This manual is provided for informational purposes only. Although the information contained in this manual is believed to be accurate, it could include technical inaccuracies or typographical errors. Changes are, therefore, periodically made to the information within this document and incorporated without notice into subsequent revisions of the manual. Net Safety Monitoring Inc. assumes no responsibility for any errors that may be contained within this manual.

This manual is a guide for the use of a Infrared Combustible Gas Detector and the data and procedures contained within this document have been verified and are believed to be adequate for the intended use of the detector. If the detector or procedures are used for purposes other than as described in the manual without receiving prior confirmation of validity or suitability, Net Safety Monitoring Inc. does not guarantee the results and assumes no obligation or liability.

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Net Safety Monitoring Inc. products, are carefully designed and manufactured from high quality components and can be expected to provide many years of trouble free service. Each product is thoroughly tested, inspected and calibrated prior to shipment. Failures can occur which are beyond the control of the manufacturer. Failures can be minimized by adhering to the operating and maintenance instructions herein. Where the absolute greatest of reliability is required, redundancy should be designed into the system.

Net Safety Monitoring Inc. , warrants its sensors and detectors against defective parts and workmanship for a period of 24 months from date of purchase and other electronic assemblies for 36 months from date of purchase.

No other warranties or liability, expressed or implied, will be honored by Net Safety Monitoring Inc.

Contact Net Safety Monitoring Inc. or an authorized distributor for details.
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Unit I GENERAL INFORMATION

DESCRIPTION

Hydrocarbon gases absorb specific wavelengths of infrared energy. In the SIR100, modulated, broadband infrared energy is focused by means of a gold plated reflector and passed along an open measurement path to a sensing element tuned to a specific IR wavelength which is absorbed by most hydrocarbon gases. When a hydrocarbon gas diffuses into the infrared path, some of the energy is absorbed by the gas. The signal change detected by the tuned sensing element is proportional to the concentration of gas in the measurement path. The SIR100 utilizes this principle to give you a reliable and simple to use combustible gas detector.

Through a unique and simple design that negates the need for mirrors and de-fogging heaters the SIR100 provides excellent performance in applications where reduced maintenance is the objective.

The Uni-Tran display unit provides a user friendly operator interface in plain text for calibration, gas level display, diagnostic messages and relay configuration.

FEATURES

- Scrolling alpha-numeric LED display highly visible in all lighting conditions
- Easy, one person, non-intrusive calibration
- Tolerant to high levels of vibration
- No mirrors to be fogged, fouled, misaligned or cleaned
- Calibration gas can be applied externally to simulate actual field conditions
- Entire optical path is protected from airborne contamination, mist, dust or oil
- Sensor can be remotely mounted more than 2000 feet from display unit
- Low power consumption that works with 12 or 24Vdc systems
- Microprocessor based smart transmitter
- Conformal coated circuit boards
- Gas specific colour coded enclosure

Technical Specifications

Sensor Specifications

- Operating Temperature Range:
  
  -40°C to +75°C (-40°F to +167°F)

- Range of Detection:
  
  0 to 100% LEL or 0 to 100% by volume (propane, methane, polypropylene, butane)**
Accuracy:  
±3% LEL up to 50% LEL  ±5% LEL above 50% LEL

Response Time:  
<30 seconds to T90

Linearity/Repeatability:  
±3% LEL  /  ±2% LEL

Weight:  
0.9 Kg (2.0 lb)

Enclosure Material:  
Aluminum (optional stainless steel)

Certification:  
CSA and NRTL/C certified for hazardous locations. Class I, Division 1, Groups B, C and D. IEC Rating Ex d IIB+H2 T5, NEMA 3R. Performance certified to CSA 22.2 No. 152

** For other gas please contact the factory

UNI-TRAN Specifications

- Operating Voltage Range:  
10.5 to 32 Vdc

- Power Consumption (at 24 Vdc):  
Nominal (160 mA, 3.8 Watts)  
Maximum (190 mA, 4.5 Watts)

- Operating Temperature Range:  
-40°C to +85°C (-40F to +185F)

