ARE CONSTRUCTED WITH REFERENCE TO PUBLISHED STANDARDS OF DIRECTIVE 72/23/EEC, TO ELIMINATE ELECTRICAL RISKS AND FULFILL 1.2.7 OF ANNEX II OF DIRECTIVE 94/9/EC.

⚠ THE MODEL M40 MUST BE USED ONLY WITH MODEL SP40 EXTERNAL SAMPLING PUMP.

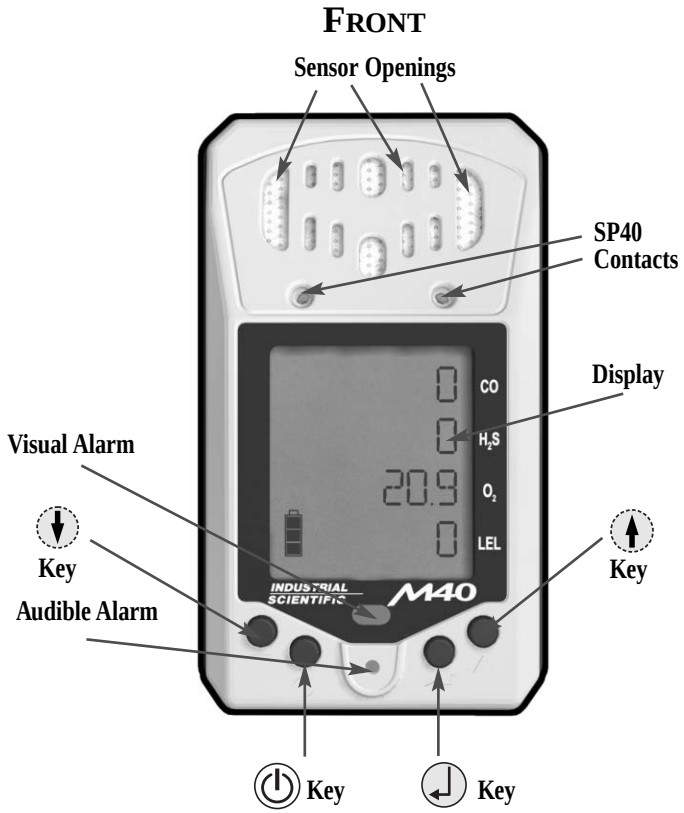
UNPACKING THE INSTRUMENT

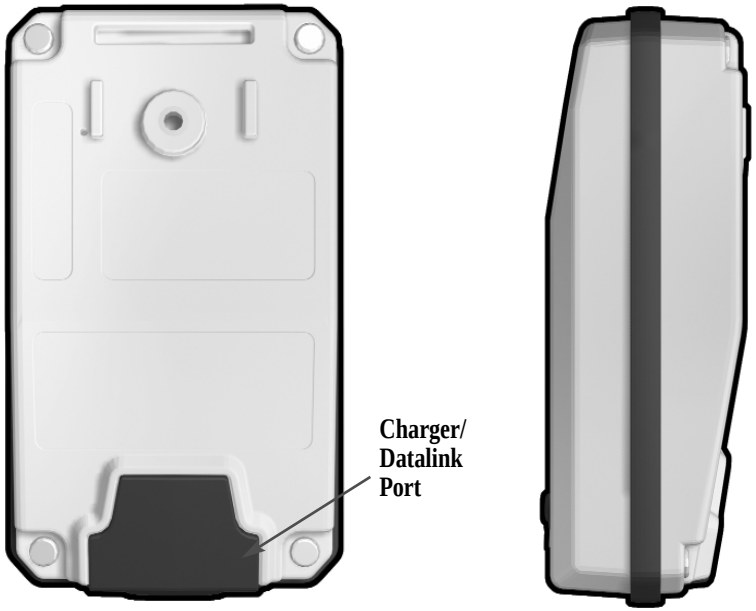
The shipping box should contain the following items. Account for each item before discarding the box.

QUANTITY	PART NUMBER	DESCRIPTION
1	1810-5437-XXXXX	M40
1	1710-8630	Swivel Belt Clip (Plastic)
1	1710-8879	Manual
1	1710-8622	Cal-Cup
1	1700-7774	Allen Wrench
1	1710-2005	Urethane Tubing
1	1810-5460*	SP40 sampling pump

** SP40s are only included in 1810-5437-1XXXX part numbers.*

After unpacking, if any listed item is missing, contact either your local distributor of Industrial Scientific products or call Industrial Scientific Corporation at 1-800-DETECTS (338-3287) in the United States and Canada, or 412-788-4353.





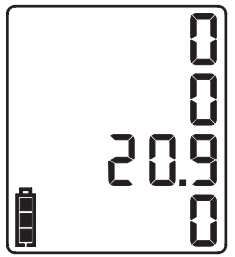
INTRODUCTION

The M40 is a portable gas monitor capable of continuously and simultaneously monitoring 4 standard gases; O2, LEL, CO and H2S. Each gas reading is displayed on a custom graphic LCD. The instrument provides user configurable low and high alarms as well as STEL and TWA alarms. When alarm conditions are exceeded, the M40 has audio, visual and a standard vibrating alarms to alert the user.

