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The information contained in this Installation, Operation and Maintenance Manual pertains only to the Alert-4 microprocessor based digital LCD Alarm. This product will perform as described in this manual when assembled, operated, maintained and serviced in accordance with the installation instructions provided.

The alarm must be checked periodically. Parts that are broken, missing, worn, distorted or contaminated must be replaced immediately. Should such repair or replacement become necessary, please contact Amico Corporation or their distributors.

All alarms should not be repaired or altered without prior written or verbal approval from Amico Corporation or its distributors. Failure to comply will void all warranty on the alarm.

Statements in this manual preceded by the words WARNING, CAUTION, DANGER and NOTE are of special significance. Please read these sections carefully.

**NOTE:** Amico strongly recommends that alarms be checked annually by qualified staff.

- **WARNING:** denotes steps which can prevent injury.
- **CAUTION:** denotes steps which can prevent damage to equipment.
- **DANGER:** denotes steps which can prevent electrical shock to equipment or to prevent serious injury and/or death.

**IMPORTANT INFORMATION**

1. Do not use impact screw driver for installation.
2. When installation is completed, peel off the LCD screen protector.
3. To protect from static electricity, ensure to discharge body static before installing the Medical Gas Alarm.
4. Do not ground the shield drain wire inside the alarm panel back box.
5. Make sure power supply is turned off while wiring.
Introduction

The Amico Area LCD Alarm System (Alert-4) incorporates the latest microprocessor based technology for alarm and surveillance systems. The alarm has been designed to provide user flexibility and reliability. This manual shall enable the customer to install, use and maintain the alarm appropriately.

There is one “MUTE” (馑) or “PUSH TO TEST” button located on the front face of the LCD panel. The button has three functions: to silence an alarm that has occurred, to view high and low set points and to test the audio. When an audible alarm is triggered, press the mute button to silence the alarm. To view the high and low set points or to test the audio, press and hold the mute button for 20 seconds.

All Gases and Vacuums are displayed on the LCD screen for clear visibility to facilitate the monitoring functions of hospital personnel. Under normal operation, the gas indicator will be in “GREEN - NORMAL”. If an alarm condition occurs, the gas indicator will be in “RED - FAULT” and an audible alarm shall be continuous until silenced by pushing the “MUTE” button.

Features

- Microprocessor based digital LCD and individual microprocessor on each sensor module
- Ethernet capable for viewing an exact image of the alarm remotely or wireless anywhere in the building
- Gas-specific sensors can be mounted locally or remotely, up to 2000 feet [609.6 m], utilizing #22 gauge stranded, shielded twisted pair cable ONLY
- DISS gas-specific sensor housed in a tamper-proof enclosure. The Sensor Module is housed in an anodized aluminum and nickel-plated brass enclosure to act as an interference barrier
- The Sensor Module is the smallest computer-calibrated temperature-compensated sensor in the industry
- PSI, kPa, inHg, mmHg or BAR display (programmable)
- Self diagnostic circuitry with error display for problem identification
- Highly accurate Solid State Pressure piezoresistive transducer
- Dry contacts for remote monitoring for a generic alarm condition
- Modules are factory mounted on a hinged frame assembly for ease of installation and maintenance
- Field programmable push buttons for adjustment of “HI” and “LOW” set-points
- Available in 1 to 8 gases
- Web Audio Enabled: web audio will trigger when alert occurs via ethernet
- Unlimited records of history log to keep track of alert history for easy troubleshooting
- Easy access via Amico Medgas App (Apple and Android)
Description of Modules

The Alert-4 Area Alarm is a high technology microprocessor based module:

COMMON TO ALL ALARMS

SYSTEM POWER SUPPLY

The System Power Supply has been pre-installed into the back box assembly. The System Power Supply converts the AC voltage supply to the alarm into two voltages: 5 VDC (regulated) required by the microprocessor hardware and 15 VDC (unregulated) required by the buzzer and the LCD. This unit also contains the main ON/OFF power switch, the transformer, the heat sink, the main fuse and fuse cover, the rectifying circuitry, the terminal blocks and the low voltage DC power cable for connecting this unit to the module. The System Power Supply can be easily removed and reinstalled by unscrewing it from the back box.

LCD MODULE

The LCD Module contains the LCD screen, microprocessor, buzzer and the “MUTE” button. The function of the “MUTE” button is to silence an alarm that has occurred. By holding the “MUTE” button for 20 seconds, the module will display the high and low pressure set points. This module also contains a fail-safe relay that de-energizes when the buzzer is activated. This relay can be used with the Amico Remote Buzzer for applications requiring a remote audible alarm, master alarm or a Building Management System.
Description of Modules

SENSOR MODULE

The Sensor Module contains the transducer which converts the source of the pressure/vacuum into a digital signal that is displayed on the LCD alarm. The sensor module shall be housed in an anodized aluminum and nickel-plated brass enclosure to act as a barrier against interference and it is temperature compensated. Each sensor is clearly labeled and color coded for the gas or vacuum being monitored. The sensor module contains a gas-specific DISS fitting to ensure correct connection of the proper sensor to the respective gas. Each sensor has been factory calibrated for the specific gas shown on the sensor housing.

