Operating & Maintenance Manual

Alert-4 Ethernet LCD Area Alarm

![Amico logo]
www.amico.com
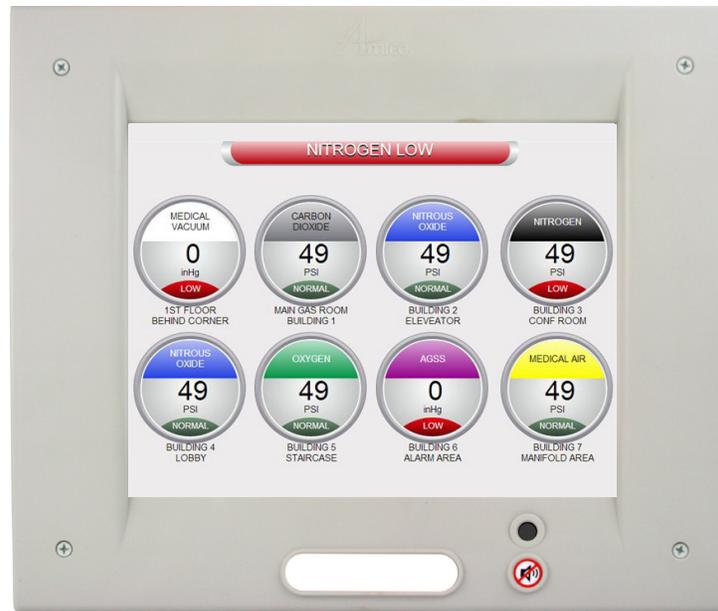
Contents

Contents

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.

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.

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" ( ) or "PUSH TO TEST" button located on the front face of the LCD panel. The button has two functions: to silence an alarm that has occurred and to view the audible alarm sound level and high and low set points. When an audible alarm is triggered, press the button to silence the alarm. To view the high and low set points, press and hold the mute button for 20 seconds to display the information on the LCD Alarm screen.

All Gases or Vacuums are displayed on the LCD screen for clear visibility to facilitate the monitoring function by hospital personnel. Under normal operation, the gas indicator will be in the "GREEN - OK" position. If an alarm condition occurs, a "RED-Alarm" indicator will be displayed and an audible alarm shall be continuous until silenced by pushing the "MUTE" button.

The LCD Alarm can be connected to a "Building Management System" for a generic alarm indicator.

Features

- Microprocessor based digital LCD and individual microprocessor on each sensor module
- Ethernet capable
- Gas-specific sensors can be mounted locally or remotely, up to 500 feet [152.4 m], utilizing 22 gauge shielded twisted pair (2 shielded wires)
- 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 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 from LCD 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 on display module
- LCD Alarm available in 1 to 8 gases

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 LCD 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" buttons. 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 or a Building Management System.

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 module. The sensor module shall be housed in an anodized aluminum and nickel-plated brass enclosure to act as an interference barrier 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 by computer for the specific gas shown on the sensor housing.

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. BE CAREFUL not to damage the DISS 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." Inspect all joints for leaks and make certain each gas is piped to a correspondingly labeled gas service.

STEP 4: SENSOR

LOCAL (inside the back box)

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

 ii. In the back box, there are color coded gas labels located under the DISS Demand Check Valves. Each label identifies where each sensor module is to be placed.

 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

Installation Guide

B: REMOTE (outside the back box)

i.   Connect a tee (supplied by others) to the pipeline with a 1/4" (6.4 mm) 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.
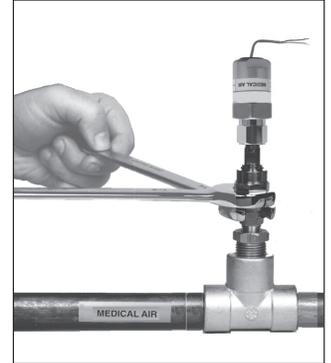
STEP 5: FRAME/MODULE ASSEMBLY

i.   Remove the frame/module assembly from its protective box.

ii. Remove the corner screws from the front frame section (4 screws).

iii. Attach the LCD module to the back box assembly by using flat head screws (provided with frame in a plastic bag) to the hinge located on the back box.

iv. 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 be fastened securely together.

CAUTION: The microprocessor circuitry on the Alert-4 alarm contains sophisticated integrated semiconductors. If it becomes necessary to remove LCD circuit board, PLEASE hold the boards by the edges. **DO NOT TOUCH** any of the components on the board. Static discharge can cause the modules to malfunction or become damaged.

Installation Guide

STEP 6: SYSTEM POWER SUPPLY

⚠️ 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.

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

ii. 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.

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

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.

