Operating & Maintenance Manual
Alert-4 LCD Ethernet Area Alarm

ALL CONDITIONS ARE NORMAL

MEDICAL AIR	WAGD	NITROUS OXIDE	CARBON DIOXIDE
50 PSI	**25** inHg	**50** PSI	**50** PSI
NORMAL	NORMAL	NORMAL	NORMAL
1ST FLOOR	MAIN GAS ROOM BUILDING 1	BUILDING 2 ELEVATOR	BUILDING 3

OXYGEN	NITROGEN	INSTRUMENT AIR	MEDICAL VACUUM
50 PSI	**150** PSI	**156** PSI	**23** inHg
NORMAL	NORMAL	NORMAL	NORMAL
BUILDING 4 LOBBY	BUILDING 5 STAIRCASE	BUILDING 6 ALARM AREA	BUILDING 7 MANIFOLD AREA

Amico

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User Responsibility

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: The intervals shown are recommended. Maintenance schedules should be more frequent for higher use areas.

⚠️ **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.

These is one "MUTE" (🔇)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 the test the panel. When an audible alarm is triggered, press the mute button to silence the alarm. To test the panel or to view the high and low set points 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 2,000 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 the Alarm

Shipment Details

When you receive an Alert-4 LCD series alarm from Amico Corporation, the package will consist of three main sections: the Alarm Back Box, Sensors, and the Frame/Module Assembly.

The Alarm Back Box

The Alarm Back Box contains the auto-switchable System Power Supply with an ON/OFF switch, a built-in fuse, and terminal blocks (115 to 220 VAC - 50 to 60 Hz). The back box also incorporates the pipe stubs for applications that require locally (in box) mounted sensors.

The Frame/Module Assembly

The Frame/Module Assembly consists of the frame and the LCD module. The hinged frame is designed to swing down from the back box to facilitate installation and servicing of the alarm. This design will reduce installation time and eliminate the risk of improper installation since all the modules are connected and tested at the factory.

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 and alarm that has occurred, to test the panel and to view the high and low set points press and hold the mute button for 20 seconds.
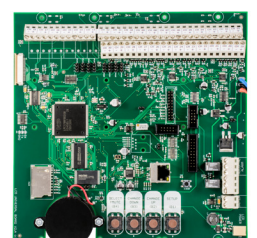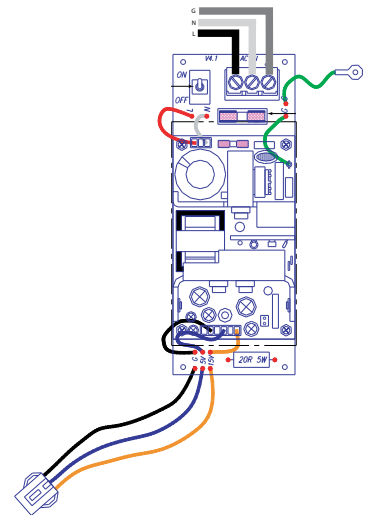
Description of Modules

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 point and to test the alarm panel. If a signal is not present after performing the test, the display will indicate missing signal.

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.

Installation Guide

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.
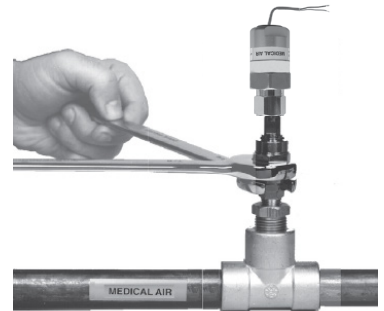
Step 5: Frame Assembly

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.
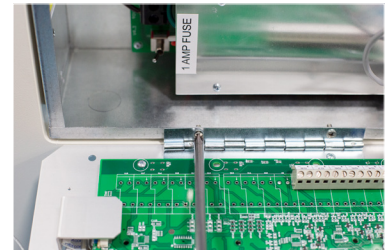
Installation Guide

    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.

Installation Guide
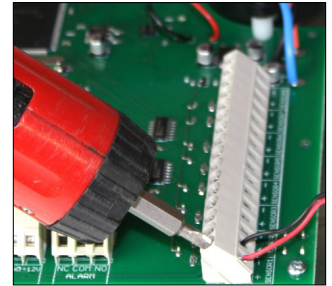
Step 7: Sensor Module

A. Gas Display (On Screen Location)

The location of gases displayed on screen is dependent 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.

| 1 Gas | 2 Gases | 3 Gases | 4 Gases | 5 Gases | 6 Gases | 7 Gases | 8 Gases |
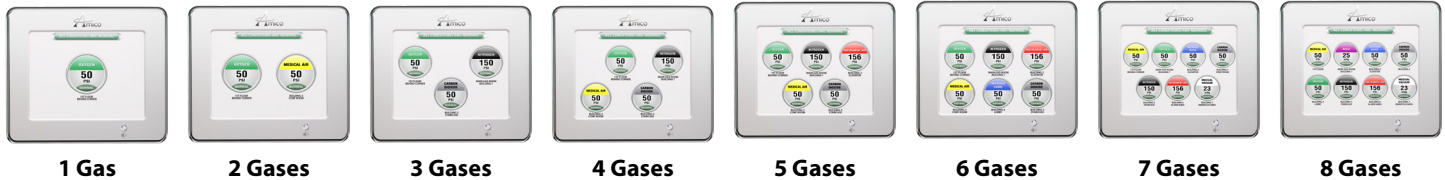
B. Local (Inside The Back Box)

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" [0.1 m - 0.2 m] #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 2,000 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.

Installation Guide

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.
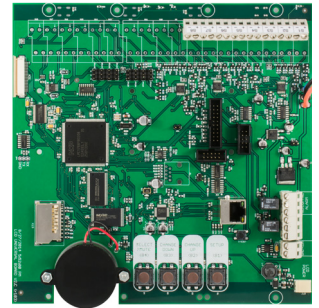
Step 9: LCD Display Setup

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.
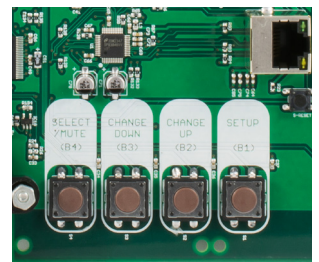
Step 10: Closing The Frame/Module Assembly

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.

Configuration Guide

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).
- Cat5 Ethernet cable (Straight-through).
- SD Card.

Setup

- Connect Alert-4 Area alarm to an Ethernet switch using a Cat5 Ethernet cable.
- For direct connection to PC, connect the Area alarm to PC using Cat5 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 follows:

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.