- Humidity Range:  
0 to 100% Relative humidity, non-condensing

- Enclosure Material:  
Copper Free Cast Aluminum

- Shipping Weight:  
3.2 Kg (7.0 lb)

- Certification:  
CSA and NRTL/C certified for hazardous locations. Class I, Division 1, Groups B, C and D, NEMA 4X and 7. IEC Rating Ex d IIB+H2 T5

NOTE: Electronics only - CSA and NRTL/C certified for hazardous locations Class I, Division 2 Groups B, C and D pending.
- **Current Output (4-20mA):**
  Into a maximum loop impedance of 800 Ohms at 32 Vdc or 150 Ohms at 10.5 Vdc. Isolated or non-isolated loop supply.

- **Relay Contacts:**
  Form C contacts rated 1 Amp at 30 Vdc, 0.5 Amp at 125 Vdc. Selectable energized/de-energized, latching/non-latching Configurable Fault, Low and High alarms.

- **Dimensions:**
  Refer to Figure 1

![Dimensions for Adalet enclosure Premium Plus](image)

---

**UNIT II SYSTEM INSTALLATION**

**INSTALLATION**

**Location of Sensors**

There are no absolute rules for determining the quantity and location of gas detection instruments within a particular facility, but care should be taken to locate the sensors in areas where gas escape may be expected and where it is desirable to detect the presence of unwanted gas. Use redundancy where enhanced protection or reliability is desired. Seek advice from experts who know the characteristics of the gas being detected, air movement patterns and the facility. Use common sense and refer to various publications that discuss general guidelines for your industry.

**Unpacking**

The UNI-TRAN Premium Plus is made up of two primary components. The housing and terminal board are a single assembly to which the input is wired. The control module is a separate plug-in assembly. Since all modern electronic equipment can be damaged by static electricity discharge it is important to discharge static electricity from your body by touching a grounded metal object before handling the module. Loosen the retaining screws and remove the module carefully from the housing by grasping the centre “pull” knob and
pull straight away, then temporarily store it in a clean safe place until field wiring is connected to the terminal board located in the base of the housing.

**Mounting**

The housing should be oriented so that the sensor is on the underside of the housing. Use a conduit seal and conduit loop or trap on the field wiring side to prevent water or condensation from entering the housing through the conduit or its threaded connection.

**Wiring**

**NOTE:**

*The wiring procedures in this manual are intended to ensure proper functioning of the device under normal conditions. However, because of the many variations in wiring codes and regulations, total compliance to these ordinances cannot be guaranteed. Be certain that all wiring complies with applicable regulations that relate to the installation of electrical equipment in a hazardous area. If in doubt, consult a qualified official before wiring the system.*

**NOTE**

*Before opening the particle detector enclosure or junction box, ensure that the area has been declassified, or remove power from the unit.*

**NOTE**

*The state of the normally open and normally closed contacts of the relays are reversed when the normally energized option is selected.*

**NOTE**

*The control module (CPU board and Display Board) with cable should never be totally removed from the Relay board and housing. If it is removed there are bright red alignment markings on the cable and on the Relay board for you to use when re-inserting the cable into the Relay Board connector.*

**NOTE**

*Since all modern electronic equipment can be damaged by static electricity discharge it is important to discharge static electricity from your body by touching a grounded metal object before handling the module.*

The transmitter is made up of two assemblies. The enclosure / relay board are a single assembly to which the input is wired. The control module (CPU board and Display Board) is a separate assembly. To conduct wiring unscrew the two retaining screws from the front of the display board. (the control module is attached to the relay board by a cable. Do not detach the cable during wiring) Detach the module from the housing by grasping the centre (Pull Here) knob and pull straight away. gently hang the module from the cable while you conduct wiring.

The use of shielded cable is highly recommended for any signal wires to protect against interference caused by extraneous electrical 'noise'. This includes power and current outputs; relay outputs do not require shielded cable. In applications where the wiring cable is installed in conduit, the conduit must not be used for wiring to other electrical equipment. The maximum distance between the sensor and controller is limited by the resistance of the connecting wiring, which is a function of the gauge of the wire being used.
Refer to the manuals on the sensors used (and transmitters if used) for maximum wiring distances and wiring instructions.