1 Gas	2 Gases	3 Gases	4 Gases

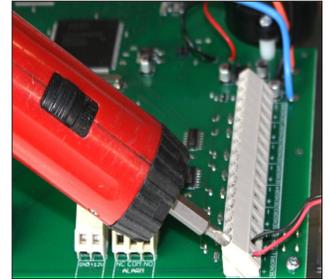| 5 Gases	6 Gases	7 Gases	8 Gases

Installation Guide

STEP 7: SENSOR MODULE
B: LOCAL (inside the back box)

i. The sensor module is provided with a 6"-8" [0.1 m - 0.2 m] twisted pair of wires. 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 a 6" - 8" [0.1m - 0.2m] twisted pair of wires. Connect the wires to a junction box (not supplied) located near the sensor as per the wiring diagram.

ii. Connect a shielded twisted pair cable from the junction box to the back box assembly. Knockouts are provided throughout the alarm back box. Up to 500 feet [152.4 m] of 22 Gauge, shielded twisted pair cable should be used.

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, a shielded or twisted pair cable is required (BELDEN #8451 or equivalent, supplied by others).

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 turned on, use the following steps to setup the LCD Alarm.

Installation Guide

STEP 9: LCD DISPLAY SETUP

i.   Press the SETUP button (B1) and press the SELECT button (B4)

ii. Volume control: 90, 80, 70, 60 – press CHANGE UP/DOWN to change noise level

iii. Press SELECT for LCD brightness and press CHANGE UP/DOWN to change LCD brightness

iv. Press the SELECT button (B4)

   * The following should be displayed.

   SENSOR: 1
   SENSOR TYPE: show the gas (example: NITROUS OXIDE)
   UNITS: PSI (to change to kPA, Bar, inHg, mmHg: press button CHANGE DOWN/UP then press SELECT)
   LOW ALARM: 40 (to change: press button CHANGE DOWN/UP then press SELECT)
   HIGH ALARM: 60 (to change: press button CHANGE DOWN/UP then press SELECT)
   CURRENT PRESSURE: displays exact pressure for the line
   CURRENT OFF SET: to re-calibrate pressure reading press button CHANGE DOWN/UP then press SELECT

v.   Repeat steps until all sensors are scanned and data is saved. Next it will show SETUP COMPLETE.

   *All gases should now be displayed. If any errors occur, repeat the steps above.

NOTE: Hold the "MUTE" button for twenty (20) seconds to display current low and high set points.

NOTE: Press the Setup button (B1) in order to make corrections/go back.

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.
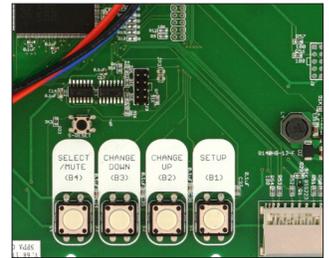
Installation Guide

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 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 cat 5 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 Mbits/s a switch also improves network performance and keeps unnecessary traffic from being routed to the alarm.

   NETWORK SETUP

- 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.

Installation Guide

CHANGING IP ADDRESS

Open SD Card with files provided by AMICO is saved. as file name "Network" to change desire network IP address .
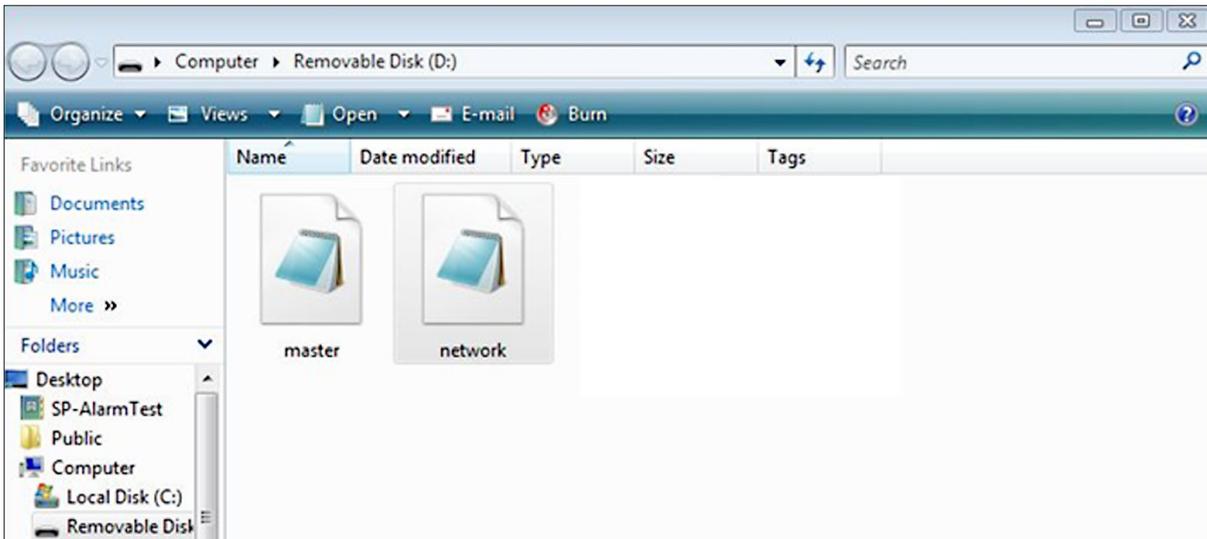
Installation Guide