Configuration Guide

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.
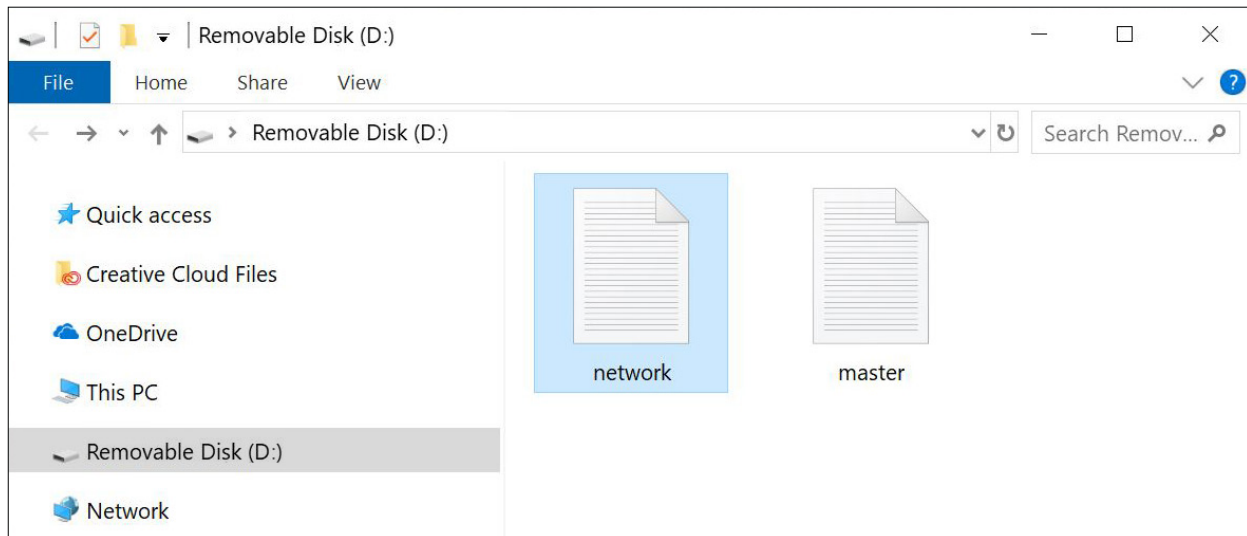
Change the default IP Address to the desired IP Address, Gateway, and Subnet Mask, then save the file by clicking "File" then "Save."

When all files are saved in the SD Card, insert the SD Card into the SD Card slot on the LCD Alarm board **(see Appendix A)**.

Configuration Guide

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 files are uploaded to the Area Alarm.

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 SD Card has been removed, restart the LCD Alarm to ensure that the configured network setting have been saved onto the LCD Alarm.

Configuration Guide

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 in 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 Cat5 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.

Configuration Guide

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.

> **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 phone number and SMS gateway address, e.g., phonenumber@txt.bell.ca)**
> **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 Cat5 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

Switch
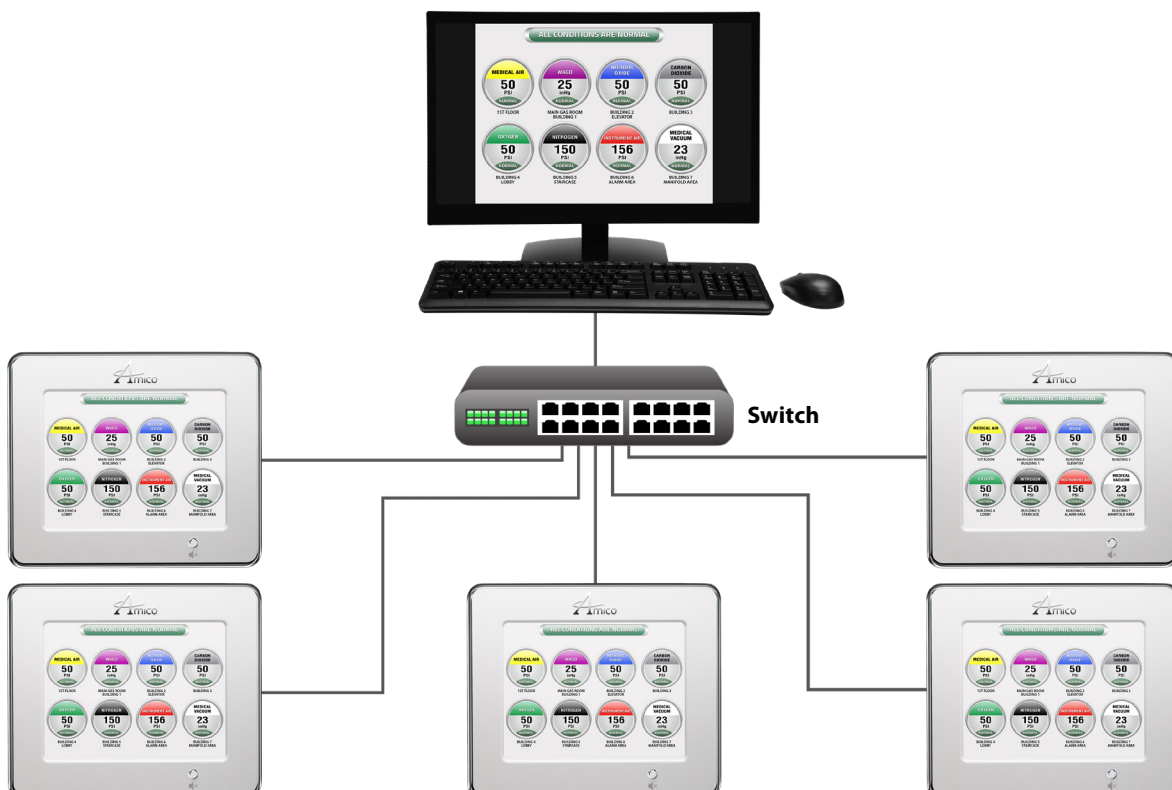
Configuration Guide

Complex Managed Network
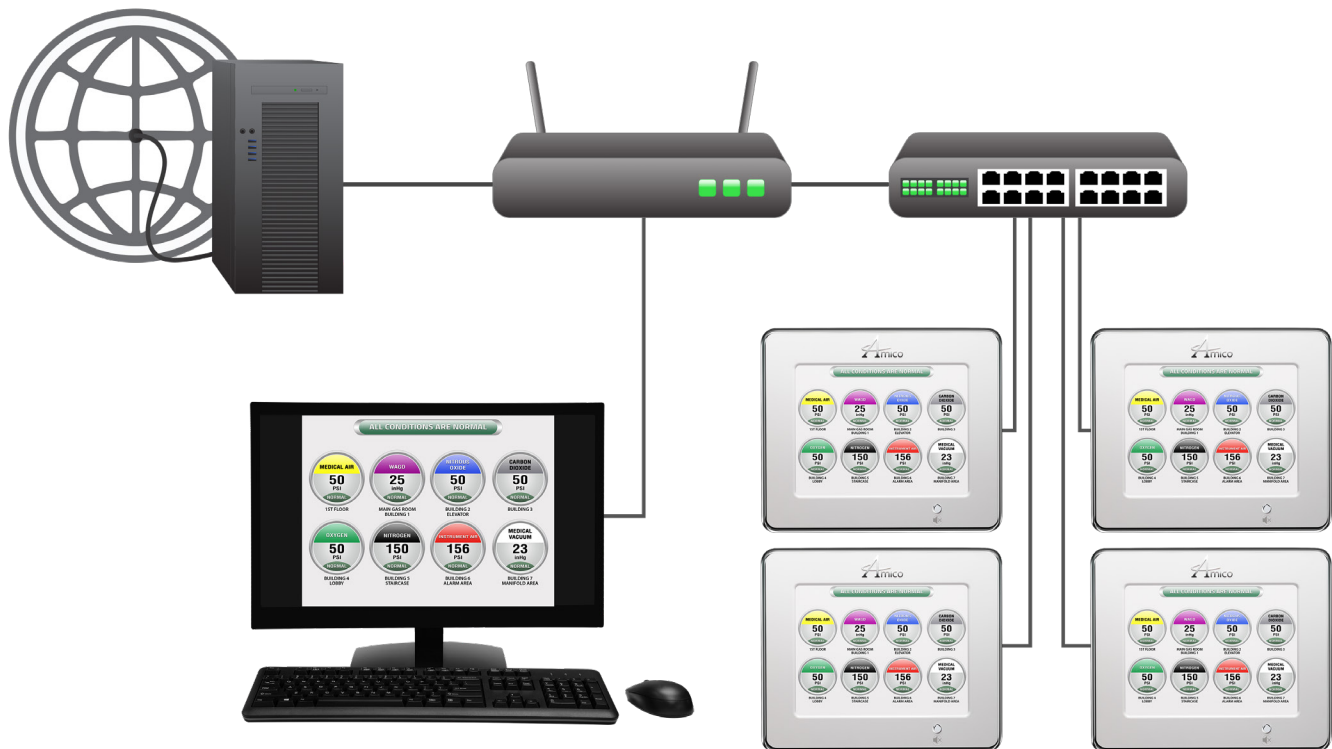
Recorded History Log