**NOTE:**

*The controller contains semiconductor devices that are susceptible to damage by electrostatic discharge. An electrostatic charge can build up on the skin and discharge when an object is touched. Therefore, use caution when handling, taking care not to touch the terminals or electronic components. For more information on proper handling, refer to Appendix A.*

Water-proof and explosion-proof conduit seals are recommended to prevent water accumulation within the enclosure. Seals should be located as close to the device as possible and not more than 18 inches (46 cm) away. Explosion-proof installations may require an additional seal where conduit enters a non-hazardous area. Conform to local wiring codes.

When pouring a seal, use a fibre dam to assure proper formation of the seal. The seals should never be poured at temperatures below freezing.

The jacket and shielding of the cable should be stripped back to permit the seal to form around the individual wires. This will prevent air, gas and water leakage through the inside of the shield and into the enclosure.

It is recommended that explosion-proof drains and conduit breathers be used. In some applications, alternate changes in temperature and barometric pressure can cause 'breathing' which allows moist air to enter and circulate inside the conduit. Joints in the conduit system are seldom tight enough to prevent this 'breathing'.

Refer to applicable wiring codes when installing and wiring. After the field wiring has been carefully connected, check that the correct wires are connected to the corresponding terminals and that voltage levels do not exceed the specifications. When the wiring and voltages have been verified remove power form the system. Set the Display board back in place and tighten the two retaining screws.

**Sensor Separation**

The sensor can be installed and wired directly to the UNI-TRAN Premium Plus housing and terminal board as per the wiring diagram (see Figure 3) or it may be remotely mounted using a sensor separation kit which is composed of a junction box and terminal strip. The sensor and sensor separation kit are then connected to the UNI-TRAN Premium Plus allowing for separations up to 2000 feet (see Figure 4).

**Initial LED Status**

With power applied, check that the green POWER LED is ON, there is a message scrolling on the display and the FAULT/CAL LED is flashing red. After 90 seconds the FAULT/CAL LED will change from flashing red to a short green flash every 2 seconds (confidence blip). During power up, the alphanumeric scrolling display scrolls the message “Start Delay Uni-Tran Net Safety”. The analog output will be 3.0mA during the start delay and will change to 4.0mA after the 90 second start delay. Observation of the LED status signals, scrolling alphanumeric display and output current levels aid the operator when calibrating the controller as described under CALIBRATION.

There are a variety of English language commands scrolled across the alphanumeric display to supplement the LED sequences and aid the operator.