For Annual Test
- Hold the MUTE button for twenty (20) seconds to display the current high and low set points and audio level.

Installation Guide

STEP 1: THE ALARM BOX

Install the back-box to the studs of the wall at the desired height. Ensure that the box is securely in place. The mounting brackets are adjustable to suit the thickness of the wall. MAKE SURE the box is parallel, squared and flush with the finished wall surface to ensure that the frame assembly will fit properly.

STEP 2: FOR LOCAL SENSORS ONLY

If the sensors are to be mounted locally (inside the back box), the pipe stubs must be connected to the pipeline. Using silver-brazing techniques, connect each pipe stub to its appropriate gas or vacuum while ensuring that the bottom of the pipe stub is wrapped with a damp cloth. If the DISS demand check-valve is installed prior to brazing, BE CAREFUL not to damage the check-valve by overheating the lower portion of the copper pipe. When the brazing of pipe stubs has been completed, the system can be pressure tested.

STEP 3: STANDING PRESSURE TEST

Perform a standing pressure test on the piping system as per NFPA-99 “Health Care Facilities” or CSA-Z7396.1 “Medical Gas Pipeline Systems”. Inspect all joints for leaks and make certain each gas is piped to a correspondingly labeled gas service.

STEP 4: SENSOR

A. LOCAL (inside the back box)

   i. Locate the gas-specific sensor module to be installed.

   ii. Install the provided demand check-valve with a sensor module to the pipe stub.

   iii. The sensor module contains a gas-specific DISS fitting. Push the sensor module hex-nut and nipple adapter up into the demand check-valve. With a wrench, tighten the nut so that it makes a good seal.

Note: Maximum input pressure not to exceed more than 249 psi for pressure sensors and 30 inHg for vacuum sensors.
Alert-3 sensor operating pressure range:

Mid Pressure  (0 to 99 psi)  -  Oxygen, Medical Air, Nitrous Oxide, Carbon Dioxide
High Pressure  (0 to 249 psi)  -  Nitrogen, Instrument Air
Vacuum  (0 to 30 inHg)  -  Vacuum, WAGD, AGSS

**CAUTION:** To protect from static electricity, ensure to discharge body static before installing the Medical Gas alarm and sensors. Do not ground the shield drain wire at sensor or inside alarm panel back box.

**B: REMOTE** (outside the back box)

- i. Connect a tee (supplied by others) to the pipeline with a 1/4” NPT female connection that will accept the DISS Demand Check Valve.
- ii. Locate the gas-specific sensor module to be installed.
- iii. Thread the DISS Demand Check Valve into the correct gas pipeline.
- iv. The sensor module contains a gas-specific DISS fitting. Push the sensor module hex-nut and nipple adapter into the demand check-valve. With a wrench, tighten the nut so that it makes a good seal.
- v. Marrette in a junction box (supplied by others) the #22 gauge stranded, shielded twisted pair sensor cable to the installation cable (supplied by others).
- vi. In the presence of any electrical, magnetic, radio frequencies, wireless or other interference, cable installation (supplied by others) running from the junction box (supplied by others) to the alarm MUST be placed in a metallic conduit.

**STEP 5: FRAME ASSEMBLY**

- i. Attach the LCD screen to the back box assembly by using star head screws (provided with frame in a plastic bag).
- ii. Attach the frame wire with 2 dome head screws (provided with frame in a plastic bag). This will allow the frame assembly and back box to the fastened securely together.
- iii. Close the LCD screen with a back box by tightening two screws provided with divider plate.
iv. Loosen the screws from the sides frame section (2 screws provided).

v. Cover the frame and tighten the side screws.

**CAUTION:**

1. The microprocessor circuitry on the Alert-4 alarm contains sophisticated integrated semiconductors. **DO NOT TOUCH** any of the components on the board. Static discharge can cause the modules to malfunction or become damaged.

2. Keep the shield drain wires as short as possible and taped to prevent from grounding, so they can not touch the front panel circuit board when front panel is closed.

3. Do not use impact driller or screwdrivers when assembling new frame.

**STEP 6: SYSTEM POWER SUPPLY**

**CAUTION:** TURN OFF POWER SWITCH before changing any modules and/or disconnecting any cables. Failure to do so can cause the fuse to blow, damaging the circuitry.

1. Ensure that the ON/OFF switch is in the OFF position.

2. Through the top left side of the back box, bring in the AC power wires. Knockouts are provided for making conduit connections to the box. All wiring is to be installed according to local and national codes.

3. Connect the AC power to the terminal blocks as shown in the wiring diagram (see Appendix B).

**CAUTION:**

1. Verify that power has been switched off prior to working on the alarm.

2. Risk of electric shock. Disconnect power at the circuit breaker before removing power supply shield.
STEP 7: SENSOR MODULE

A: GAS DISPLAY (on screen location)

The location of gases displayed on screen is dependant upon which sensor channel each individual gas is connected to. The display below indicates which sensor channel corresponds to each location the gas will be displayed on the LCD screen.