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
[10/01/2019, 13:28:13] Alarm condition TRIGGERED        Channel OXYGEN 16 PSI, Status: LOW.
[10/01/2019, 13:33:14] Alarm condition CLEARED          Channel OXYGEN 50 PSI, Status: NORMAL.
[10/01/2019, 13:33:15] Alarm condition TRIGGERED        Channel OXYGEN 86 PSI, Status: HIGH.
[10/01/2019, 13:33:17] Alarm condition CLEARED          Channel OXYGEN 56 PSI, Status: NORMAL.
[10/01/2019, 13:33:57] Alarm condition TRIGGERED        Channel OXYGEN 0 PSI, Status: LOW.
[10/01/2019, 13:34:12] Alarm condition CLEARED          Channel OXYGEN 53 PSI, Status: NORMAL.
[10/01/2019, 13:34:13] Alarm condition TRIGGERED        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.
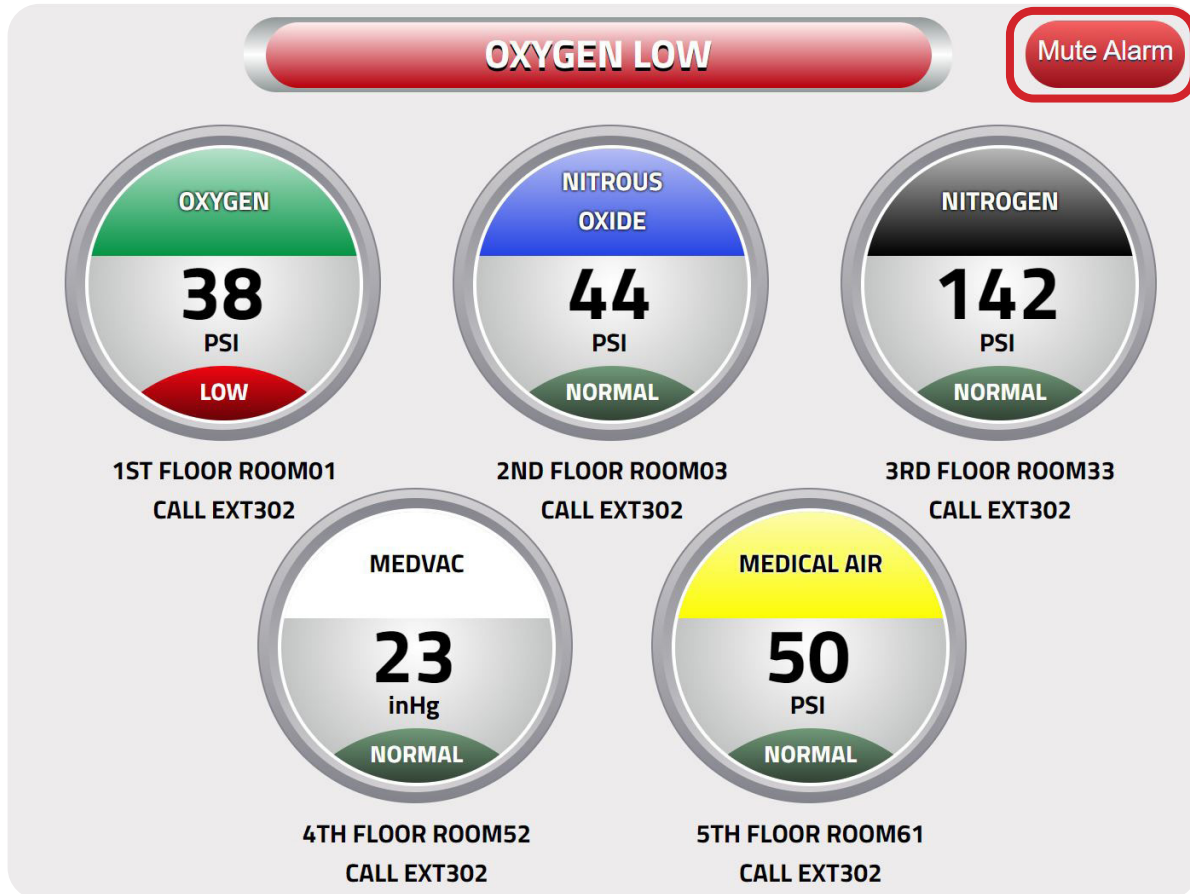
NOTE: Muting the audio in the web page will not silence audio at the alarm panel. To silence the audio at the alarm panel press the mute button at the panel.

Programming Gas Locations

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 **(see 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.
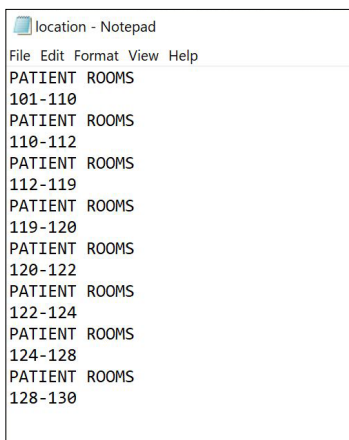
Notepad File
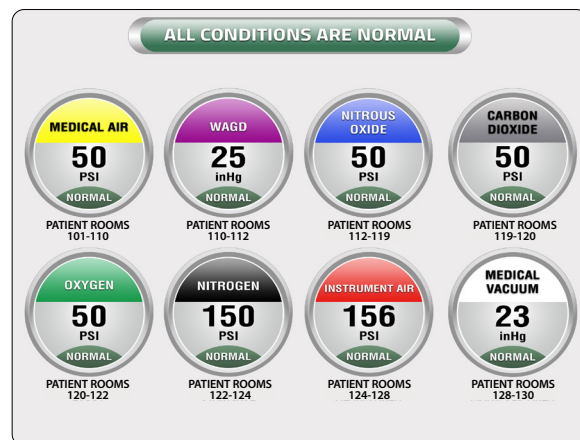
Updated Display on LCD Alarm

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.