INSTRUMENT OPERATION

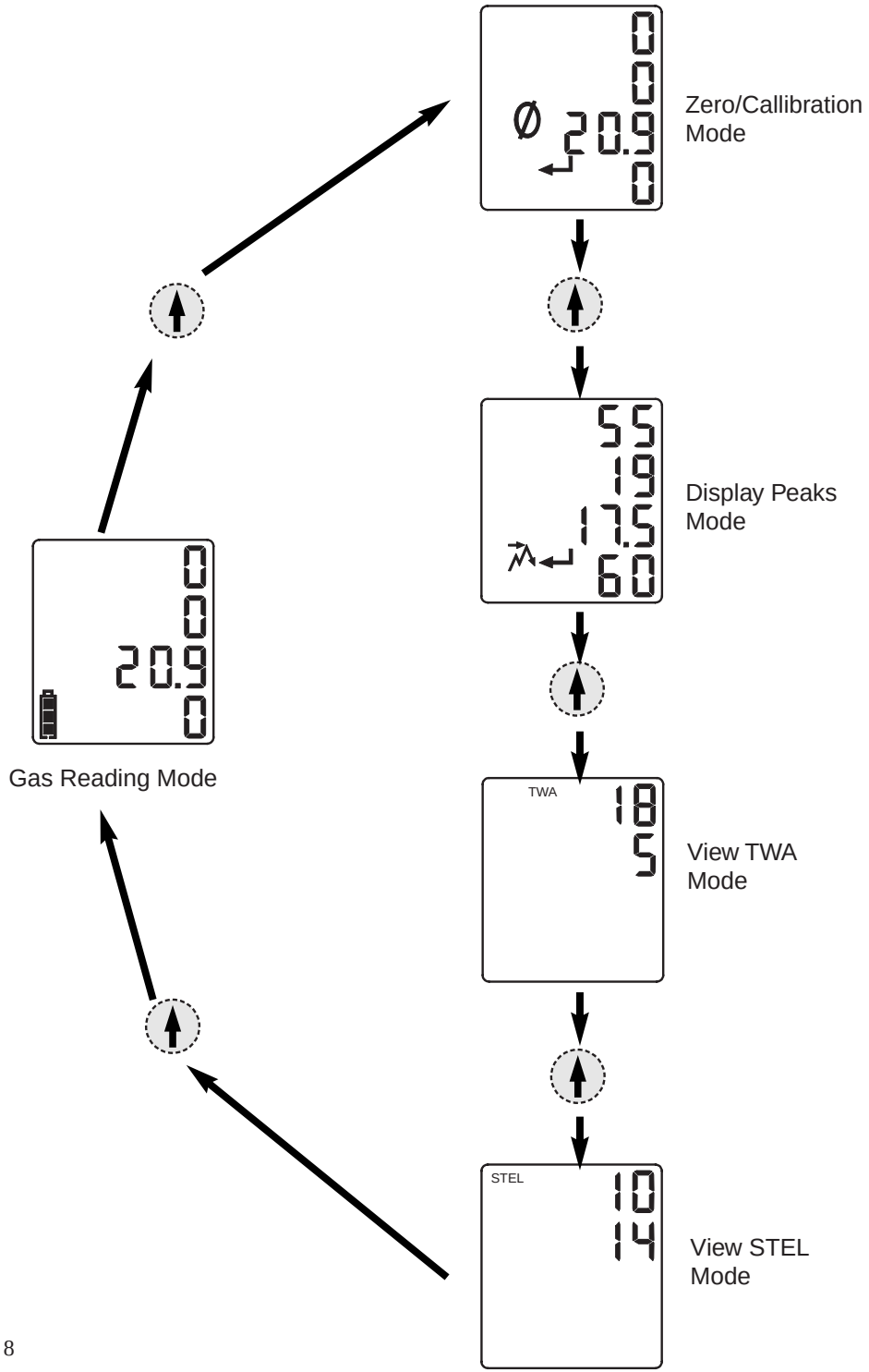
To turn on the M40, press and hold the button for 1 second. The unit will emit a single beep and go into a display test. All icons and segments on the LCD will light. Next the software revision will be displayed. After this, the instrument will go into a 20 second countdown. During the countdown sequence, if the and arrow keys are pressed simultaneously, the user will enter into the Configuration Mode. When the countdown is complete, the M40 will be in its normal Gas Reading Mode.

M40 GAS READING MODE

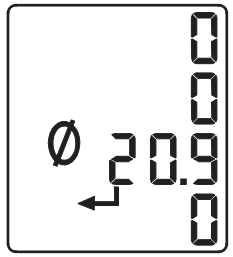


Once the M40 enters into the Gas Reading Mode, all 4 gases (O2, LEL, CO and H2S) will be continuously monitored and the readings updated on the liquid crystal display. As gas levels increase, the corresponding reading will reflect the current gas concentrations. A battery life indicator is also displayed in the lower left corner. As battery life decreases, the shaded area of the battery icon decreases. If any of the gas concentrations exceed the low or high alarm limits (as well as STEL/TWA), the M40 will go into alarm. When in alarm, the audible and visual alarms will beep and flash at set frequencies, and the vibrating alarm will be pulsed. When the gas concentrations drop below the alarm set points, the M40 will go back to the Gas Reading Mode. From the Gas Reading Mode, there are four other modes that can be accessed. These other modes are reached by pressing the arrow key.