B: LOCAL (inside the back box)

i. The sensor module is provided with a 6" - 8" [0.1 m - 0.2 m] #22 gauge stranded, shielded and twisted pair cable. One wire is red (positive) and the other wire is black (negative). Connect the wires to the display module as shown in Appendix D. Take the red wire from the sensor and attach it to terminal “Sensor +” on the display module. Take the black wire from the sensor and attach it to terminal “Sensor -”. The terminal block on the display module is clearly marked for proper connection of the sensor wires.

ii. Repeat the above procedures with the remaining sensor modules.

C: REMOTE (outside the back box)

i. The sensor module is provided with 6" - 8" [0.1m - 0.2m] #22 gauge stranded, shielded and twisted pair cable. Connect the wires to a junction box (supplied by others) located near the sensor as per the wiring diagram (see Appendix E).

ii. Connect a #22 gauge stranded, shielded and twisted pair cable ONLY, up to 2000 ft [609.6 m]. Knockouts are provided throughout the alarm back box.

iii. Connect the red wire from the cable to the terminal on the display module marked “Sensor +”. Connect the black wire to terminal “Sensor -” as shown in the wiring diagram (see Appendix E).

iv. Repeat the above procedures with the remaining sensor modules using the wiring diagram.

NOTE:

- When remote sensors are used, ONLY a #22 gauge stranded, shielded twisted pair cable must be used (BELDEN #8451 or equivalent, supplied by others).
- Do not ground the shield drain wire at sensor or inside the alarm panel back box.
**STEP 8: LCD DISPLAY MODULE**

If the dry contacts for a generic alarm is to be used for remote monitoring, connect the wires to the appropriate terminals: COM (Common), NO ( Normally Open) or NC (Normally Closed), using the diagram in Appendix A.

See Appendix G for contact rating.

Once the sensors are connected and the power has been switched on, use the following steps to setup the LCD Alarm.

**STEP 9: LCD DISPLAY SETUP**

i. Press the Setup (B1), choose the language by pressing (B2) or (B3) and (B4) to select the language.

ii. Volume level: 90, 80, 70, 60 - press CHANGE UP (B2)/DOWN(B3) and (B4) to select the volume level.

iii. LCD brightness: 1-19 press CHANGE UP (B2)/DOWN (B3) and (B4) to select brightness.

iv. Select DST (Daylight Saving Time) (ON/OFF)- press CHANGE UP/DOWN to change.

v. Select the DATE (YEAR/MONTH/DAY) and press CHANGE UP/DOWN to change YEAR, MONTH, DAY.

vi. Select TIME (HR/MIN) and press CHANGE UP/DOWN to change HR/MIN.

*Screen will prompt with detected gas sensor and display the gas type automatically (Example: OXYGEN).

vii. Select unit of measure: Gas (PSI, BAR, KPA) for Vacuum ( in HG, mmHg) press CHANGE UP(B2)/DOWN(B3) to change, press CHANGE UP (B2)/DOWN (B3) to change and (B4) to select.

viii. Select LOW/HIGH alarm set points: LOW ALARM 40/ HIGH ALARM 60, press CHANGE UP (B2)/DOWN (B3) to change and (B4) to select.

** Screen will display line pressure of the selected gas sensor

ix. CURRENT OFF SET: to re-calibrate the pressure reading, press CHANGE UP (B2)/DOWN (B3) and press (B4) to select.

** Repeat steps until all sensors are scanned and configured**

** All gases should be displayed after setup is complete.
If any errors occur, repeat the steps above.

**STEP 10: CLOSING THE FRAME/MODULE ASSEMBLY**

i. Close the frame panel by tightening the screws found on the frame panel to the back box. Ensure that the screws are securely fastened to keep the LCD Alarm closed.

ii. Carefully place the front frame over the frame panel. Screw in the screws that were removed in Step 5, part ii. The alarm shall now be ready for use.

** CAUTION:** To protect from static electricity, ensure to discharge body static before installing the Medical Gas alarm and sensors.
NETWORK SETUP

**CAUTION:** Have the information systems personal set up the network interface. Before making any changes to the network setting notify information systems personals.

EQUIPMENT NEEDED TO SETUP THE NETWORK

- PC with Ethernet connection
- PC with web browser, (Internet Explorer, Google Chrome)
- CAT 5 Ethernet cable (Straight-Through)
- SD Card

SETUP

- Connect Alert-4 Area alarm to an Ethernet switch using a CAT 5 Ethernet cable
- For direct connection to PC, connect the Area alarm to PC using cat-5 Ethernet cable

**NOTE:** It is best to use a switch instead of a hub because the device communicates at 10 Mbps. A switch is better able to support this speed, improves network performance and keeps unnecessary traffic from being routed to the alarm.