Change the selected Amico's default IP address to the desire IP address, Gateway and Subnet Mask – then save the file by clicking File-Save

```
network - Notepad
File  Edit  Format  View  Help
IP_ADDR=192.168.1.100IP_GW=192.168.1.1IP_MASK=255.255.255.0
```
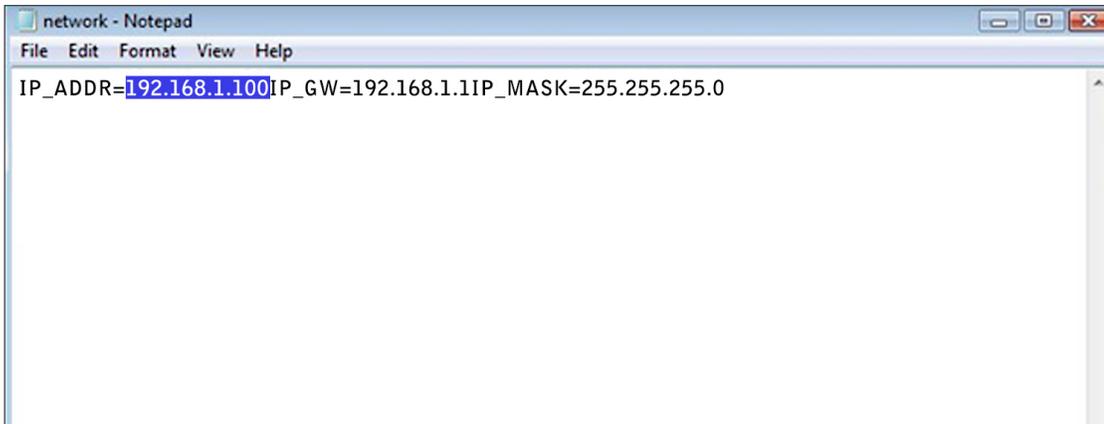
- When all files are saved in the SD card, insert the SD Card into the SD Card Slot on the LCD Alarm board (Refer to Appendix A).
- To load Network configuration press and   hold Reset button and Set-up button at the same time for two seconds and let go of rest button while still holding setup button, until the new Network configuration is uploaded to the Area Alarm. When loading is completed screen display as below with a desire Network address.

BUILD DATE: OCT 24 2014
BUILD VERSION: 1515

GATEWAY: 192.168.1.1
MASK: 255.255.255.0
IP ADDRESS: 192.168.1.120

If the configurated information does not appear on the screen, repeat above steps. 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.

Installation Guide

CONNECTING TO ALARM

- Start the web browser(Google Chrom, 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
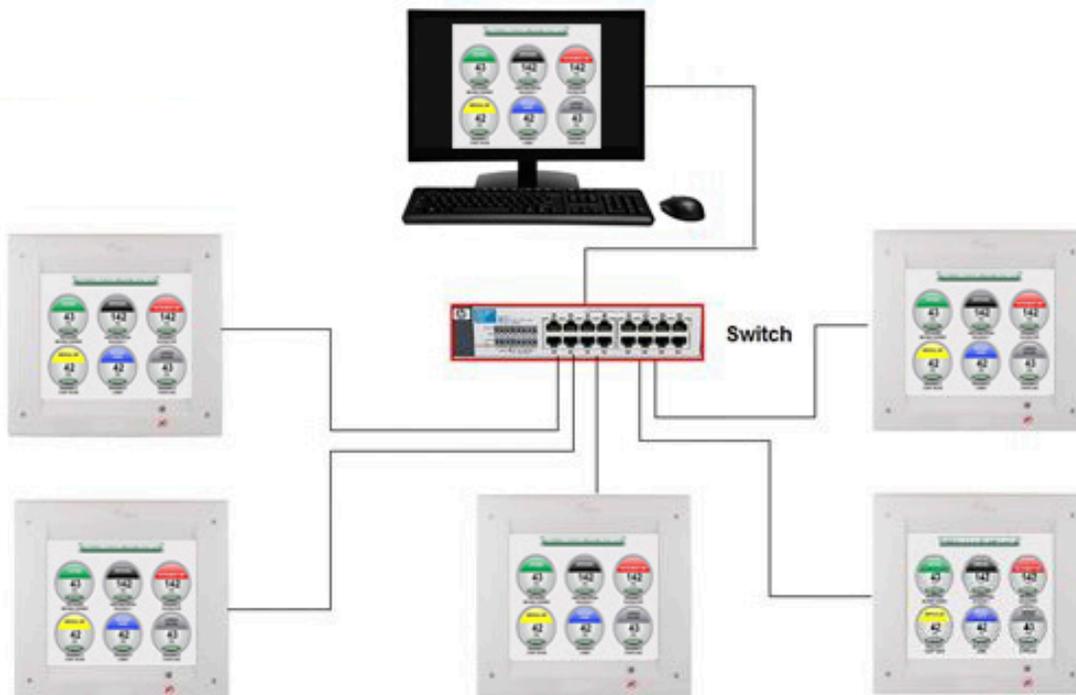
Installation Guide