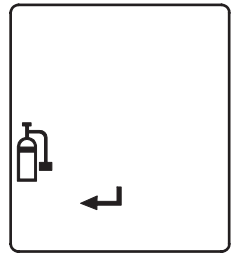
Operating Modes



Zero/Calibration Mode

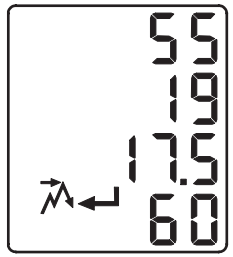


Pressing the ↑ arrow key once from the Gas Reading Mode will put the M40 in the Zero/Cal Mode. When this mode is entered, the "Zero" icon and the "Enter" icon will be displayed along with all four gas readings. Pressing the ↑ arrow key a second time will advance you to the Display Peaks Mode. Pressing the ↵ key will start the zeroing process. When the CO, H2S, and LEL sensors have finished the zeroing process, the oxygen sensor will start to span. During this process, the "Clock" icon and oxygen full span value will be displayed. When this process is complete, the instrument will display the "Span" icon and "Enter" icon. Pressing the ↵ key at this time will cause the M40 to begin calibration for the remaining sensors. For more information, reference the calibration section on page 15.

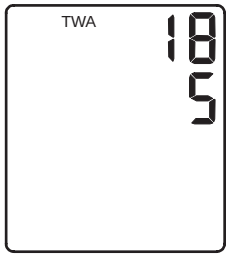


The M40 calibration gases are fixed values. You must calibrate the instrument on a blended cylinder containing 25 ppm H2S, 100 ppm CO, 25% or 50% LEL Methane or Pentane, and 19% Oxygen at 0.5 LPM flow.
Note: CSA International compulsory calibration is 50% LEL Methane.

Display Peaks Mode



Pressing the ↑ arrow key from the Zero/Calibration Mode will advance the M40 to the Display Peaks Mode. When in this mode, the M40 will display the peak gas readings seen by the toxic and combustible sensor as well as the lowest reading for the oxygen sensor. The "Peak" and "Enter" icons are displayed. Pressing the ↵ key will reset all the peak values to the current reading.



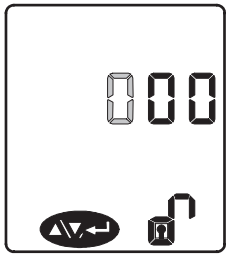
View TWA Mode

Pressing the ↑ arrow key a third time will put the M40 in the View TWA Mode. The TWA screen will show the "TWA" icon along with the TWA (Time Weighted Average) values for the two toxic sensors. TWA values are reset every time the instrument is powered down, and the time base is set for 8 hours.

View STEL Mode

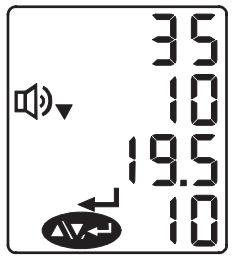
Pressing the ↑ arrow key a fourth time from the Gas Reading Mode will put the M40 in the View STEL Mode. The STEL screen with display the "STEL" icon along with the STEL values for the two toxic sensors. STEL (Short Term Exposure Limit) for the toxic sensors will be reset every time the unit is powered down. The time base for the STEL is set for 15 minutes.

Configuration Mode

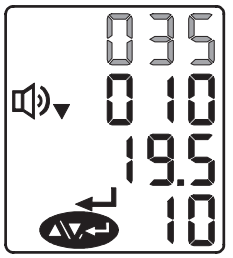


Pressing the ↑ and ↓ arrow keys simultaneously during the twenty second countdown will put the M40 into the Configuration Mode. The Configuration Mode allows the user to change the Low, High, TWA, and STEL alarm levels, as well as set the time, date and security code (if desired). Once the Configuration Mode is entered, a Security Code screen will be displayed. If no security code has been set (000), the M40 will go directly to the low alarm setpoints. If a security code has been set, use the ↑ and ↓ arrow keys to change the value of the flashing digits to match the code. Once the desired number is reached for the first digit, press the ⏻ key to select the next digit. Continue this process until all three digits are correct, then press the ↵ key.

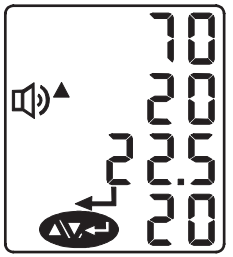
Low Alarm Set Points



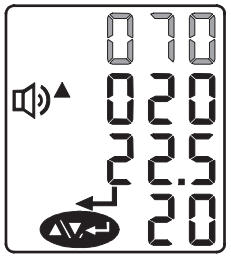
This is the first of the configuration screens. The display will show the "Buzzer", "Low", "Enter", and "Up/Down/Enter" icons along with the four low alarm set points. If no changes are needed, press the ↑ arrow key to move to the next screen. If changes are desired, press the ↵ key. The first low alarm value will be flashing. To adjust this value, use the ↑ and ↓ arrow keys. Once the desired value is met, press the ↵ key to select the next low alarm value. Continue this process until all four low alarm set points have been set. Once all four values are set, the display will again show the "Buzzer", "Low", "Enter", and "Up/Down/Enter" icons along with the four low alarm set points. Pressing the ↵ key will re-enter the mode and let you set the low alarm levels again; pressing the ↑ arrow key will move you to the High Alarm Set Points screen. Pressing the ⏻ key at any time will take you back to initial Low Alarm screen, and no changes will be saved. Pressing the ⏻ key a second time will take you to the normal Gas Readings screen. The low alarm is a non-latching alarm.