- Amico Alert-4 Area alarm will be set to factory default setting, the IP Address, Subnet Mask and Gateway as following:
  
  IP address: 192.168.1.100
  Gateway: 192.168.1.1
  Subnet Mask: 255.255.255.0

- Static IP configuration needs to used to connect to the Hospital Network
- Upon power-up, the device will immediately begin using the static IP configuration
- Verify the green “LINK” LED illuminates at the Ethernet Port
CHANGING IP ADDRESS

Open the SD Card with the files provided by Amico Corporation. Open the file named “network” to change the network IP address.

![Image of network file]

Change the default IP address to the desired IP address, Gateway and Subnet Mask; then save the file by clicking “File” then “Save.”

![Image of network file in Notepad]

When all files are saved in the SD card, insert the SD Card into the SD Card Slot on the LCD Alarm board (Refer to Appendix A).
To load the network configuration file, press and hold the Reset button and the Setup button at the same time for two seconds; then let go of the Reset button while still holding down the Setup button, until the network configuration file are uploaded to the Area Alarm.

### Configuration Guide

**BUILD DATE:** OCT 24 2014  
**BUILD VERSION:** 1515

**GATEWAY:** 192.168.1.1  
**MASK:** 255.255.255.0  
**IP ADDRESS:** 192.168.1.100

If the configured information does not appear on the screen, repeat the steps above. If the problem persists, contact Amico Corporation for further assistance.

- Once the information is visible on the LCD Alarm screen, leave the SD Card in the slot for approximately 1 minute in order for the information to be completely uploaded onto the alarm, and then proceed to remove the card.

- Once the card has been removed, restart the LCD Alarm to ensure that the configured network setting have been saved onto the LCD Alarm.
EMAIL SETUP

**CAUTION:** Have the information system personnel setup the email interface. Notify information systems personnel before making any changes to the network setting.

SMTP server is required for electronic mail service.

The following parameters are needed to activate the email service. Information systems personnel will be able to provide the necessary parameters.

Open the network configuration file on the SD card provided by Amico to input the SMTP server parameters.

```
IP_SMTP= (provide SMTP server IP address)
SMTP_PORT= (provide SMTP port number)
SMTP_USER= (provide SMTP user name)
SMTP_PASSWORD= (provide SMTP password)
EMAIL= (provide recipient email address)
DEVICE_ID= (location where device is installed)
```

To load the Network configuration, press and hold the Reset and Setup buttons at the same time for two seconds. Let go of the Reset button while still holding the Setup button until the new configuration is uploaded to the panel. When parameters are uploaded, the panel will display the new parameters in boot sequence.

**CAUTION:** When wiring source equipment or gas sensors to the panel, make sure that the CAT 5 cable is unplugged or turn off the panel before wiring. If the panel is connected to the mail server it will send email while wiring the terminals to the recipients.

**NOTE:** IP address has to be routable if connecting the alarm panel to the global network.
TEXT SETUP

**CAUTION:** Have the information system personnel setup the email interface. Notify information systems personnel before making any changes to the network setting.

SMTP server is required for electronic text service.

The following parameters are needed to activate the text service. Information systems personnel will be able to provide the necessary parameters.

Open the network configuration file on the SD card provided by Amico to input the SMTP server parameters.

- \texttt{IP\_SMTP=} (provide SMTP server IP address)
- \texttt{SMTP\_PORT=} (provide SMTP port number)
- \texttt{SMTP\_USER=} (provide SMTP user name)
- \texttt{SMTP\_PASSWORD=} (provide SMTP password)
- \texttt{EMAIL=} (provide recipient phone number and SMS gateway address, e.g., phonenumber@txt.bell.ca)
- \texttt{DEVICE\_ID=} (location where device is installed)

To load the Network configuration, press and hold the Reset and Setup buttons at the same time for two seconds. Let go of the Reset button while still holding the Setup button until the new configuration is uploaded to the panel. When parameters are uploaded, the panel will display the new parameters in boot sequence.

**CAUTION:** When wiring source equipment or gas sensors to the panel, make sure that the CAT 5 cable is unplugged or turn off the panel before wiring. If the panel is connected to the mail server it will send email while wiring the terminals to the recipients.
Configuration Guide

CONNECTING TO ALARM

- Start the web browser (Google Chrome, Internet Explorer)
- Enter the device IP address eg: (http://192.168.1.1xx) in the browser’s address bar*.

NOTE: To find Alarm IP Address, press reset button on the back of the Alert-4 Area Alarm.

DIRECT CONNECTION

SIMPLE UNMANAGED NETWORK
Recorded History Log

Must leave the SD card in the SD card slot to record the logs. Panel will automatically log the track of alerts with date and time provided.