**Start Delay Uni-Tran Net Safety:** power up delay in progress
<table>
<thead>
<tr>
<th>Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Switch On:</strong></td>
<td>magnetic reed switch is activated or manual reset switch is activated</td>
</tr>
<tr>
<td><strong>Calibrate Sensor:</strong></td>
<td>mode for calibrating the unit</td>
</tr>
<tr>
<td><strong>Auto Cal:</strong></td>
<td>automatic calibration mode</td>
</tr>
<tr>
<td><strong>Sensor Fault:</strong></td>
<td>fault present, sensor or sensor wiring failure</td>
</tr>
<tr>
<td><strong>Zero Set:</strong></td>
<td>calibration zero gas setting in progress</td>
</tr>
<tr>
<td><strong>Apply 50% LEL:</strong></td>
<td>apply 50% calibration gas</td>
</tr>
<tr>
<td><strong>Setting Span:</strong></td>
<td>span gas detected, automatic span gas setting in progress</td>
</tr>
<tr>
<td><strong>Remove Gas:</strong></td>
<td>remove calibration gas</td>
</tr>
<tr>
<td><strong>Fail Span:</strong></td>
<td>calibration span setting failed</td>
</tr>
<tr>
<td><strong>Time Out:</strong></td>
<td>calibration failed, no gas detected during calibration</td>
</tr>
<tr>
<td><strong>Setting Zero:</strong></td>
<td>setting zero level on controller</td>
</tr>
<tr>
<td><strong>Neg. Drift:</strong></td>
<td>excessive negative sensor drift</td>
</tr>
<tr>
<td><strong>Set Relay Options:</strong></td>
<td>mode for setting the alarm relay</td>
</tr>
<tr>
<td><strong>Review Relay Settings:</strong></td>
<td>mode for reviewing the alarm settings</td>
</tr>
<tr>
<td><strong>Set Low:</strong></td>
<td>set low alarm level</td>
</tr>
<tr>
<td><strong>Set High:</strong></td>
<td>set high alarm level</td>
</tr>
<tr>
<td><strong>Coil Status:</strong></td>
<td>set the coil status for relays</td>
</tr>
<tr>
<td><strong>Energized:</strong></td>
<td>relay is normally energized</td>
</tr>
<tr>
<td><strong>De-Energized:</strong></td>
<td>relay is normally de-energized</td>
</tr>
<tr>
<td><strong>Latch Status:</strong></td>
<td>set the latch status of relays on alarm condition</td>
</tr>
<tr>
<td><strong>Latching:</strong></td>
<td>relay latches at alarm condition</td>
</tr>
<tr>
<td><strong>Non-Latching:</strong></td>
<td>relay does not latch at alarm condition</td>
</tr>
<tr>
<td><strong>Low Alarm Level:</strong></td>
<td>low alarm relay is activated</td>
</tr>
<tr>
<td><strong>High Alarm Level:</strong></td>
<td>high alarm relay is activated</td>
</tr>
<tr>
<td><strong>Cal. Complete:</strong></td>
<td>Calibration completed successfully</td>
</tr>
</tbody>
</table>
Figure 2 Uni-Tran Premium Plus connection Diagram for SIR100 (LEL) Sensor
**Analog Output**

The analog output is precisely controlled by the internal micro-processor and digital to analog converter. Digital control provides the means to include extra features such as automatic calibration and error checking.

The UNI-TRAN Premium Plus may be reset by any of the following four methods.

- Place the magnet on the side of the transmitter enclosure at the 10 o’clock position where marked for 1 second *(see Figure 6)*
- Press and hold the internal reset switch for 1 second
- Press and hold the external reset switch for 1 second
- Momentarily interrupt power to the unit

**Sensor Drift**

It is a normal characteristic of gas sensors to exhibit a slow drift from zero. When the amount of drift exceeds 10% since the last calibration, the analog output switches to a value of 2.5 mA, the fault relay is activated the alphanumeric display indicates **“Neg. Drift”** and the red LED flashes until manually reset and the system is re-calibrated. When switched to 2.5mA due to drift, the sensor will still respond and transmit reasonable analog signals if gas is present.

**Sensor Life**

Sensor response normally deteriorates slowly over a period of several years, depending on exposure, until there is no longer sufficient signal. When this condition occurs, calibration will not be possible, the analog output will lock at 2.5mA, the red status LED flashes and **“Sensor Fault”** is displayed on the scrolling alphanumeric display. Install a new sensor and re-calibrate. The calibration function automatically adjusts span amplifier gain across a broad range without any need for manual adjustment of potentiometers or jumpers.

**Test Jacks**

The UNI-TRAN Premium Plus is equipped with test jacks to facilitate convenient current loop measurements without opening the external current loop. To make current loop measurements use the following procedure:

- Insert the current meter leads into the test jacks
- Apply test gas and take meter readings. Set external devices to bypass if necessary to avoid unwanted alarm response
- Remove meter leads from test jacks
Unit III SYSTEM SETTINGS

MAIN MENU

The main menu of the UNI-TRAN Premium Plus has three options:

- Calibrate Sensor
- Set Relay Options
- Review Relay Settings

In order to enter the main menu of the controller, place the curved side of the magnet on the side of the enclosure at the 10 o’clock position (see Figure 6) where marked to actuate the magnetic reed switch or press the manual CAL/RESET switch. Release the magnetic reed switch/CAL/RESET switch after the count-down timer has finished counting down from 10 to 0. In the main menu, the options are displayed and prompted for selection by displaying “YES?”. Momentarily activate the magnetic reed switch/CAL/RESET switch when the desired option is prompted for selection. If the magnetic reed switch/CAL/RESET switch is not activated the UNI-TRAN Premium Plus will scroll to the next option. When a selection has been made the selection is acknowledged with a flashing “YES”. If none of the three options are selected, the UNI-TRAN Premium Plus returns to normal operation mode.