AMICO MOBILE ECO SYSTEM APP
Download Now!

Download on the **App Store**

GET IT ON **Google Play**

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

Click to Add a Device

Add a Device

Add a Device Screen

Type in Device Name and Location

Type in Device IP Address

Click to Select Product Category

Click to Save
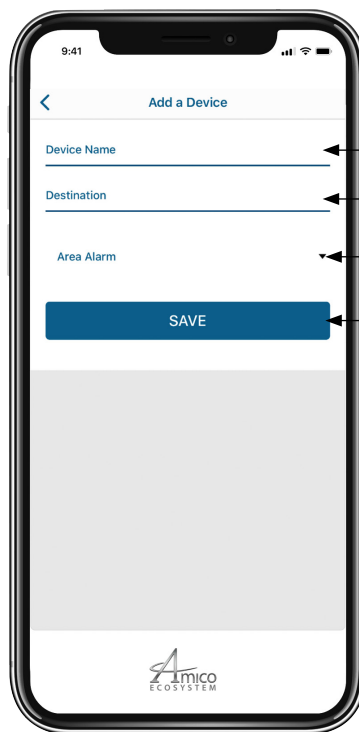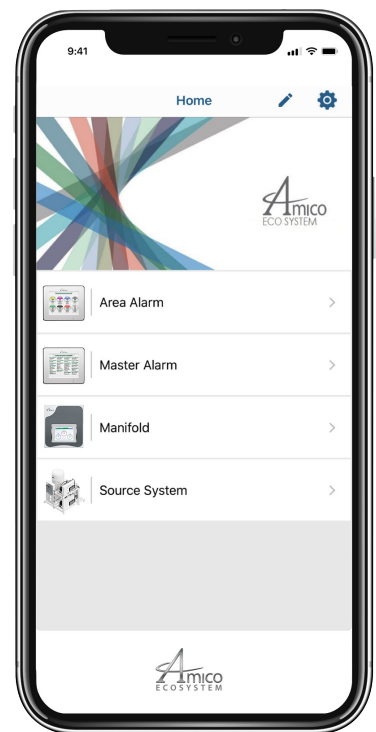
Home Screen with Devices Added

Area Alarm

Master Alarm

Manifold

Source System

Amico Mobile Eco System App
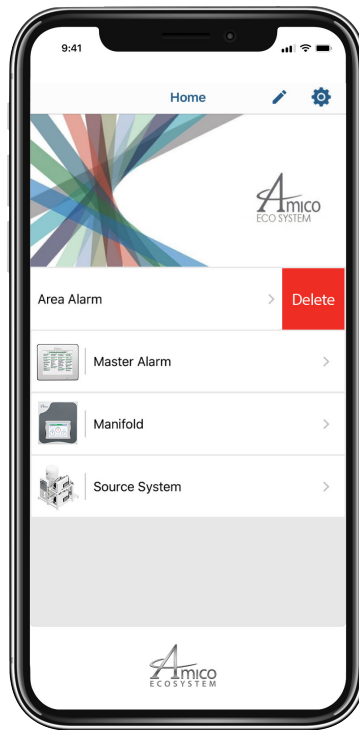
Display Exact Image of the Alarm

Slide Left to
Delete Device

Click to Open
Manuals

Click to Contact
Amico

Re-order mode

Click to add
more devices
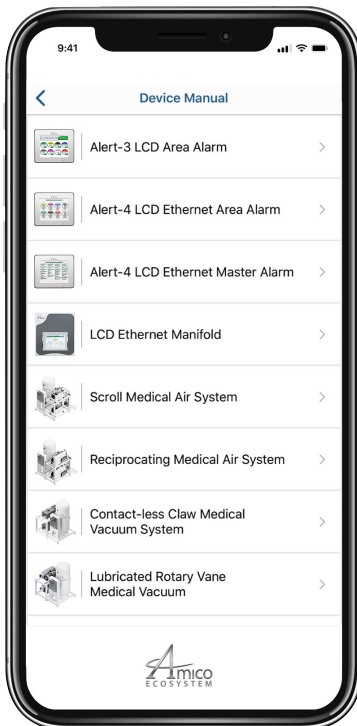
Device Manual
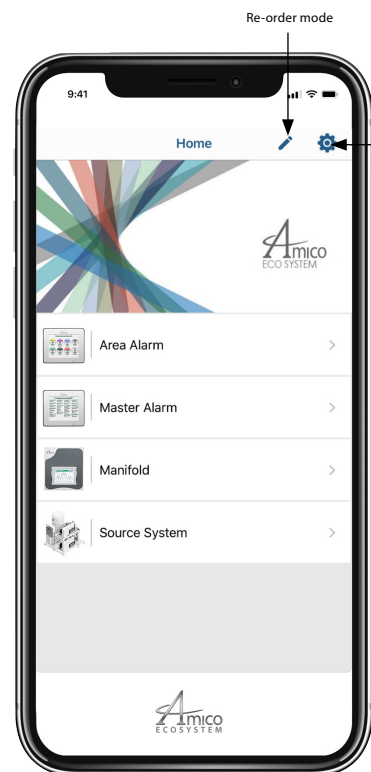
**Press and hold the device screen to
move the device**

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.

Spare Part Numbers

Sensors

Model Number	Description
A3P-SENS-E-AIR	Sensor Module ISO-AIR Eng. Alert-3
A3P-SENS-E-CO2	Sensor Module ISO-CO2 Eng. Alert-3
A3P-SENS-E-AGS	Sensor Module ISO-AGS Eng. Alert-3
A3P-SENS-E-N2O	Sensor Module ISO-N2O Eng. Alert-3
A3P-SENS-E-NIT	Sensor Module ISO-NIT Eng. Alert-3
A3P-SENS-E-OXY	Sensor Module ISO-OXY Eng. Alert-3
A3P-SENS-E-VAC	Sensor Module ISO-VAC Eng. Alert-3
A3P-SENS-E-IAR	Sensor Module ISO-IAR Eng. Alert-3
A3P-SENS-U-AIR	Sensor Module USA-AIR Eng. Alert-3
A3P-SENS-U-OXY	Sensor Module USA-OXY Eng. Alert-3
A3P-SENS-U-VAC	Sensor Module USA-VAC Eng. Alert-3
A3P-SENS-U-WAG	Sensor Module USA-WAG Eng. Alert-3
A3P-SENS-U-IAR	Sensor Module USA-IAR Eng. Alert-3