High Alarm Set Points

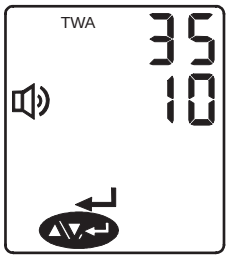


This is the second of the configuration screens. The display will show the "Buzzer", "High", "Enter", and "Up/Down/Enter" icons along with the four high alarm set points. If no changes are needed, press the ↑ arrow key to move to the next screen. If changes are desired, press the ↵ key. The first high alarm value will be flashing. To adjust this value, use the ↑ and ↓ arrow keys. Once the desired value is met, press the ↵ key to select the next high alarm value.

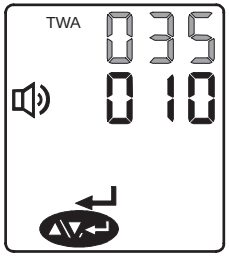


Continue this process until all four high alarm set points have been set. Once all four values are set, the display will again show the "Buzzer", "High", "Enter", and "Up/Down/Enter" icons along with the four high alarm set points. Pressing the ↵ key will re-enter the mode and let you set the high alarm levels again; pressing the ↑ arrow key will move you to the TWA Alarm Set Points screen. Pressing the ⏻ key at any time will take you back to initial High Alarm screen, and no changes will be saved. Pressing the ⏻ key a second time will take you to the normal Gas Readings screen. The high alarm is a non-latching alarm.

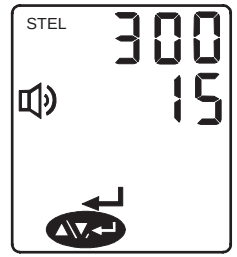
TWA Alarm Set Points



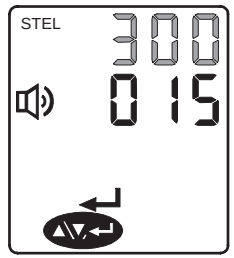
This is the third of the configuration screens. The display will show the "TWA", "Buzzer", "Low", "Enter", and "Up/Down/Enter" icons along with the two TWA alarm set points. If no changes are needed, press the ↑ arrow key to move to the next screen. If changes are desired, press the ↵ key. The first TWA alarm value will be flashing. To adjust this value, use the ↑ and ↓ arrow keys. Once the desired value is met, press the ↵ key to select the next TWA alarm value. Continue this process until both TWA alarm set points have been set. When both values are set, the display will again show the "TWA", "Buzzer", "Low", "Enter", and "Up/Down/Enter" icons along with the two TWA alarm set points. Pressing the ↵ key will re-enter the mode and let you set the TWA alarm levels again; pressing the ↑ arrow key will move you to the STEL Alarm Set Points screen. Pressing the ⏻ key at any time will take you back to the initial TWA Alarm screen, and no changes will be saved. Pressing the ⏻ key a second time will take you to the normal Gas Readings screen.



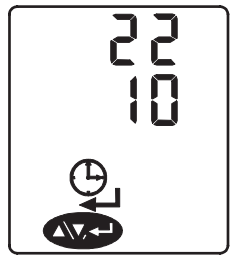
STEL Alarm Set Points



The fourth of the configuration screens is the STEL alarm values. The display will show the "STEL", "Buzzer", "Low", "Enter", and "Up/Down/Enter" icons along with the two STEL alarm set points. If no changes are needed, press the ↑ arrow key to move to the next screen. If changes are desired, press the ↵ key. The first STEL alarm value will be flashing. To adjust this value, use the ↑ and ↓ arrow keys. Once the desired value is met, press the ↵ key to select the next STEL alarm value. Continue this process until both STEL alarm set points have been set. When both values are set, the display will again show the "STEL", "Buzzer", "Low", "Enter", and "Up/Down/Enter" icons along with the two STEL alarm set points. Pressing the ↵ key will re-enter the mode and let you set the STEL alarm levels again; pressing the ↑ arrow key will move you to the Clock Setting screen. Pressing the ⏻ key at any time will take you back to initial STEL Alarm screen, and no changes will be saved. Pressing the ⏻ key a second time will take you to the normal Gas Readings screen.



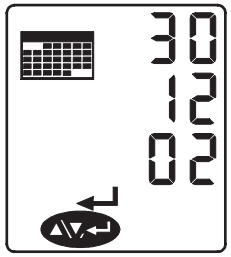
Clock Setting



Setting the clock is the next configuration screen. The display will show the "Clock", "Enter", and "Up/Down/Enter" icons along with two rows of digits. If no changes are needed, press the ↑ arrow key to move to the next screen. If changes are desired, press the ↵ key. The first value that will be flashing is the hours setting of your clock. To adjust this value, use the ↑ and ↓ arrow keys. Once the desired value is met, press the ↵ key to select the minutes value. Continue this process until both hours and minutes have been set. When both values are set, the display will again show the "Clock", "Enter", and "Up/Down/Enter" icons along with the two rows of digits. Pressing the ↵ key will re-enter

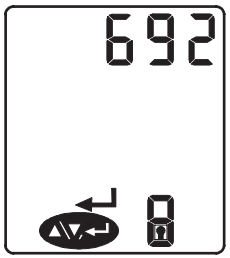
the mode and let you set the hours and minutes again; pressing the ↑ arrow key will move you to the Calendar Setting screen. Pressing the ⏻ key at any time will take you to the normal Gas Readings screen.