Summary of Main Menu

Enter Main Menu: 10 second timer count down
First Option: Calibrate Sensor, followed by the “YES?” prompt for selection
Second Option: Set Relay Option, followed by the “YES?” prompt for selection
Third Option: Review Relay Settings, followed by the “YES?” prompt for selection
Exit: Return to normal (if no option selected)
Unit IV SYSTEM CALIBRATION

CALIBRATION

The UNI-TRAN Premium Plus should always be calibrated when first installed in the field. Response to the input should be checked and if necessary calibration should be performed whenever any of the following occur:

- excess sensor drift is indicated by 2.5mA or 4.4mA current output
- “Neg. Drift” is shown on the scrolling alphanumeric display
- when the sensor or transmitter supplying a signal to the UNI-TRAN Premium Plus is added or removed
- whenever the sensor is exposed to high concentrations of gas over full scale

It is necessary to calibrate the UNI-TRAN Premium Plus when it is used as a stand-alone device and connected to other monitoring equipment requiring a precise 4 to 20mA output signal. The following calibration procedure should be followed to ensure an accurate correlation between the 4 to 20mA output signal and the sensor input signal.

Calibration Procedure (use 50% certified calibration gas)

- Be sure the UNI-TRAN Premium Plus is powered-up and is not indicating a fault; FAULT/CAL LED is showing a short green flash every 2.0 seconds (confidence blip).
- Ensure that the sensor is in a clean air environment before beginning the calibration procedure. It is recommended to flow certified ZERO AIR at a rate of 0.5 litres per minute through the barbed tubing connector on the end of the sensor calibration cup accessory for one minute to ensure clean air is present. If the input device is another transmitter, be sure that it is calibrated and that the input to UNI-TRAN Premium Plus is 4.0mA.
- To enter the main menu, activate the magnetic reed switch or CAL/RESET button. When the countdown from 10 to 0 is complete, remove the magnet from the magnetic reed switch or release the CAL/RESET push button.
- When prompted with Calibrate sensor “YES?” select the function by momentarily placing the magnet on the reed switch or depressing the CAL/RESET button. The selection is acknowledged with flashing “YES”. The controller starts calibration. The following instructions are scrolled across the display for calibration:
  - Setting Zero - at this time input should be 4.0mA or ZERO gas applied to sensor (3.0mA output current level)
  - Apply 50% LEL - at this time input should be 12.0mA or 50% span gas applied to sensor (3.3mA output current level)
  - Setting Span - increasing input signal has been detected (3.3mA output current level)
Remove Gas - at this time input should be reduced to 4.0mA by removing span gas from the sensor (3.6mA output current level)

Cal. Complete - returns to normal operation (4.0mA output current)

NOTE:
If span setting does not complete successfully within ten minutes of starting the calibration sequence, the status LED alternates flashes of RED and GREEN, “Cal. Fail” is displayed on the alphanumeric display and the analog output changes back and forth from 3.0 to 3.3mA. The unit remains in this state until acknowledged by a manual Reset. After manual Reset the program will return to the normal operation mode using previous calibration values. Since the calibration was unsuccessful another attempt may be made or replace the sensor and re-try calibration.

Periodic Response Check

A periodic response check verifies system response and indicates if calibration is necessary.

Take precautions to prevent unwanted shut-downs, then apply calibration gas to the sensor. Observe the response of LEDs, display, analog output, relays and external monitoring equipment. If the UNI-TRAN Premium Plus response is within specified accuracy then it is not necessary to perform a calibration. For example, when 50% span is applied the response is expected to be between 11.5mA (47%) and 12.5mA (53%). Consider the accuracy tolerance of the calibration gas which may be plus or minus a few additional percent.