Accessories/Miscellaneous

Model Number	Description
A2P-POWER-V2	Power Supply Module Alert-2
A2P-BOXASS-3LCD	Alarm Back Box Assembly 3-station Alert-2
A2X-BOX-ASY-3LCD	Alert-3 LCD Alarm Box without Power Supply
A4A-AREA-FRAME	LCD Alarm Frame Assembly for Alert-4 Area
A2P-PIPE-AIR	Pipe, Demand Check, Gas Specific Label AIR
A2P-PIPE-OXY	Pipe, Demand Check, Gas Specific Label OCY
A2P-PIPE-VAC	Pipe, Demand Check,Gas Specific Label VAC
A2P-PIPE-NIT	Pipe, Demand Check,Gas Specific Label NIT
A2P-PIPE-CO2	Pipe, Demand Check,Gas Specific Label CO2
A2P-PIPE-EVA	Pipe, Demand Check,Gas Specific Label WAG
A2P-PIPE-IAR	Pipe, Demand Check,Gas Specific Label IAR
A2P-PIPE	Pressure Module Pipe Assembly (Alert-2)
A3X-P-SW-PVCAP	LCD PVA Switch Cap-gray
A3X-LCD-LABEL	LCD Alarm Front Label
A3X-LCD-LABEL-MUTE	Alert-3 Mute Label

Spare Part Numbers

Demand Check Valves

Model Number	Description
S-DIS-DEMC-AIR	DISS Demand Check Valve ¼" MNPT - AIR
S-DIS-DEMC-CO2	DISS Demand Check Valve ¼" MNPT - CO2
S-DIS-DEMC-NIT	DISS Demand Check Valve ¼" MNPT - NIT
S-DIS-DEMC-N2O	DISS Demand Check Valve ¼" MNPT - N2O
S-DIS-DEMC-EVA	DISS Demand Check Valve ¼" MNPT - EVA
S-DIS-DEMC-OXY	DISS Demand Check Valve ¼" MNPT - OXY
S-DIS-DEMC-VAC	DISS Demand Check Valve ¼" MNPT - VAC
S-DIS-KIT-OXY	DISS Demand Check, Nut and Nipple - OXY
S-DIS-KIT-AIR	DISS Demand Check, Nut and Nipple - AIR
S-DIS-KIT-VAC	DISS Demand Check, Nut and Nipple - VAC
S-DIS-KIT-N2O	DISS Demand Check, Nut and Nipple - N2O
S-DIS-KIT-NIT	DISS Demand Check, Nut and Nipple - NIT
S-DIS-KIT-WAG	DISS Demand Check, Nut and Nipple- WAG
S-DIS-KIT-AGS	DISS Demand Check, Nut and Nipple - AGS
S-DIS-KIT-IAR	DISS Demand Check, Nut and Nipple - IAR
S-DIS-KIT-CO2	DISS Demand Check, Nut and Nipple - CO2

Dimensions

LCD Alarm

Front View

Side View

Inch
[mm]

15/16 [24]
1 5/16 [33]
1 3/16 [30]
1 5/16 [33]
1 3/16 [30]
1 5/16 [33]
1 3/16 [30]

6 1/8 [156]

8 1/8 [207]

9 3/4 [248]

11 1/2 [292]

11 7/8 [302]

1 3/4 [44]

7 1/8 [182]

1 1/4 [32]

4 3/4 [121]

9 [229]

3 7/8 [100]

7 1/2 [191]

6 3/8 [162]

Brazing Filler Metal AWS Spec. BAg-7

1/2-14NPSM THD.

1/4 [6] NPT

Brass 1 [25] HEX
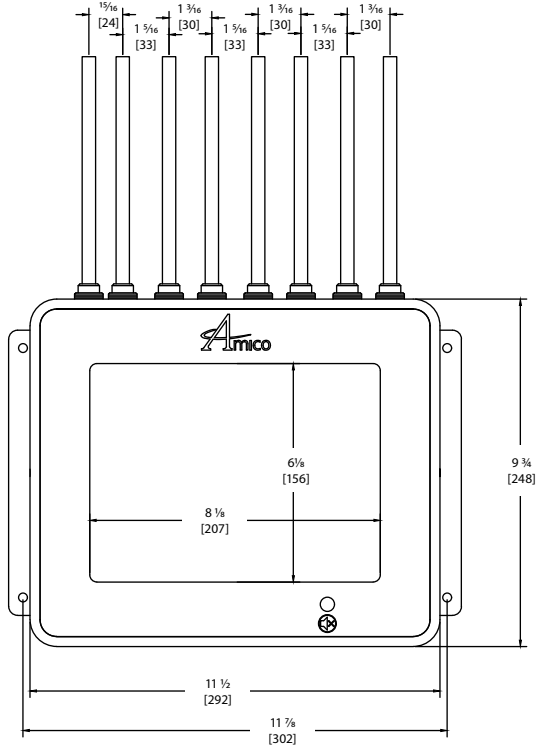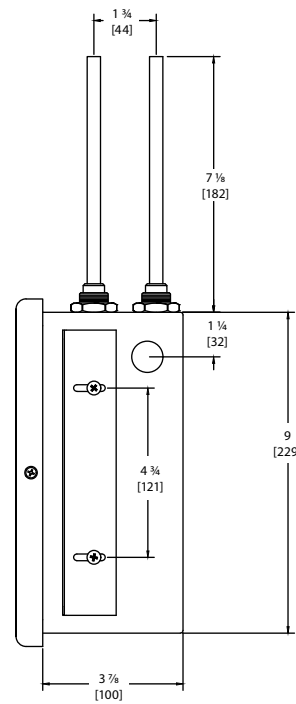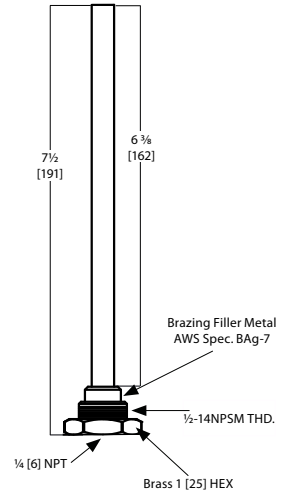
NOTE: DISS demand check valves by 1/4 [6] NPT, supplied with each sensor.

Top View

Bottom View

7/8 [21]

7 1/2 [191]

2 1/2 [64]

2 1/2 [64]

1 [25]

3/4 [19]

3/4 [19]

1 3/4 [44]

2 1/4 [57]

2 1/2 [64]

2 1/2 [64]

3/4 [19]

1 3/8 [36]

1 1/4 [32]

10 3/4 [272]
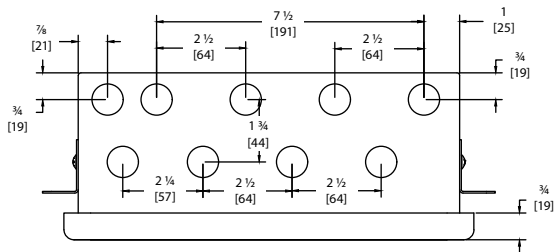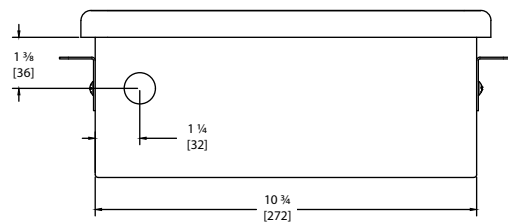
NOTE: LCD Alarm itself is 8 lbs. Each sensor is 1 lb.