Calendar Setting



Setting the calendar is the configuration screen after the clock set up. The display will show the "Calendar", "Enter", and "Up/Down/Enter" icons along with three rows of digits. If no changes are needed, press the ↑ arrow key to move to the next screen. If changes are desired, press the ↵ key. The first value that will be flashing is the month setting of your clock. To adjust this value, use the ↑ and ↓ arrow keys. Once the desired value is met, press the ↵ key to select the day value. Continue this process until the month, day and year have been set. When all three values are set, the display will again show the "Calendar", "Enter", and "Up/Down/Enter" icons along with three rows of digits. Pressing the ↵ key will re-enter the mode and let you set the calendar again; pressing the ↑ arrow key will move you to the Security Code Settings screen. Pressing the ⏻ key at any time will take you to the normal Gas Readings screen.

Security Code Setting

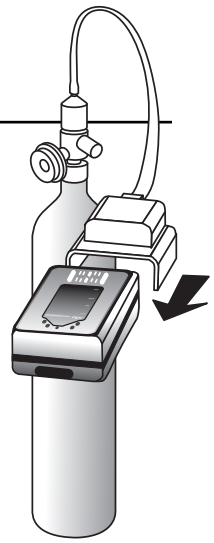


The next setting is the Security Code Settings. The display will show the "Closed Lock", "Enter", and "Up/Down/Enter" icons along with the top row of digits displaying the current security code. If no changes are needed, press the ↑ arrow key to move to the LEL settings. If changes are desired, press the ↵ key. The current security code will be flashing. To adjust the first value, use the ↑ and ↓ arrow keys. Once the desired value is met, press the ↵ key to select the next digit. Continue this process until all three digits have been set. When all three values are set, the display will again show the "Closed Lock", "Enter", and "Up/Down/Enter" icons along with the top Security Code. Pressing the ↵ key will re-enter the mode and let you set the security code again; pressing the ↑ arrow key will move you to LEL Settings. Pressing the ⏻ key at any time will take you back to the initial Security Code screen, and no changes will be saved. Pressing the ⏻ key a second time will take you to the normal Gas Readings screen.

LEL Setting

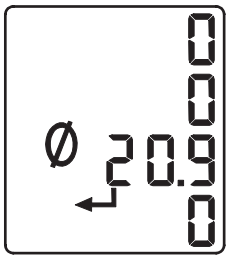
The final configuration screen is the LEL calibration gas setting. After pressing the ↵ key, the LEL and the concentration will start to flash. Use the ↑ to toggle between 25% LEL and 50% LEL. When the desired concentration is selected, press the ↵ key. Pressing the ⏻ key will take you out of the Configuration Mode and into the normal Gas Reading Mode. Pressing either of the arrow keys will scroll you through the configuration menus.

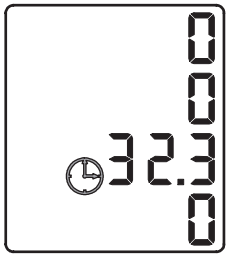
Zero/Calibration

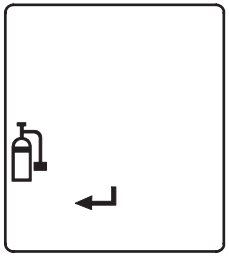


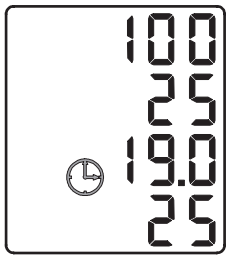
The M40's calibration procedure is a ‘Quick-Cal’ procedure that will calibrate all four sensors simultaneously with a single blended cylinder of gas. The ‘Quick-Cal’ feature offers calibration times of <60 seconds. The M40 can be calibrated with or without the external pump. If calibrating with the SP40 pump on the instrument, please attach a piece of tubing from the end of the pump to the demand flow regulator on the blended gas cylinder. If calibrating without the SP40, securely place

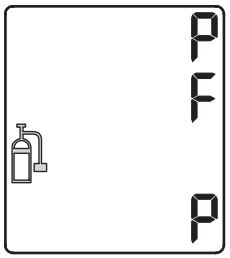
the M40 cal-cup over the sensors. With a piece of tubing, connect the cal-cup to the regulator on the blended gas cylinder.











Pressing the arrow key once from the Gas Reading Mode will put the M40 in the Zero/Cal Mode. When this mode is entered, the "Zero" icon and the "Enter" icon will be displayed along with all four gas readings. Pressing the key will start the zeroing process. When the CO, H2S, and LEL sensors have finished the zeroing process, the oxygen sensor will start to span. During this process, the "Clock" icon and oxygen full span value will be displayed. When this process is complete, the instrument will display the "Span" icon and "Enter" icon. Pressing the key at this time will cause the M40 to begin calibration for the remaining sensors. If this occurs, the display will flash the "Clock" icon along with the span values of the sensors. When gas is detected, the display will show the span readings as well as the "Calibration" icon. This is a quick calibration (‘Quick-Cal’) process, and should take no longer than 60 seconds. At the end of the calibration, the display will flash between the span readings and a pass/fail indication for ten seconds. Full span values between 50 and 70 percent are considered marginal calibrations, and the sensor may soon need replaced. Full span values less than 50 percent will result in a failed calibration. To abort calibration at any point in the process, press the key.

The M40 calibration gases are fixed values. You must calibrate the instrument on a blended cylinder containing 25 ppm H2S, 100 ppm CO, 25% or 50% LEL Methane or Pentane, and 19% Oxygen at 0.5 LPM flow.
Note: CSA International compulsory calibration is 50% LEL Methane.