1. To view the logs
2. Remove the SD card from the SD card slot.
3. Plug the SD card to a PC card reader and open the SD card.
4. Open the file called “ERROR” by double clicking
5. File will displays history logs.

```
[10/01/2019, 13:26:57] The device started
```

Channel OXYGEN 16 PSI, Status: LOW.
Channel OXYGEN 50 PSI, Status: NORMAL.
Channel OXYGEN 86 PSI, Status: HIGH.
Channel OXYGEN 56 PSI, Status: NORMAL.
Channel OXYGEN 0 PSI, Status: LOW.
Channel OXYGEN 53 PSI, Status: NORMAL.
Channel OXYGEN 68 PSI, Status: HIGH.
Web Audio

When an alert occurs, the PC audio that is monitoring will turn on automatically. To Mute the audio, click the mute button on the web page. If the PC audio doesn't turn on automatically, click mute and re-activate the alert to turn PC Audio ON.

Note: By muting the audio in the web page doesn't not silence audio at the alarm panel. To silence press mute button at the panel.
1. Use the **Notepad** program to enter information for gas locations. Each line can hold up to a **maximum of 16 characters**. (*Notepad* is a generic text editor included with all versions of Microsoft Windows)

2. Two lines may be used per individual gas.

3. The order of the text must go in order of the gas; meaning the first two lines of text shall represent the 1st gas location, the next two lines of text shall represent the 2nd gas location, and so forth.
   - Please refer to the diagram in the Installation Guide under step 7a (see page 9) to determine gas location on the LCD Alarm screen.

4. Once all the text has been entered, save the file onto the SD Card with the file name: **location**.

5. Insert the SD Card into the SD Card Slot on the LCD Alarm board (Refer to Appendix A).

6. While the LCD Alarm is on, to load gas location "location.txt" file, press and hold the Reset and Setup buttons at the same time for two seconds. Let go of the Reset button while still holding the Setup button until the file is uploaded to the panel. When file is uploaded, the panel will display the location under the gas icons.
   - If the gas location text does not appear on the screen, repeat step #6. If the problem persists, contact Amico Corporation for further assistance.

7. Once the text is visible on the LCD Alarm, leave the SD Card in the slot for **approximately 1 minute** in order for the information to be completely uploaded onto the alarm, and then proceed to remove the card.

8. Once the card has been removed, restart the LCD Alarm to ensure that the locations have been saved onto the LCD Alarm.

**NOTE:** Symbols and special characters cannot be displayed.
Amico Mobile Eco System App

Amico is pleased to introduce the latest technology for monitoring the Medical Gas System of a hospital on a mobile phone. This App allows facilities to monitor the pipeline equipment in real time on an iPhone or Android phones.

The App will provide an exact and instant visual representation of the equipment in alarm condition, thereby eliminating the need for nurses to call maintenance personnel in the event of a gas outage. The App will also help maintenance personnel to localize the outage for a quicker resolution.

**NOTE:** If Alert-4 alarm is given with local IP address, the phone must be connected to local WiFi before connecting the app to the Alert-4 alarm. If Alert-4 alarm is given with global IP address, connecting the phone to local WiFi is not needed.

Click and open Amico Mobile Eco System App on the phone

![Home Screen](image1)

![Add a Device Screen](image2)

![Home Screen with Devices Added](image3)
Amico Mobile Eco System App

Display Exact Image of the Alarm

Slide Left to Delete Device

Press and hold the device screen to move the device

Click to add more devices

Click to Open Manuals

Click to Contact Amico

Re-order mode

Device Manual

Operating & Maintenance Manual
Alert-4 LCD Ethernet Area Alarm
Model Numbers

LCD ALARM

A4AR-L-XXXXXXXX

- Remote/Local = R
- Conversion (Retrofit) = C

The “L” Defines the Language:
- English (NFPA) = U
- English (CSA/ISO) = E
- Spanish (NFPA/ISO) = S
- French (CSA/ISO) = F

The “X” Defines the Type of Gas:
- Oxygen = O
- Medical Air = A
- MedVac = V
- Nitrous Oxide = 2
- Nitrogen = N
- Carbon Dioxide = C
- WAGD (NFPA) = W
- AGSS (CSA/ISO) = E
- Instrument Air = I

ALERT-3 SENSOR MODULE

A3P-SENS-L-GAS

The “L” Defines the Language:
- English (NFPA) = U
- English (CSA/ISO) = E
- French (CSA/ISO) = F
- Spanish (NFPA) = S

“GAS” Defines the Type of Gas:
- Oxygen = OXY
- Medical Air = AIR
- MedVac = VAC
- Nitrous Oxide = N2O
- Nitrogen = NIT
- Carbon Dioxide = CO2
- WAGD (NFPA) = WAG
- AGSS (CSA/ISO) = AGS
- Instrument Air = IAR

NOTE: Each Alert-3 Sensor comes with an A2P-PIPE
## SENSORS

<table>
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<th>Model Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A3P-SENS-E-N2O</td>
<td>Sensor Module ISO-N2O Eng. Alert-3</td>
</tr>
<tr>
<td>A3P-SENS-U-AIR</td>
<td>Sensor Module USA-AIR Eng. Alert-3</td>
</tr>
<tr>
<td>A3P-SENS-U-OXY</td>
<td>Sensor Module USA-OXY Eng. Alert-3</td>
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<tr>
<td>A3P-SENS-U-VAC</td>
<td>Sensor Module USA-VAC Eng. Alert-3</td>
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<tr>
<td>A3P-SENS-U-WAG</td>
<td>Sensor Module USA-WAG Eng. Alert-3</td>
</tr>
<tr>
<td>A3P-SENS-U-IAR</td>
<td>Sensor Module USA-IAR Eng. Alert-3</td>
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## ACCESSORIES/MISC.