Alert-4 Sensor

1 7/8 [48]

6" - 8" [0.1m - 0.2 m] #22 gauge stranded, shielded and twisted pair cable supplied

1/2"-14 NPSM [13]

Wrench Flats
1 [25]

DISS Connector

(Approximate, can vary)

1/2" Conduit Connection

Troubleshooting

Symptom	Cause	Corrective Action
An error or "LOW ALARM" LCD screen.	The microprocessor detected a fault and has shut down.	Turn power switch to OFF position. Wait for at least 5 seconds before turning ON the power. The program will reset itself.
	Faulty wire connection between the sensor and LCD module.	Check wiring diagram in Appendix D and Appendix E.
No power on the alarm.	AC power not available.	1. Ensure that the ON/OFF switch on the power supply module is turned ON **(see Appendix B)**. 2. AC wiring not connected. 3. Check the building electrical breaker to ensure that the power is ON. 4. Check the voltage at the terminal block above the transformer. Ensure that 115 VAC - 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

Symptom	Cause	Corrective Action
Display shows "NO SENSORS".	No sensor(s) are connected to the LCD module.	Make sure sensor module(s) are connected to LCD module **(see Appendix D and Appendix E)**.
	Program not set up.	Press setup and select button to program all connected sensors **(see page 11, Step 9)**.
	Faulty sensors.	Replace sensors.
Network connectivity lost.	Wrong network cable used.	a. Use Cat5 or 6 (Straight-through).
	Dynamic IP Address.	b. Static IP Address must be used to configure the network switch to the correct port number.
	Wrong port number assigned to the network switch.	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.
Email or Text notification not send.	SMTP email server parameters not assigned, authentication errors.	a. Contact Hospital IT administrator for SMTP parameters. b. Must use plain text authentication. c. TLS/SSL authentication not supported. d. Configure the exchange server to accept plain text authentication from the panel. **Check the SMTP server logs for reported authentication errors from the panel.**
Alarm Logs not recorded.	Wrong memory card is used. Must use SD Card between 2 GB – 32 GB.	a. Must use SD Card between 2 GB – 32 GB. b. SD Card must be formatted to FAT32 system.
	SD Card formatted incorrectly.	**Must leave an SD Card to the SD Card slot to record alarm logs.** **Set the DATE & TIME appropriately.**

Factory Default Setting Gas

Mid Pressure   Hi   =   60 psi

                    Low =   40 psi

Vacuum   Hi   =   32 inHg

                    Low =   12 inHg

High Pressure   Hi   =   195 psi

                    Low =   140 psi

Appendix A

Wiring Diagram: LCD Board

DC Connector

Mute Button
(Located on reverse side of board)

Blue
(5 VDC)

Black
(Ground)

Orange
(15 VDC)

S 8   S 7   S 6   S 5   S 4   S 3   S 2   S 1
- +   - +   - +   - +   - +   - +   - +   - +

LCD Cable
Connector

SD Memory Card
Slot (Memory card
not provided)

NC
COM
NO

Dry-contacts (Building
Management System)

+12V
GRND

Reset
Button

Select / Mute   Change DOWN   Change UP   Set - Up

B4   B3   B2   B1

LCD Power

Buzzer

Four Push
Buttons

12 V DC
Output

Buzzer
Jumper

Ethernet
Port

⚠ **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
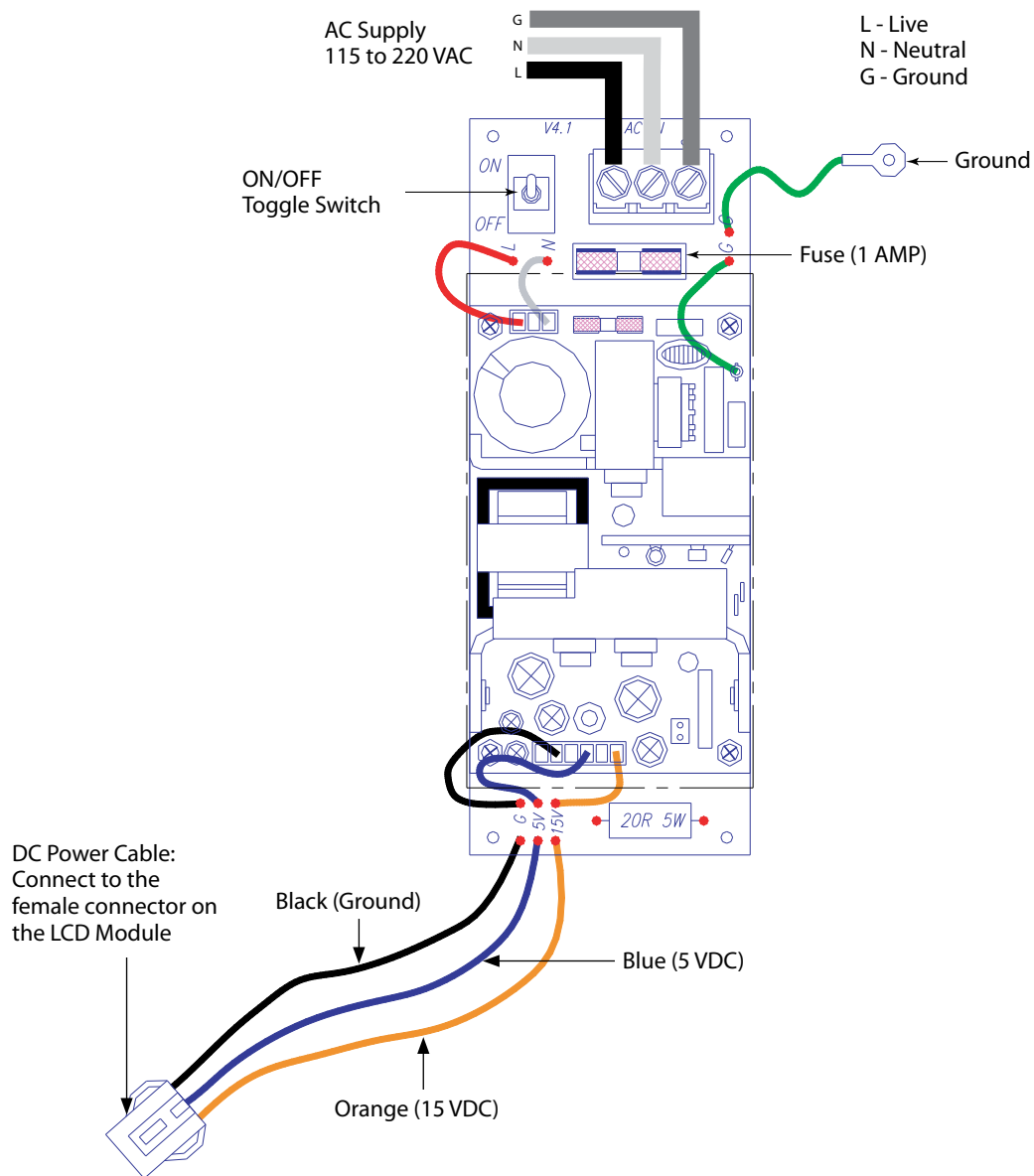
AC Supply
115 to 220 VAC

G
N
L

L - Live
N - Neutral
G - Ground

ON/OFF
Toggle Switch

Ground

Fuse (1 AMP)

DC Power Cable:
Connect to the
female connector on
the LCD Module

Black (Ground)

Blue (5 VDC)

Orange (15 VDC)

⚠ **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.