COMPLEX MANAGED NETWORK
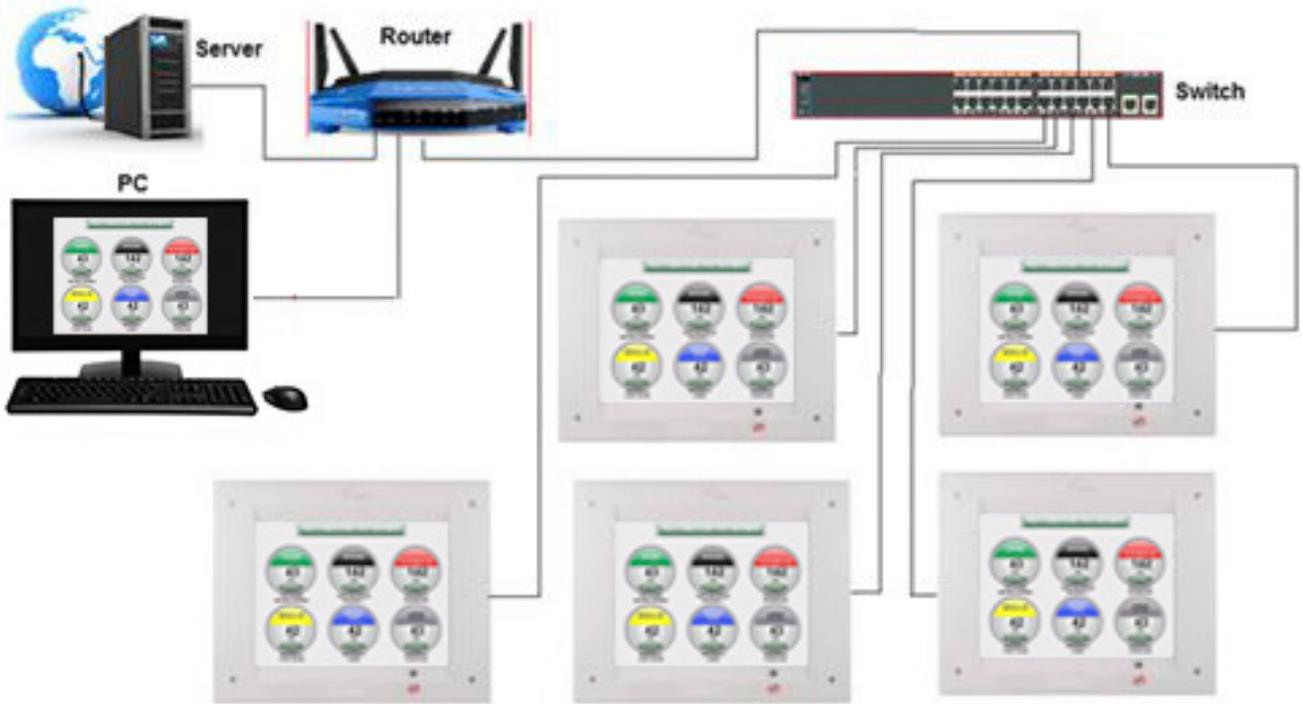
Programming Gas Locations
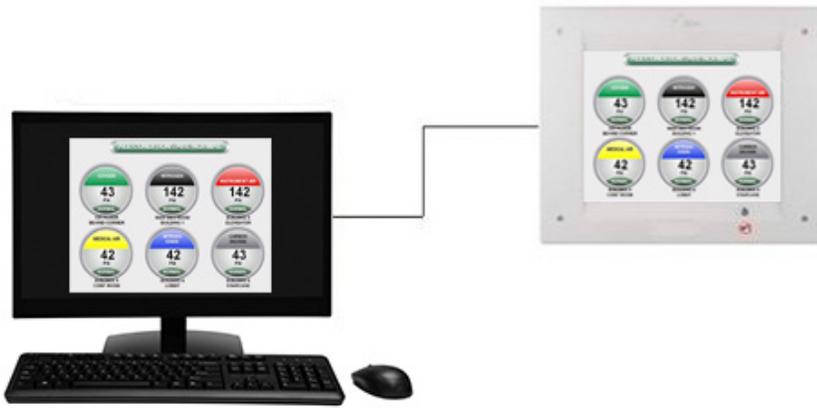
1. Use the **Notepad** program to enter information for gas location. Each line can hold up to a **maximum of 16 characters**.

2. Two lines may be used per individual gas.

3. The order of the text must go in order of 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 section 7a to determine gas location on the LCD Alarm screen.

4. Once all the text has been inputted, save the file on to 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, press the **reset button**, then press and hold the **setup button** until the information from the file saved on the SD Card (**location.txt**) appears on the LCD Alarm Screen.

   - 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 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.