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<th>Description</th>
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<td>A2P-POWER-V2</td>
<td>Power Supply Module Alert-2</td>
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<tr>
<td>A2P-BOXASS-3LCD</td>
<td>Alarm Back Box Assembly 3-Station Alert-2</td>
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<tr>
<td>A2X-BOX-ASY-3LCD</td>
<td>Alert-3 LCD Alarm Box without Power Supply</td>
</tr>
<tr>
<td>A4A-AREA-FRAME</td>
<td>LCD Alarm Frame Assembly for Alert-4 Area</td>
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<tr>
<td>A2P-PIPE-AIR</td>
<td>Pipe, Demand Check, Gas Specific Label AIR</td>
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<td>A2P-PIPE-OXY</td>
<td>Pipe, Demand Check, Gas Specific Label OCY</td>
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<td>Pipe, Demand Check, Gas Specific Label NIT</td>
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<td>A2P-PIPE-CO2</td>
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<td>Pipe, Demand Check, Gas Specific Label WAG</td>
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<td>A2P-PIPE-IAR</td>
<td>Pipe, Demand Check, Gas Specific Label IAR</td>
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<td>A2P-PIPE</td>
<td>Pressure Module Pipe Assembly (Alert-2)</td>
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<tr>
<td>A3X-P-SW-PVCAP</td>
<td>LCD PVA Switch Cap-Gray</td>
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<tr>
<td>A3X-LCD-LABEL</td>
<td>LCD Alarm Front Label</td>
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<td>A3X-LCD-LABEL-MUTE</td>
<td>Alert-3 Mute Label</td>
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## DEMAND CHECK VALVES

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<td>S-DIS-DEMC-AIR</td>
<td>DISS Demand Check Valve 1/4&quot; MNPT - AIR</td>
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<tr>
<td>S-DIS-DEMC-CO2</td>
<td>DISS Demand Check Valve 1/4&quot; MNPT - CO2</td>
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<td>S-DIS-DEMC-NIT</td>
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<td>DISS Demand Check Valve 1/4&quot; MNPT - N2O</td>
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<tr>
<td>S-DIS-DEMC-EVA</td>
<td>DISS Demand Check Valve 1/4&quot; MNPT - EVA</td>
</tr>
<tr>
<td>S-DIS-DEMC-OXY</td>
<td>DISS Demand Check Valve 1/4&quot; MNPT - OXY</td>
</tr>
<tr>
<td>S-DIS-DEMC-VAC</td>
<td>DISS Demand Check Valve 1/4&quot; MNPT - VAC</td>
</tr>
<tr>
<td>S-DIS-KIT-OXY</td>
<td>DISS Demand Check, Nut and Nipple - OXY</td>
</tr>
<tr>
<td>S-DIS-KIT-AIR</td>
<td>DISS Demand Check, Nut and Nipple - AIR</td>
</tr>
<tr>
<td>S-DIS-KIT-VAC</td>
<td>DISS Demand Check, Nut and Nipple - VAC</td>
</tr>
<tr>
<td>S-DIS-KIT-N2O</td>
<td>DISS Demand Check, Nut and Nipple - N2O</td>
</tr>
<tr>
<td>S-DIS-KIT-NIT</td>
<td>DISS Demand Check, Nut and Nipple - NIT</td>
</tr>
<tr>
<td>S-DIS-KIT-WAG</td>
<td>DISS Demand Check, Nut and Nipple - WAG</td>
</tr>
<tr>
<td>S-DIS-KIT-AGS</td>
<td>DISS Demand Check, Nut and Nipple - AGS</td>
</tr>
<tr>
<td>S-DIS-KIT-IAR</td>
<td>DISS Demand Check, Nut and Nipple - IAR</td>
</tr>
<tr>
<td>S-DIS-KIT-CO2</td>
<td>DISS Demand Check, Nut and Nipple - CO2</td>
</tr>
</tbody>
</table>
Dimensions

**LCD ALARM**

Front View

Side View

**NOTE:** DISS demand check valves by 1/4 [6] NPT, supplied with each sensor

Top View

Bottom View

**NOTE:** LCD Alarm itself is 8 lbs. Each sensor is 1 lb.

**ALERT-4 SENSOR**

9” - 8” [0.1m - 0.2 m] #22 gauge stranded, shielded and twisted pair cable supplied