Appendix C

Wiring Diagram: LCD Display Module - Alarm Buzzer

Optional: To Amico Manifold Universal Remote Buzzer

REMOTE BUZZER

+12V

+
S
-

NC COM NO 12V GND

REMOTE BUZZER

Amico

POWER   ALARM

PUSH
TO
TEST

ALARM
SILENCE

Optional: Abnormal Alarm

CH +1

CH -

To Amico:
Master Module or Building
Management System

NO COM NC 12V GND

S 8   S 7   S 6   S 5   S 4   S 3   S 2   S 1
- +   - +   - +   - +   - +   - +   - +   - +

NC
COM
NO

Select / Mute

Change DOWN

Change UP

Set - Up

B4   B3   B2   B1

Reset
Button

+12V
GRND

Appendix D

Wiring Diagram: LCD Display Module - Local Sensor

Sensor Module →

OXYGEN

6" - 8" [0.1m - 0.2 m]
#22 gauge stranded,
shielded twisted pair
cable supplied

Black → ← Red

S 8   S 7   S 6   S 5   S 4   S 3   S 2   S 1

Orange
(15 VDC)

Blue
(5 VDC)

Black
(Ground)

NC
COM
NO

Select / Mute   Change DOWN   Change UP   Set - Up

Reset
Button

+12V
GRND

B4   B3   B2   B1
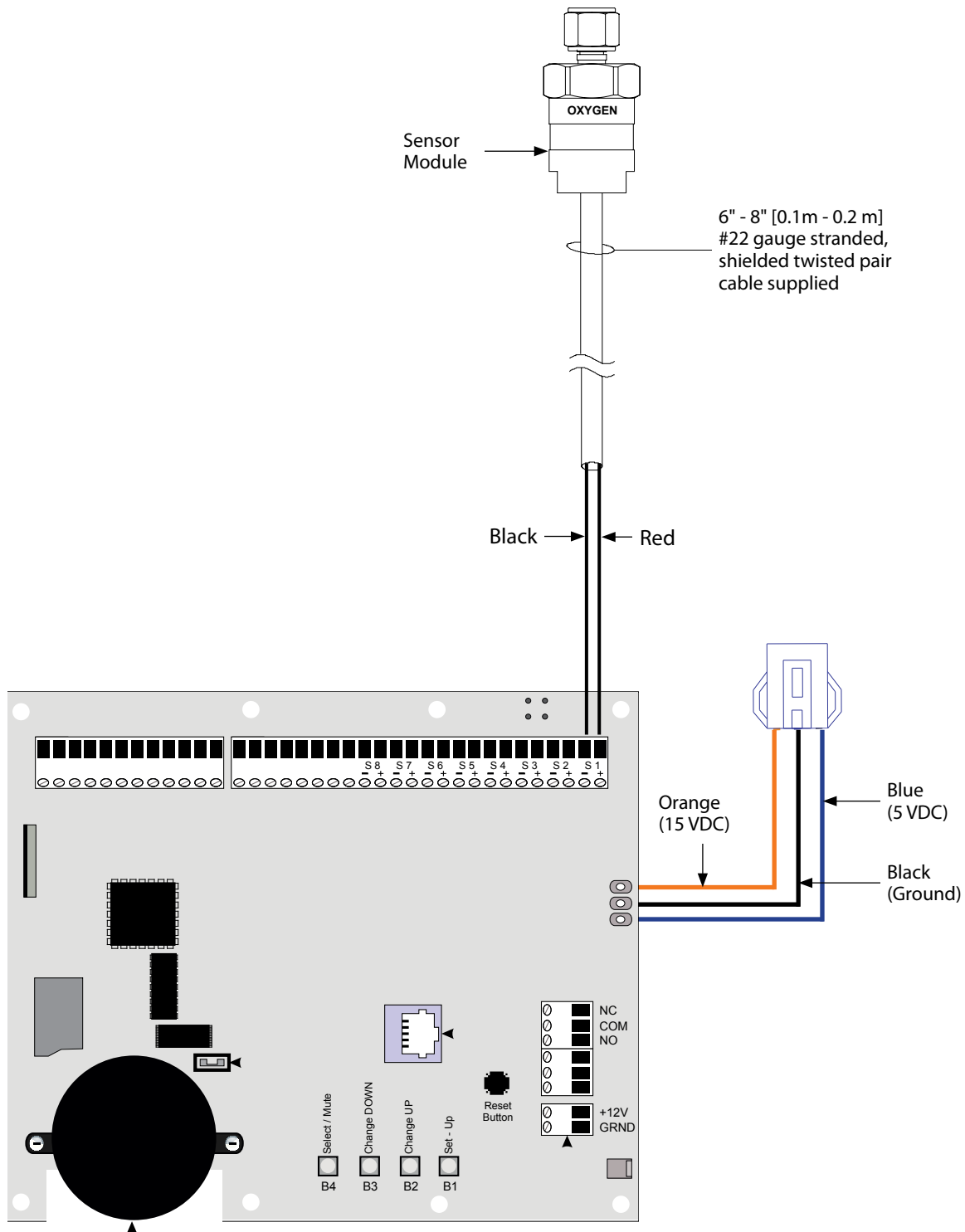
NOTE: Do not ground the shield drain wire at sensor or inside alarm panel back box.