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

   - NOTE: Only capital letters and spaces will be displayed on screen. Small caps, symbols and special characters cannot be displayed.
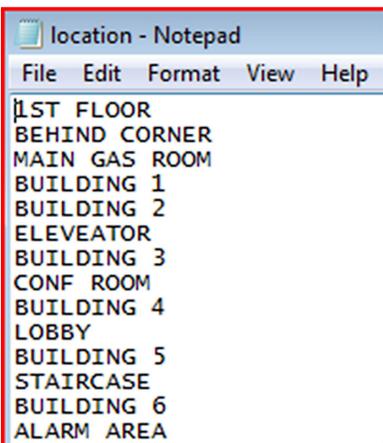
Notepad File
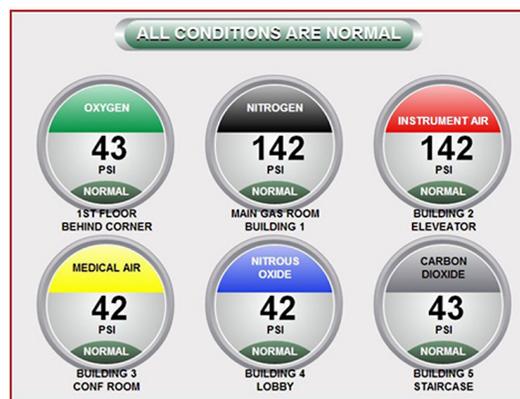
Updated Display on LCD Alarm

Model Numbers

LCD ALARM

A4AR-L-XXXXXXXX

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

"L" Defines the Language:

U = English (NFPA)

E = English (CSA/ISO)

F = French (CSA/ISO)

S = Spanish (NFPA/ISO)

"X" Defines the Type of Gas:

Oxygen	=	O
Medical Air	=	A
MedVac	=	V
Nitrous Oxide	=	2
Nitrogen	=	N
Carbon Dioxide	=	C
Waste Anesthetic Gas Disposal (NFPA)	=	W
Anesthetic Gas Scavenging System (CSA/ISO)	=	E
Instrument Air	=	I
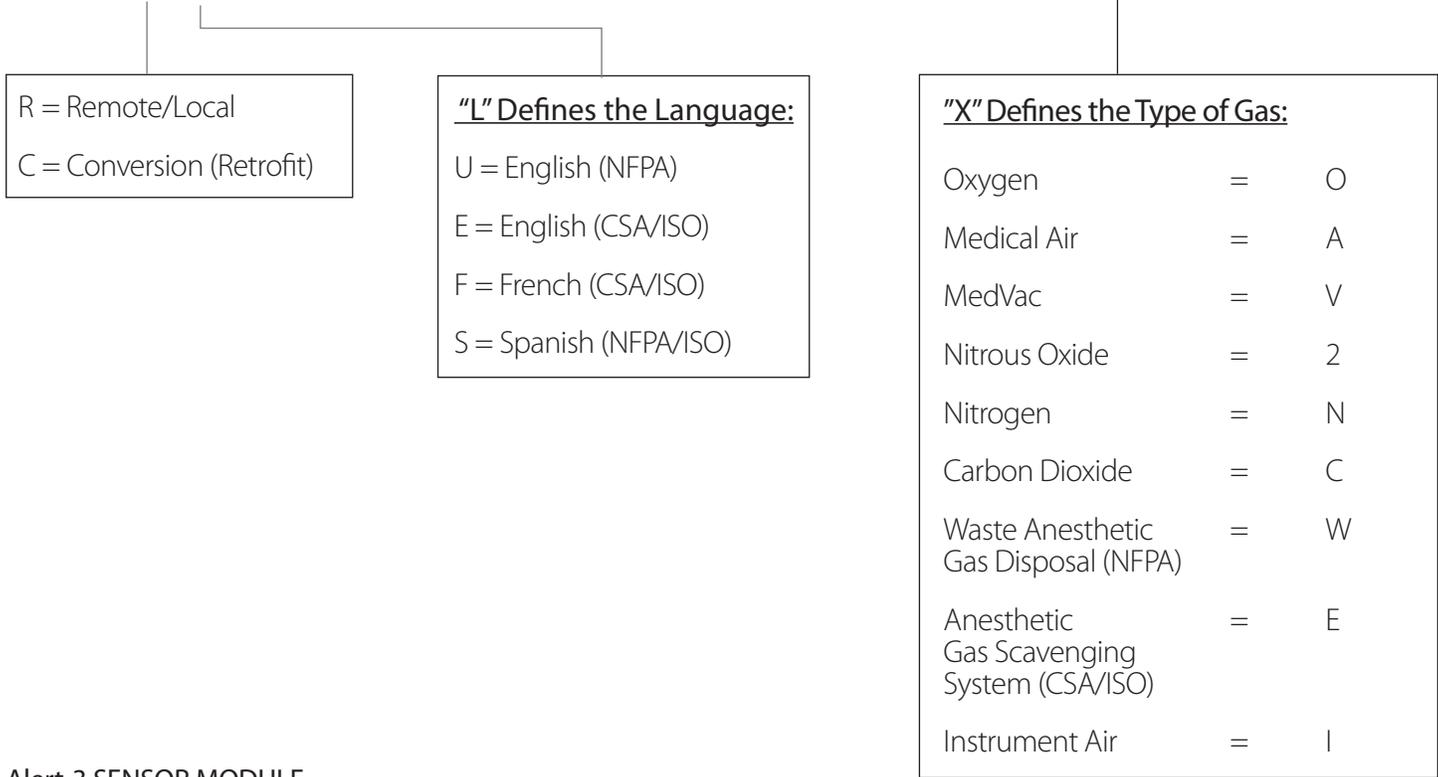
Alert-3 SENSOR MODULE