1/2”-14 NPSM [13]
## Troubleshooting

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Cause</th>
<th>Corrective Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>An error or &quot;LOW ALARM&quot; LCD screen</td>
<td>The Microprocessor detected a fault and has shut down</td>
<td>Turn power switch to OFF position. Wait for at least 5 seconds before turning ON the power. The program will reset itself.</td>
</tr>
<tr>
<td>Faulty wire connection between the sensor and LCD module</td>
<td></td>
<td>Check wiring diagram in Appendix D and Appendix E</td>
</tr>
</tbody>
</table>
| No power on the alarm | AC power not available | a. Ensure that the ON/OFF switch on the power supply module is turned ON (see Appendix B).  
b. AC wiring not connected.  
c. Check the building electrical breaker to ensure that the power is ON.  
d. Check the voltage at the terminal block above the transformer. Ensure that 115 VAC to 220 VAC is being supplied. |
| Fuse is blown | | Check the fuse. The fuse is located on the upper-right corner of the system power supply. Replace the fuse if it is defective (see Appendix B and Appendix G). |
| DC power plug not connected to the LCD module | | a. Ensure that the DC power plug is firmly in its socket on the LCD module.  
b. Replace the System Power Supply unit if all the above steps fail to resolve the problem. |
| Power light is ON, however there is no display on LCD screen | Power failure on screen | a. Remove all transducers and reset power by switching the power supply OFF, then ON.  
b. Replace the LCD module. |
| No audible alarm | DC power cable is disconnected or loose, check ribbon cable | a. Ensure that the DC power cable from the system power supply is firmly connected to the LCD module.  
b. Replace LCD module. |
| Audible signal will not silence | Faulty display module | Disconnect the ribbon cable from the back of the faulty display module and replace the LCD module. |
| Connection of the DC power cable from system power supply to LCD module is loose | | Disconnect the DC power cable from the LCD module and then reconnect. If audible alarm still persists, replace the System Power Supply unit. |
| Faulty push button | | Replace the LCD module. |
| Gas reading incorrect | Loose connection of DISS fittings | Ensure that the sensor module is properly connected to the DISS demand check-valve |
| Sensor module is not properly wired to the display module | | Ensure that the sensor module is properly wired to the LCD module by using wiring diagram in Appendix D or Appendix E |
| Requires calibration | | Re-calibrate pressure reading (see page 11, Step 9 - iv, "CURRENT OFF SET") |
| Defective sensor | | Replace the sensor module |
| Defective LCD display | | Replace the LCD module |
## Troubleshooting

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Cause</th>
<th>Corrective Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display shows “NO SENSORS”</td>
<td>No sensor(s) are connected to the LCD module</td>
<td>Make sure sensor module(s) are connected to LCD module (see Appendix D and Appendix E)</td>
</tr>
<tr>
<td>Program not set up</td>
<td></td>
<td>Press setup and select button to program all connected sensors (see page 11, Step 9)</td>
</tr>
<tr>
<td>Faulty sensors</td>
<td></td>
<td>Replace sensors</td>
</tr>
<tr>
<td>Network connectivity lost</td>
<td>Wrong network cable used</td>
<td>a. Use Cat 5 or 6 (Straight-Through)</td>
</tr>
<tr>
<td></td>
<td>Dynamic IP address</td>
<td>b. Static IP address must be used to configure the network switch to the correct port number</td>
</tr>
<tr>
<td></td>
<td>Wrong port number assigned to the network switch</td>
<td>c. To test connectivity, assign static IP address to a PC as same subnet as panel. Connect the PC to the panel. Open a shell prompt (Microsoft Windows Command Prompt or MS-DOS prompt) on the start menu, type “ping” followed by a space and then the IP address of the panel then hit Enter. When panel is responded with a ping, connection is successful.</td>
</tr>
<tr>
<td>Email or Text notification not send</td>
<td>SMTP email server parameters not assigned, authentication errors</td>
<td>a. Contact Hospital IT administrator for SMTP parameters.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>b. Must use plain text authentication.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>c. TLS/SSL authentication not supported.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>d. Configure the exchange server to accept plain text authentication from the panel</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Check the SMTP server logs for reported authentication errors from the panel</strong></td>
</tr>
<tr>
<td>Alarm Logs not recorded</td>
<td>Wrong memory card is used. Must use SD card between 2GB – 32GB</td>
<td>a. Must use SD card between 2GB – 32GB</td>
</tr>
<tr>
<td></td>
<td>SD card formatted incorrectly</td>
<td>b. SD card must be formatted to FAT32 system.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Must leave an SD card to the SD card slot to record alarm logs</strong> <strong>Set the DATE &amp; TIME appropriately</strong></td>
</tr>
</tbody>
</table>

### FACTORY DEFAULT SETTING GAS

<table>
<thead>
<tr>
<th>Gas</th>
<th>Hi</th>
<th>Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid Pressure</td>
<td>60 psi</td>
<td>40 psi</td>
</tr>
<tr>
<td>Vacuum</td>
<td>32 inHg</td>
<td>12 inHg</td>
</tr>
<tr>
<td>High Pressure</td>
<td>195 psi</td>
<td>140 psi</td>
</tr>
</tbody>
</table>
Appendix A

WIRING DIAGRAM: LCD BOARD

CAUTION:
1. Keep the shield drain wires as short as possible and taped to prevent from grounding, so they cannot touch the front panel circuit board when front panel is closed.