The UNI-TRAN Premium Plus is designed to provide many years of dependable service, however, sensor input characteristics can shift slightly over time depending on exposure to environmental factors. Under good conditions, initial calibration will be satisfactory for many months. Typically, companies perform response checks at a period of 1 to 6 months. The level of confidence will be proportional to the frequency of system response checks.

Relay Settings

Enter the main menu and activate the magnetic reed switch/CAL/RESET button when prompted for “Set Relay Options” with “YES?”. The selection is acknowledged with a flashing “YES”. The current output will drop to 3.0mA and the micro-processor begins the relay setting procedure. Alarm level, coil energization and latching options are set for each relay in sequence.

STEP 1. The low alarm level is set first. “Set Low” is scrolled across the screen followed by the alarm level setting which increases in increments of 5% every 2 seconds. Actuate the magnetic reed switch/CAL/RESET button when the desired level is displayed. The selection is acknowledged by flashing the selected level on the alphanumeric display. The range for the low alarm is 0 to 55. The value increases in increments of 5% from 5 through 55 until an alarm level is selected, or a 5 minute timer expires, in which case the unit returns to normal operation.

STEP 2. The coil condition is set under NORMAL status (no alarm present). “Coil Status” is scrolled across the alphanumeric display. The display then alternates between “Energized” and “De-Energized”, each time prompting the user with “YES?” for selection. Activate the magnetic reed switch/CAL/RESET button when the desired action is prompted. The selection is acknowledged by flashing “YES”.

STEP 3. The relay latching action is set for ALARM status. “Latch Status” is scrolled on the alphanumeric
display. The display then alternates between “Latching” and “Non-Latching”, each time prompting the user with “YES?” for selection. Activate the magnetic reed switch/CAL/RESET button when the desired action is prompted. The selection is acknowledged by flashing “YES”. The alphanumeric display alternates between “Latching” and “Non-Latching” until one is selected, or a 5 minute timer expires, in which case the unit returns to normal operation.

**STEP 4. Set the high alarm relay option.** The high alarm relay cannot be set to a value lower than the low alarm relay setting or higher than 55% LEL. The high alarm level is displayed in increments of 5% greater than the low alarm level selected in step 1 to a maximum of 55% LEL. Activate the magnetic reed switch/CAL/RESET button when the desired level is displayed. The selection is acknowledged by flashing the selected level on the alphanumeric display.

Repeat steps 2 and 3 for setting the high alarm relay coil and latch status.

**Review Relay Settings**

Enter the main menu and activate the magnetic reed switch/CAL/RESET button when prompted for “Review Relay Settings” with “YES?”. After the magnetic reed switch/CAL/RESET button has been activated the selection is acknowledged by “YES”. The output current will drop to 3.0mA and the relay settings are displayed. First the fault alarm settings are displayed and these are fixed as normally “Energized” and “Non-Latching”, followed by the low alarm settings and high alarm settings. This is a read-only mode, thus changes cannot be made in this mode. The settings for all three alarm relays are displayed twice and then the unit returns to normal operation.
**Table 1 - Table of Responses**