A3P-SENS-L-GAS

"L" Defines the Language:

U = English (NFPA)

E = English (CSA/ISO)

F = French (CSA/ISO)

S = Spanish (NFPA/ISO)

"Gas" Defines the Type of Gas:

Oxygen	=	OXY
Medical Air	=	AIR
MedVac	=	VAC
Nitrous Oxide	=	N2O
Nitrogen	=	NIT
Carbon Dioxide	=	CO2
Waste Anesthetic Gas Disposal	=	WAG
Anesthetic Gas Scavenging System	=	AGS
Instrument Air	=	IAR
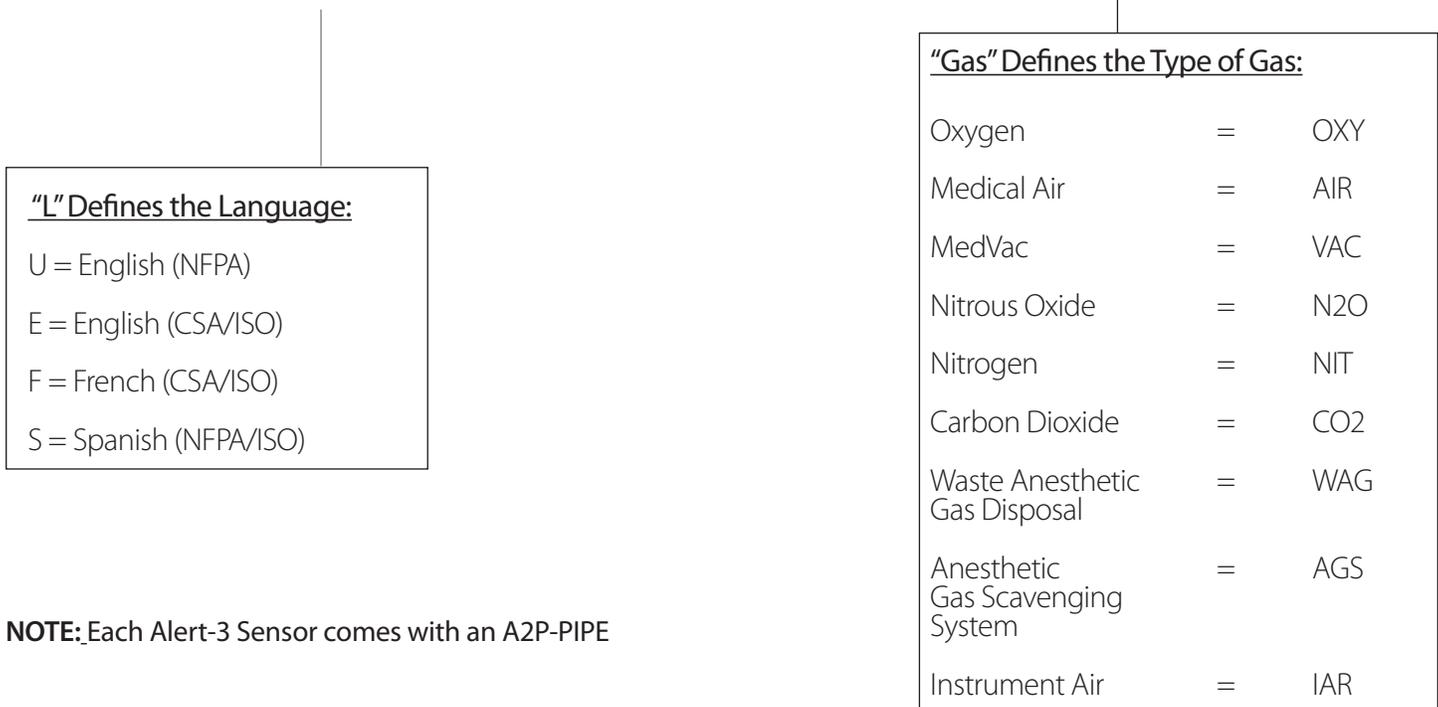
NOTE: Each Alert-3 Sensor comes with an A2P-PIPE

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/MISC.