2. To protect from static electricity, ensure to discharge body static before installing the Medical Gas Alarm and Sensors.
Appendix B

WIRING DIAGRAM: AUTO-SWITCH POWER SUPPLY

CAUTION:
1. Verify that power has been switched off prior to working on the alarm
2. Risk of electric shock, disconnect power at the circuit breaker before removing power supply shield
WIRING DIAGRAM: LCD DISPLAY MODULE - ALARM BUZZER

Optional: To Amico Manifold Universal Remote Buzzer

Optional: Abnormal Alarm

To Amico: Master Module or Building Management System

NOTE:
Relays on the annunciator are fail safe for Version 3.1 or newer. Relays are not fail safe for Versions 3.0 or older.
Appendix D

**WIRING DIAGRAM: LCD DISPLAY MODULE - LOCAL SENSOR**

**CAUTION:**
To protect from static electricity, ensure to discharge body static before installing the Medical Gas Alarm and sensors.

**NOTE:**
Do not ground the shield drain wire at sensor or inside alarm panel back box.
Appendix E

WIRING DIAGRAM: LCD DISPLAY MODULE - REMOTE SENSOR

- Oxygen Pipeline
- DISS
- Sensor Module
- Remote location alarm
- Junction Box

**Note:** For multiple sensors, a multi-conductor #22 gauge stranded, shielded twisted pair cable ONLY must be used, up to a distance of 2000 ft [609.6 m]. In the presence of any electrical, magnetic radio, wireless or other interference, the installation cable MUST be placed in a metallic conduit.

- Black
- Red
- Orange (15 VDC)
- Blue (5 VDC)
- Black (Ground)

**NOTE:**

For multiple sensors, a multi-conductor #22 Gauge stranded, shielded and twisted pair cable ONLY must be used.
## TECHNICAL SPECIFICATIONS

Supply Voltage: 115 - 220 VAC, 50 - 60 Hz  
Current Draw: 1 Amp. Max.  
Fuse (1/4 * 1-1/4): Fast Blow 1 Amp.

Cable requirement:

**LCD Alarm to Remote Sensor:**

**Important:**

**Cable:** ONLY a #22 gauge stranded, shielded twisted pair cable must be used. (Belden # 8451 or equivalent.) In the presence of any electrical, magnetic, radio frequencies, wireless or other interference, cable installation MUST be placed in metallic conduit.

**Distance:** Maximum 2000 ft [609.6 m]

**Signal:**
- 30 VDC: 1.0 Amps.
- 60 VDC: 0.3 Amps.
- 125 VAC: 0.5 Amps.

**LCD Alarm to Master:**

**Distance:** Maximum 10,000 ft [3,000 m]

**Cable:** Minimum #22 gauge stranded wire

**Signal:**
- 5 VDC: < 5 µA

**LCD Generic Alarm:**

**Output:** Dry Contacts NC, open on Alarm

**Rating:**
- 30 VDC: 1.0 Amps.
- 60 VDC: 0.3 Amps.
- 125 VAC: 0.5 Amps.
WIRING

1. General Requirements

1. All wiring shall be protected from physical damage by raceways, cable trays or conduit in accordance with NFPA 70, National Electric Code or the Canadian Electrical Code.

2. All alarms are to be powered from the life safety branch of the emergency power system as required by applicable standards.

3. Alarm panel wires should be directly connected to switches or sensor as required by applicable standards.

4. All wire runs should be made with color coded wire. Record color, signal and source of signal for each wire lead to aid in connection of alarm finish components.

5. The alarm panel and remote sensors should not be installed near radio transmitters, electrical motors, electrical control room, switch gear, CT scanners, MRI machines or high voltage lines

6. In the presence of any electrical, magnetic, radio frequencies, wireless or other interference, cable installation MUST be placed in metallic conduits.

7. No solid wire should be used for connecting sensors or master alarms to source equipment

8. To protect from static electricity, ensure to discharge body static before installing the Medical Gas Alarm and Sensors

9. Do not ground the shield drain wire at sensor or inside alarm panel back box

2. Low Voltage wire type, size and other requirements

All low voltage wiring must meet the following criteria:

1. #22 AWG stranded, shielded twisted pair wire ONLY must be used, rated for 300V and 60°C (140°F) minimum. (Belden 8451 or equivalent)

2. Marrette the sensor cable in a junction box (supplied by others) to the installation cable (supplied by others) to protect from physical damage, radio frequencies and EMI

3. For multiple sensors, a multi-conductor #22 gauge stranded, shielded and twisted pair cable ONLY must be used

The following rules along with references to this manual’s schematics clarify wiring requirements. Two conductor cables (must be #22 gauge stranded, shielded and twisted pair cable type) are required for each Gas Sensor module to the Gas Input board.