DATA LOGGING

The M40 comes standard with a continuous loop data logger. The data logger has enough memory to store 50 hours of data for all four sensors as well as the temperature. When the 50 hours is exceeded, the data logger will go back and start overwriting the oldest data in memory. Data is logged in one minute intervals and can be downloaded to a PC via the software package and Datalink Module.

Data is extracted from the M40 via a Datalink Module (1810-5528). To purchase a Datalink Module please contact either you local distributor of Industrial Scientific Products, or call Industrial Scientific Corporation at 1-800-DETECTS. To use the Datalink Module, you must first install the setup software located on the CD (comes with Datalink). Also make sure there is a fresh battery in the Datalink Module. Once the Datalink is connected to the M40, and to the COM port on your PC, click on the "Connect" button to establish communication. Once communication is established, data can be downloaded or cleared from the interface menu. To view data, select "File Open", and to view graphics, select "Graphics" from the spreadsheet menu. To disconnect at anytime, click on the "Disconnect" button and unplug the M40.

MAINTENANCE

With normal routine maintenance the M40 can be relied upon to provide years of dependable service. The following guidelines should be followed when performing maintenance on the M40.

CLEANING

When necessary, wipe the outside of the M40 with a soft, clean cloth. Never use solvents or cleaning solutions of any type. Make sure the sensor diffusion membrane is free of debris. Clean sensor openings with a soft, clean cloth or soft brush.

Charging the Batteries

The lithium-ion (Li-ion) battery pack should be fully charged before using the M40. To charge the internal battery, plug the flying lead of the M40 battery charger into the charging port located at the bottom of the instrument. This port is protected with a rubber flap. To ensure proper connection, line up the arrow on the charger plug with the arrow on the label located on the bottom of the M40. The battery pack should be fully charged in 5 hours. With a fully charged battery pack, the M40 typically will run 18 hours in the diffusion mode, or 12 hours with the SP40. As the battery life decreases, the shaded area of the battery icon will also decrease. With a maximum of 10 minutes left in the life of the battery, the M40 will emit a periodic tone alerting you to charge the unit.

Sensor Replacement

To replace the sensor in the M40, make sure that the SP40 is first removed from the unit. Once the SP40 is removed, turn the M40 over, and remove the 4 screws located at each corner of the unit. Carefully pull the two halves of the unit apart, being careful not to pull the connector of the vibrating alarm off. Once the two halves are apart, place the bottom half next to the top half. You will be looking at the back side of the sensor board. Carefully remove the two screws and the black PCB retaining clip that hold the sensor board in place. After the retaining clip is removed, remove the two screws located near the center of the sensor board. You can now pull the sensor board from the top case assembly. The four sensors are located on this board. To remove sensors, gradually pull them from the sockets. Each sensor has its own unique footprint. Once a sensor is removed, place a new one in the appropriate position. After sensors are replaced, place the sensor board back in the unit. Use the two screws to secure the board to the case top, then add the black PCB retaining clip. After the sensor board is secured, place the two case halves together using the four screws. The two shorter screws go in the bottom of the case.

SP40 Sampling Pump

The SP40 external sampling pump is available for the M40. The SP40 is a parasitic pump that draws its power from the M40's battery pack. The pump attaches to the M40 via two captive screws on the face of the M40. The SP40 has a flow rate of .5 SCFH (0.25 LPM), and can draw up to a 50 foot sample. If flow is restricted to the pump, the M40 will go into a low flow alarm to alert the user.

If the M40 gets a low flow alarm, make sure there are no visible restrictions in the sampling line. If the unit stays in alarm, the internal dust/water filter should be replaced. To replace the filter, power down the M40 and remove the end nozzle of the SP40. Once the nozzle is removed, replace the internal filter. With the new filter in place, screw the end nozzle back onto the SP40 and power up the M40.

M40 Specifications

Size: 4.30" x 2.45" x 1.27" (109mm x 62mm x 35mm)

Weight: 8.6 oz. without SP40 (243 grams)
11.5 oz. with SP40 (326 grams)

Display: Custom Grahic LCD with Backlight

Sensor Specifications:

Gas	Range	Resolution	T90
Carbon Monoxide (CO)	0-999 ppm	1 ppm	48 sec
Hydrogen Sulfide (H_2S)	0-500 ppm	1 ppm	30 sec
Oxygen (O_2)	0-30%	0.1%	10 sec
Combustible (LEL)	0-100% LEL	1%	35 sec

Temperature and Humidity Range:

Operating Temperature: -20ºC to +50ºC (-4 to 122ºF), typical toxic/oxygen

0ºC to 40ºC (32 to 104ºF), for LEL sensor only per C22.2 No. 152

Operating Humidity: 15-95% RH, typical
0-99%, intermittent, non-condensing

Storage Temperature: 0 to 20ºC (32º to 68ºF)

Battery Specifications:

Rechargeable Lithium-Ion battery
3.6 Volts, 1.8 Amp/hr.