Model Number	Description
A4-MAN-ALM-ENG	Alert-4 Alarm Manual English
A2P-POWER-V2	Power Supply Module Alert-2
A2P-BOXASS-3LCD	Alarm Back Box Assembly 3-Station Alert-2
A3P-FRMASS-LCD	LCD Alarm Frame Assembly for LCD Alert-3
A2P-PIPE	Pressure Module Pipe Assembly (Alert-2)
A2X-BOX-3-FILL	Alert-2 Alarm Box Filler Frame 3-Station
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 1/4" MNPT - AIR
S-DIS-DEMC-CO2	DISS Demand Check Valve 1/4" MNPT - CO2
S-DIS-DEMC-NIT	DISS Demand Check Valve 1/4" MNPT - NIT
S-DIS-DEMC-N2O	DISS Demand Check Valve 1/4" MNPT - N2O
S-DIS-DEMC-EVA	DISS Demand Check Valve 1/4" MNPT - EVA
S-DIS-DEMC-OXY	DISS Demand Check Valve 1/4" MNPT - OXY
S-DIS-DEMC-VAC	DISS Demand Check Valve 1/4" 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

1.2 [30.48] (×7)

NITROGEN LOW

MEDICAL VACUUM	CARBON DIOXIDE	NITROGEN OXIDE	NITROGEN
0 inHg	49 PSI	49 PSI	49 PSI
LOW	NORMAL	NORMAL	LOW
1ST FLOOR BEHIND CORNER	MAIN GAS ROOM BUILDING 1	BUILDING 2 ELEVATOR	BUILDING 3 CONF ROOM

NITROGEN OXIDE	OXYGEN	AGSS	MEDICAL AIR
49 PSI	49 PSI	0 inHg	49 PSI
NORMAL	NORMAL	LOW	NORMAL
BUILDING 4 LOBBY	BUILDING 5 STAIRCASE	BUILDING 6 ALARM AREA	BUILDING 7 MANIFOLD AREA

10.25 [260.35]

12 [304.8]

Side View

2 1/10 [53.34]

0.81 [20.57]

7 3/16 [182]

Only supplied with Local Sensors 3/8 [9.53] (O.D.) 1/4 [6.4] (I.D) Type "K" Copper Pipe

1 1/4 [32]

7 [177.8]

9 [228.6]

3.97 [100.84]

Mounting Bracket

NOTE: DISS demand check valves by 1/4" NPT, supplied with each sensor

6.375 [162]

7.50 [191]

Brazing Filler Metal AWS Spec. BAg-7

1/2-14NPSM THD.

1/4[6] NPT

Brass 1[25] HEX

Inch [mm]

Top View

10.7 [271.78]

7.5 [190.5]

.75 [19.05]

.75 [19.05]

2.5 [63.5]

1.75 [63.5]

2.5 [44.45]

1 [25.4]

1 [25.4]

1.2 [30.48]

Ø 0.875 [22.23]

.75 [19.05]

Punched hole for electrical power cord

Bottom View

1.25 [31.75]

Alert-3 SENSOR

1.88 [48]

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

Wrench Flats 1 [25]

1/2" Conduit Connection

DISS Connector

(Approximate, can vary)
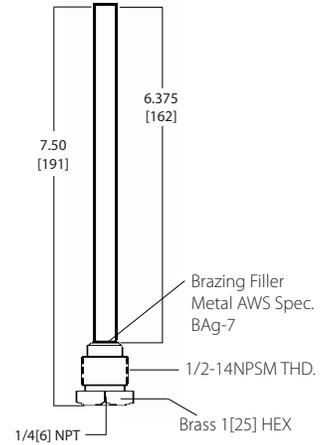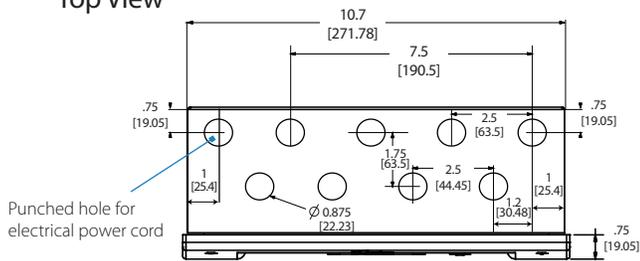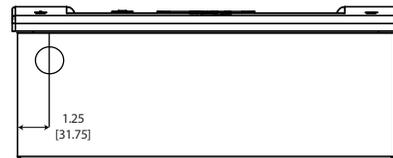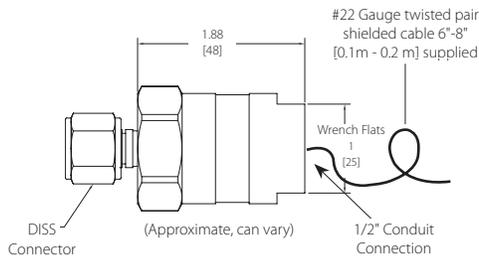
1/2"-14 NPSM [13]

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	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	Loose ribbon cable from LCD screen to board	a. Ensure that the cable is firmly in it's socket on the LCD screen and board. b. Replace the LCD module.
No audible alarm	DC power cable is disconnected, loose or 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 board.
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.