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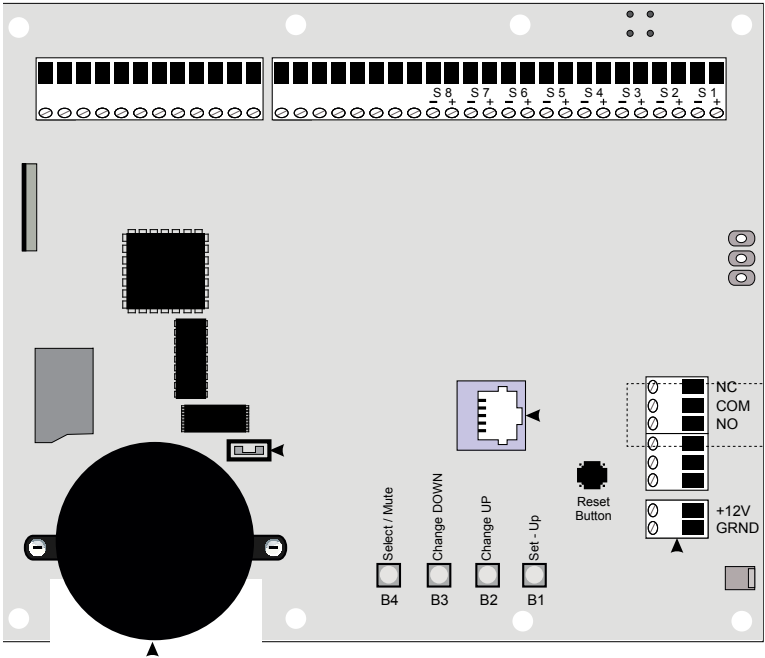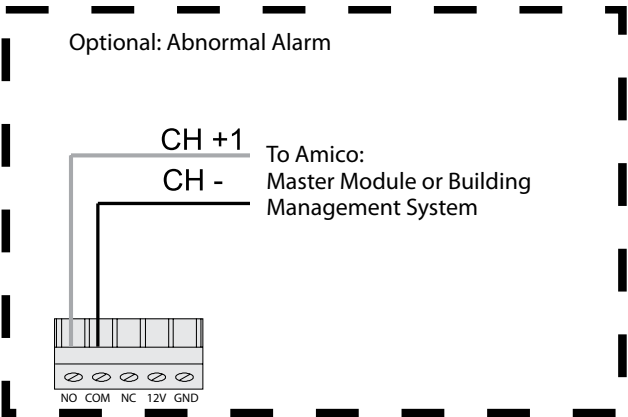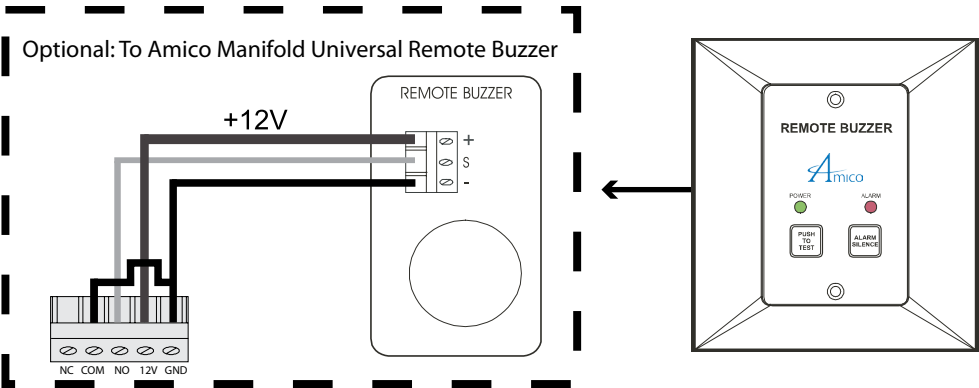
Appendix E

Wiring Diagram: LCD Display Module - Remote Sensor

Sensor Module

DISS

Oxygen Pipeline

6" - 8" [0.1 m - 0.2 m] #22 gauge stranded, shielded twisted pair cable supplied

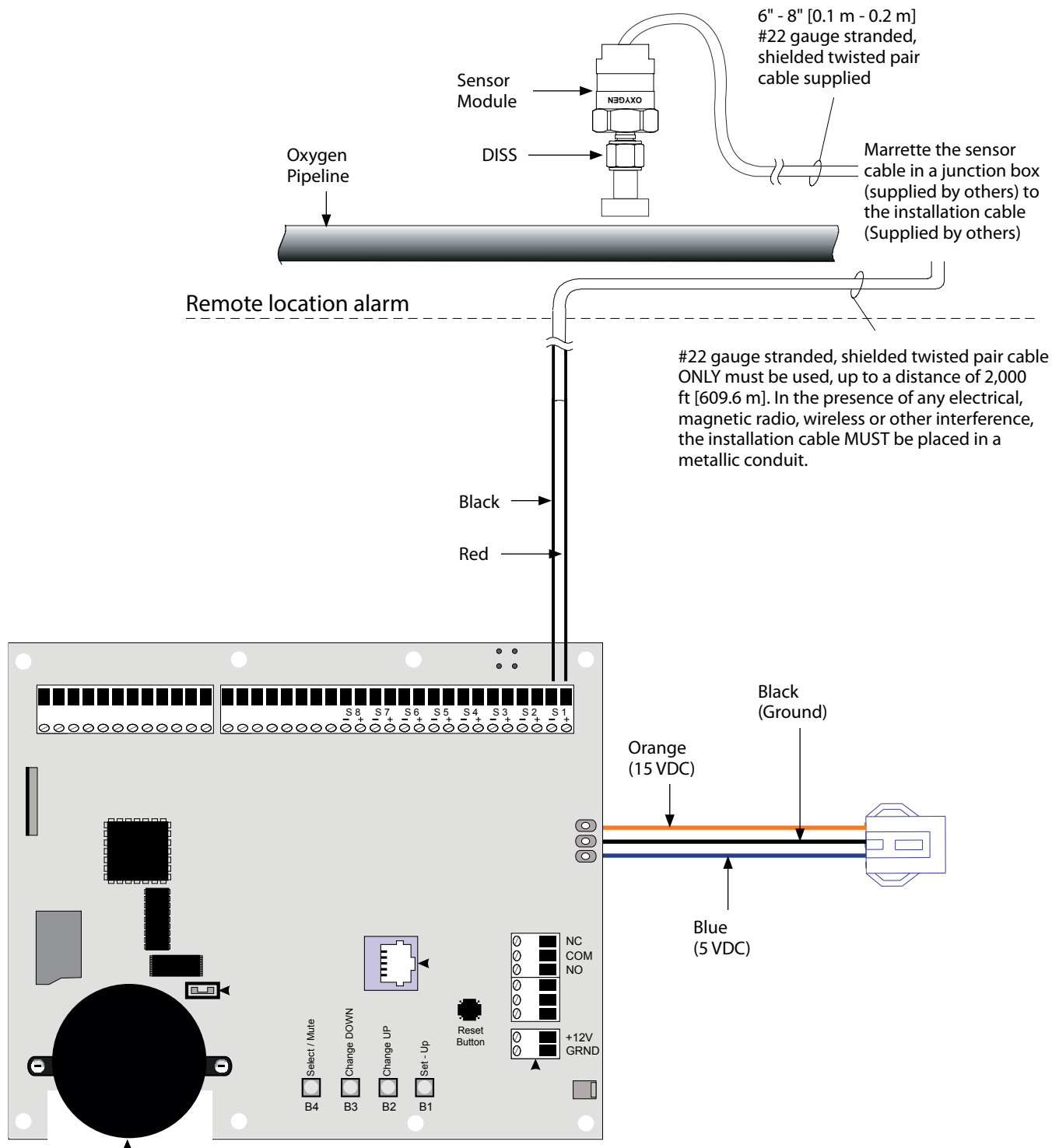Marrette the sensor cable in a junction box (supplied by others) to the installation cable (Supplied by others)

Remote location alarm

#22 gauge stranded, shielded twisted pair cable ONLY must be used, up to a distance of 2,000 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

S 8 S 7 S 6 S 5 S 4 S 3 S 2 S 1

Orange (15 VDC)

Black (Ground)

Blue (5 VDC)

Select / Mute
Change DOWN
Change UP
Set - Up

B4   B3   B2   B1

Reset Button

NC
COM
NO

+12V
GRND

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

Appendix F

Technical Specifications

Supply Voltage: 115 - 220 VAC, 50 - 60 Hz
Current Draw: 1 Amp. Max.
Fuse (¼ * 1¼):   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 2,000 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.

Appendix G

Wiring

A. 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.

B. 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 300 V 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.

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