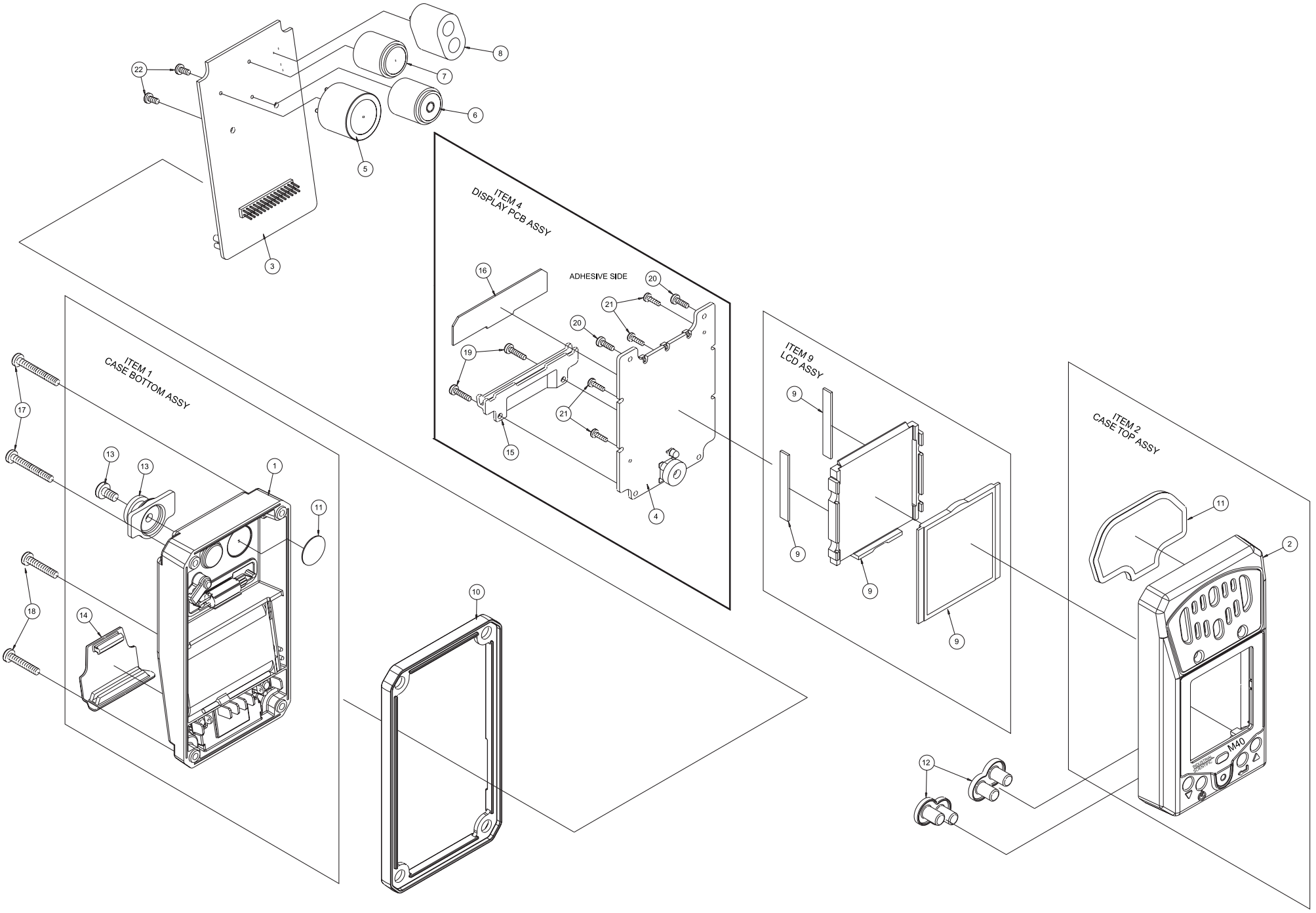
Charger Specifications:

Runtimes:
18 hours diffusion, 12 hours with pump

Runtimes are specified at room temperature with no alarm conditions.

Replacement Parts List

	PART NO.	DESCRIPTION
Accessories		
	1810-5460	SP40 Sampling pump
	1810-5528	Datalink
	1810-5478	M40 Nylon Carrying Case
	1810-5486	M40/SP40 Combination Carrying Case
	1810-5494	Compact Charger 120 VAC
	1810-5668	Compact Charger 230 VAC
	1810-5890	Compact Charger 230 VAC (UK)
	1810-5908	Compact Charger 230 VAC (Aus)
	1810-5502	12 VDC Automotive Charger
	1810-5510	6 Unit Charger
	1710-8895	Swivel Belt Clip (standard)
	1709-2941	Metal Belt Clip
	1710-7582	Suspender Clip
Replacement Sensors		
	1709-3758	Oxygen Sensor
	1711-2152	Hydrogen Sulfide Sensor
	1711-2160	Carbon Monoxide Sensor
	1705-0788	Combustible Gas Sensor
Replacement Parts		
1	1711-3580	Case Bottom Assembly
2	1711-3598	Case Top Assembly
3	1711-1055	Main/Sensor Board Assy
4	1711-2830	Display Board Assy
5	1709-3758	Oxygen Sensor
6	1711-2160	CO Sensor
7	1711-2152	H2S Sensor
8	1705-0788	LEL Sensor
9	1711-4331	LCD Display Assembly
10	1710-8499	Conductive Case Gasket
11	1710-8903	Water Barrier Kit
12	1710-8523	Elastomer Keypad
13	1710-8895	Swivel Belt Clip
14	1710-8614	Charger Recess Plug
17	1710-8663	4-40 x .875 Button Head Hex Screws
18	1710-8655	4-40 x .625 Button Head Hex Screws
19	1705-2628	2-28 x.31 Self Tap Screws
20	1705-2558	2-28 x.25 Self Tap Screws
21	1710-8820	1-32 x.188 Self Tap Screws
22	1705-0453	2-56 x.188 PHCR Screws
Confined Space Kits		
	M40-KIT-11111	M40/SP40 - O2, LEL, CO, H2S
	M40-KIT-11101	M40/SP40 - O2, LEL, H2S
	M40-KIT-11110	M40/SP40 - O2, LEL, CO