<table>
<thead>
<tr>
<th>CONDITION</th>
<th>Current O/P (mA)</th>
<th>Status LED</th>
<th>Status LED</th>
<th>Alphanumeric display Premium Plus</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>RED</td>
<td>GREEN</td>
<td></td>
</tr>
<tr>
<td>Start-up delay</td>
<td>3</td>
<td>Slow Flash</td>
<td></td>
<td>START DELAY</td>
</tr>
<tr>
<td>White sensor lead open</td>
<td>20</td>
<td>Solid</td>
<td></td>
<td>SENSOR FAULT</td>
</tr>
<tr>
<td>Black sensor lead open</td>
<td>2.5</td>
<td>Slow Flash</td>
<td></td>
<td>SENSOR FAULT</td>
</tr>
<tr>
<td>Red sensor lead open</td>
<td>2.5</td>
<td>Slow Flash</td>
<td></td>
<td>SENSOR FAULT</td>
</tr>
<tr>
<td>Excess drift (&gt;10%)</td>
<td>2.5</td>
<td>Blip/ blink</td>
<td></td>
<td>NEG DRIFT</td>
</tr>
<tr>
<td>Auto Zero set</td>
<td>3</td>
<td>Solid</td>
<td></td>
<td>SETTING ZERO</td>
</tr>
<tr>
<td>Apply calibration gas</td>
<td>3.3</td>
<td>Fast Flash</td>
<td></td>
<td>APPLY 50% LEL of full scale span gas</td>
</tr>
<tr>
<td>Span is set, remove gas</td>
<td>3.6</td>
<td>Solid</td>
<td></td>
<td>REMOVE GAS</td>
</tr>
<tr>
<td>Return to normal operation</td>
<td>3.6</td>
<td>Solid</td>
<td></td>
<td>CAL COMPLETE</td>
</tr>
<tr>
<td>Normal</td>
<td>4</td>
<td>Blip/ blink</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Gas Present</td>
<td>4.4 - 20.0</td>
<td>Blip/ blink</td>
<td></td>
<td>0 to 100 of full scale</td>
</tr>
</tbody>
</table>

It is necessary that reliable monitoring and indicating devices or systems be connected to the transmitter. These devices must be designed to produce clear visual and audible danger signals when high signal levels occur. Operating personnel must consider the area to be dangerous until a careful survey of the area has been conducted with a separate and reliable gas indicating device.
ORDERING INFORMATION

UT-X-XXXXXX-XXX-X-XX

FACE PLATE
PREMIUM PLUS = P+

LANGUAGE
ENGLISH (EN)
SPANISH (SP)
FRENCH (FR)

HOUSING TYPE
ADALET = A

SENSOR TYPE
SC1100 (LEL)

RANGE
0 - 100% LEL
Appendix A Net Safety Monitoring Inc. Electrostatic Sensitive Device Handling Procedure

With the trend toward increasingly widespread use of microprocessors and a wide variety of other electrostatic sensitive semiconductor devices, the need for careful handling of equipment containing these devices deserves more attention than it has received in the past.

Electrostatic damage can occur in several ways. The most familiar is by physical contact. Touching an object causes a discharge of electrostatic energy that has built up on the skin. If the charge is of sufficient magnitude, a spark will also be visible. This voltage is often more than enough to damage some electronic components. Some devices can be damaged without any physical contact. Exposure to an electric field can cause damage if the electric field exceeds the dielectric breakdown voltage of the capacitive elements within the device.

In some cases, permanent damage is instantaneous and an immediate malfunction is realized. Often, however, the symptoms are not immediately observed. Performance may be marginal or even seemingly normal for an indefinite period of time, followed by a sudden and mysterious failure.

Damage caused by electrostatic discharge can be virtually eliminated if the equipment is handled only in a static safeguarded work area and if it is transported in a package or container that will render the necessary protection against static electricity. Net Safety Monitoring Inc. modules that might be damaged by static electricity are carefully wrapped in a static protective material before being packaged. Foam packaging blocks are also treated with an anti-static agent. If it should ever become necessary to return the module, it is highly recommended that it be carefully packaged in the original carton and static protective wrapping.

Since a static safeguarded work area is usually impractical in most field installations, caution should be exercised to handle the module by its metal shields, taking care not to touch electronic components or terminals.

In general, always exercise all of the accepted and proven precautions that are normally observed when handling electrostatic sensitive devices. A warning label is placed on the packaging, identifying those units that use electrostatic sensitive semiconductor devices.

*Published in Accordance with EIA standard 471
# Appendix B Wire Resistance In Ohms

<table>
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<th>Distance (Feet)</th>
<th>AWG #20</th>
<th>AWG #18</th>
<th>AWG #16</th>
<th>AWG #14</th>
<th>AWG #12</th>
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**NOTE:** RESISTANCE SHOWN IS ONE WAY. THIS FIGURE SHOULD BE DOUBLED WHEN DETERMINING CLOSED LOOP RESISTANCE.