ITEM 1
CASE BOTTOM ASSY
ITEM 4
DISPLAY PCB ASSY
ADHESIVE SIDE
ITEM 9
LCD ASSY
ITEM 2
CASE TOP ASSY
M40

WARRANTY

Industrial Scientific Corporation's M40 portable gas monitors are warranted to be free from defects in material and workmanship for a period of two years after purchase.

The above warranty includes sensors, battery pack, and internal sampling pump (SP40). Filters are warranted to be free from defects in material and workmanship for 18 months from date of shipment, or 1 year from date of first use, whichever occurs first, except where otherwised stated in writing in Industrial Scientific literature accompanying the product.

LIMITATION OF LIABILITY

INDUSTRIAL SCIENTIFIC MAKES NO OTHER WARRANTIES, EITHER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE.

SHOULD THE PRODUCT FAIL TO CONFORM TO THE ABOVE WARRANTY, BUYER'S ONLY REMEDY AND INDUSTRIAL SCIENTIFIC'S ONLY OBLIGATION SHALL BE, AT INDUSTRIAL SCIENTIFIC'S SOLE OPTION, REPLACEMENT OR REPAIR OF SUCH NON-CONFORMING GOODS OR REFUND OF THE ORIGINAL PURCHASE PRICE OF THE NON-CONFORMING GOODS.

IN NO EVENT WILL INDUSTRIAL SCIENTIFIC BE LIABLE FOR ANY OTHER SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING LOSS OF PROFIT OR LOSS OF USE, ARISING OUT OF THE SALE, MANUFACTURE OR USE OF ANY PRODUCTS SOLD HEREUNDER WHETHER SUCH CLAIM IS PLEADED IN CONTRACT OR IN TORT, INCLUDING STRICT LIABILITY IN TORT.

It shall be an express condition to Industrial Scientific's warranty that all products be carefully inspected for damage by Buyer upon receipt, be properly calibrated for Buyer's particular use, and be used, repaired, and maintained in strict accordance with the instructions set forth in Industrial Scientific's product literature. Repair or maintenance by non-qualified personnel will invalidate the warranty, as will the use of non-approved consumables or spare parts. As with any other sophisticated product, it is essential and a condition of Industrial Scientific's warranty that all personnel using the products be fully acquainted with their use, capabilities and limitations as set forth in the applicable product literature.

Buyer acknowledges that it alone has determined the intended purpose and suitability of the goods purchased. It is expressly agreed by the parties that any technical or other advice given by Industrial Scientific with respect to the use of the goods or services is given without charge and at Buyer's risk; therefore, Industrial Scientific assumes no obligations or liability for the advice given or results obtained.

INDUSTRIAL SCIENTIFIC

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EC *Declaration of Conformity*

Manufacturer:	**Industrial Scientific Corporation**
Manufacturer's Address:	**1001 Oakdale Road** **Oakdale, Pennsylvania 15071** **United States of America**
Local Representative's Name:	**Industrial Scientific Corporation**
Local Representative's Address:	**Smederijstraat 2** **4814 DB Breda** **The Netherlands**
Type of Equipment:	**Multi-Gas Monitor with optional Sample Pump**
Model:	**M40 Multi-Gas Monitor (P/N 1810-5437)** **SP40 Sample Pump (P/N 1810-5460)**

DESCRIPTION: The M40 Multi-Gas Monitor is a hand held portable device capable of monitoring and recording data for combustible, oxygen and two toxic gases or vapors simultaneously. It is equipped with audio and visual alarms. Recorded data can be downloaded for analysis and storage. The SP40 Sample Pump is powered from the M40 and can be used to sample gases from remote locations.

DECLARATION: Industrial Scientific Corporation declares that the M40 Multi-Gas Monitor and SP40 Sample Pump conforms to all of the relevant provisions of the EC Council ATEX Directive 94/9/EC dated 23 March 1994.

Quality Assurance Notification:	**SIRA 00 ATEX M080**
Issued by Notified Body:	**SIRA Certification Services (0518)**
EC-Type-Examination Certificate:	**03 ATEX 0324154X**
Issued by Notified Body:	**UL International DEMKO A/S (0539)** **LYSKAER 8, P.O. Box 514** **DK -- 2730, HERLEV, DENMARK**
Standards:	**EN 50014:1997+A1:1999,+A2:1999, EN 50020:1994** **EN 50018:1998, EN 60529:1991**

Declarations to other relevant EC Community Directives: **EMC: 89/336/EEC, 92/31/EEC & 93/68/EEC**

Standards: **EN 50270:1999**

I, the undersigned, as authorized representative of Industrial Scientific Corp., declare that the equipment specified above conforms to the above Directive(s) and Standard(s).

Place: Oakdale, PA **Signature:**

Date: August 27, 2003

David D. Wagner
Product Manager

ISO9001 CERTIFIED

OUR MISSION
Design-Manufacture-Sell: Highest quality products for the preservation of life and property
Provide: Best customer service available