Troubleshooting

Symptom	Cause	Corrective Action
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
	Defective sensor or requires calibration	Replace the sensor module
	Defective LCD display module	Replace the LCD display module
Display shows "NO SENSORS"	No sensor(s) are connected to the LCD board	Make sure sensor module(s) are connected to LCD board (see Appendix D and Appendix E)
	Program not set up	Press setup and select button to program all connected sensors (see LCD Display Set-Up in Section 9)
	Faulty sensors	Replace sensors

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 MOTHERBOARD

DC Connector

Mute Button
(located on reverse side of board)

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

LCD Cable Connector

SD Card

Dry Contacts
(to Building Management System)

NC
COM
NO

+12V
GRND

Select / Mute
Change DOWN
Change UP
Set - Up

Reset Button

B4 B3 B2 B1

LCD Power

Buzzer

Buzzer Jumper

Four Push Buttons

Ethernet Port

12V DC Output
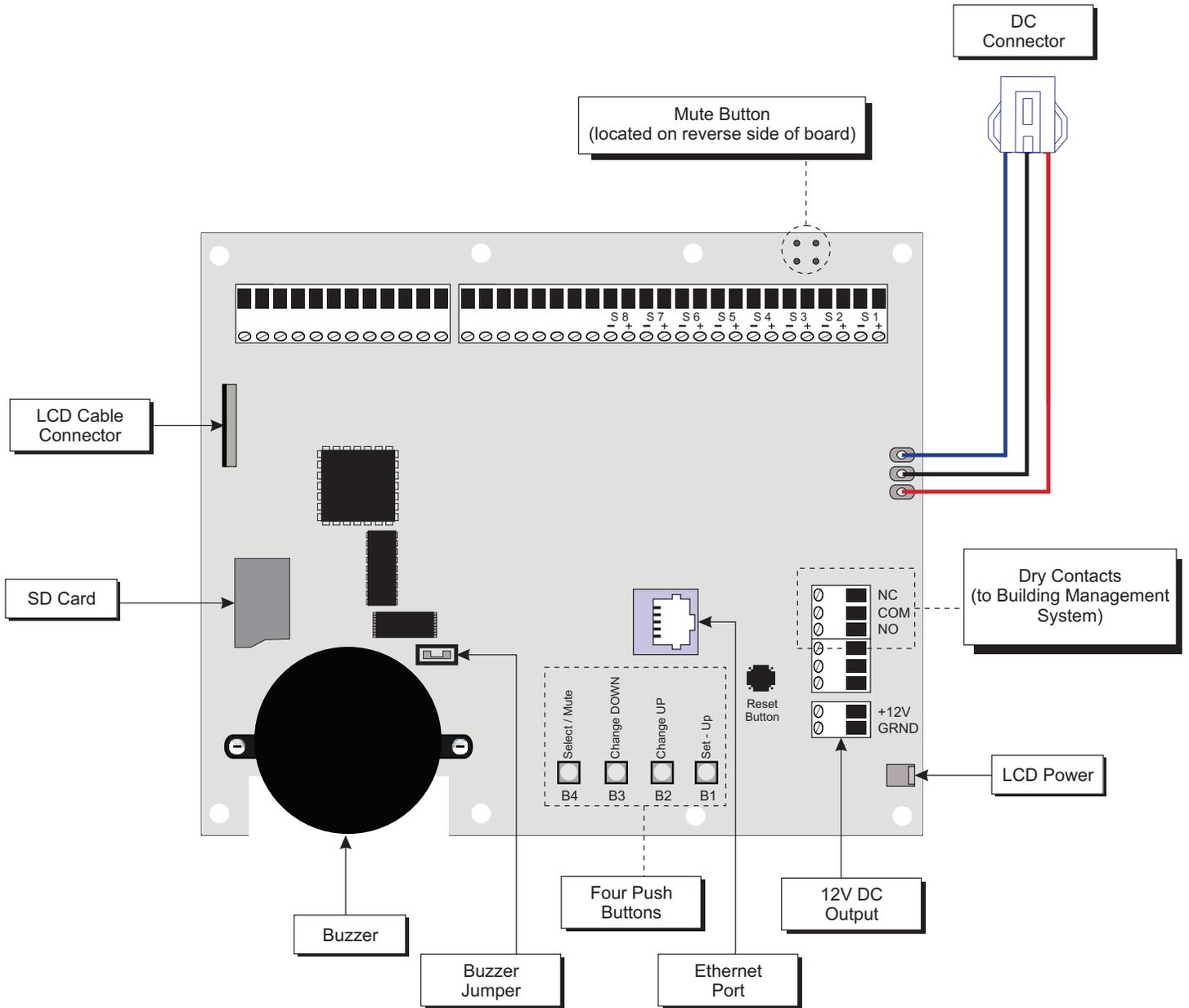
Appendix B

WIRING DIAGRAM: AUTO-SWITCH POWER SUPPLY

AC Supply
115 to 220 VAC

G
N
L

L - Live
N - Neutral
G - Ground

V4.1

ON

OFF

Toggle Switch

Ground

Fuse (1 AMPw)

DC Power Cable:
Connect to LCD
Module

G 5V 15V

20R 5W
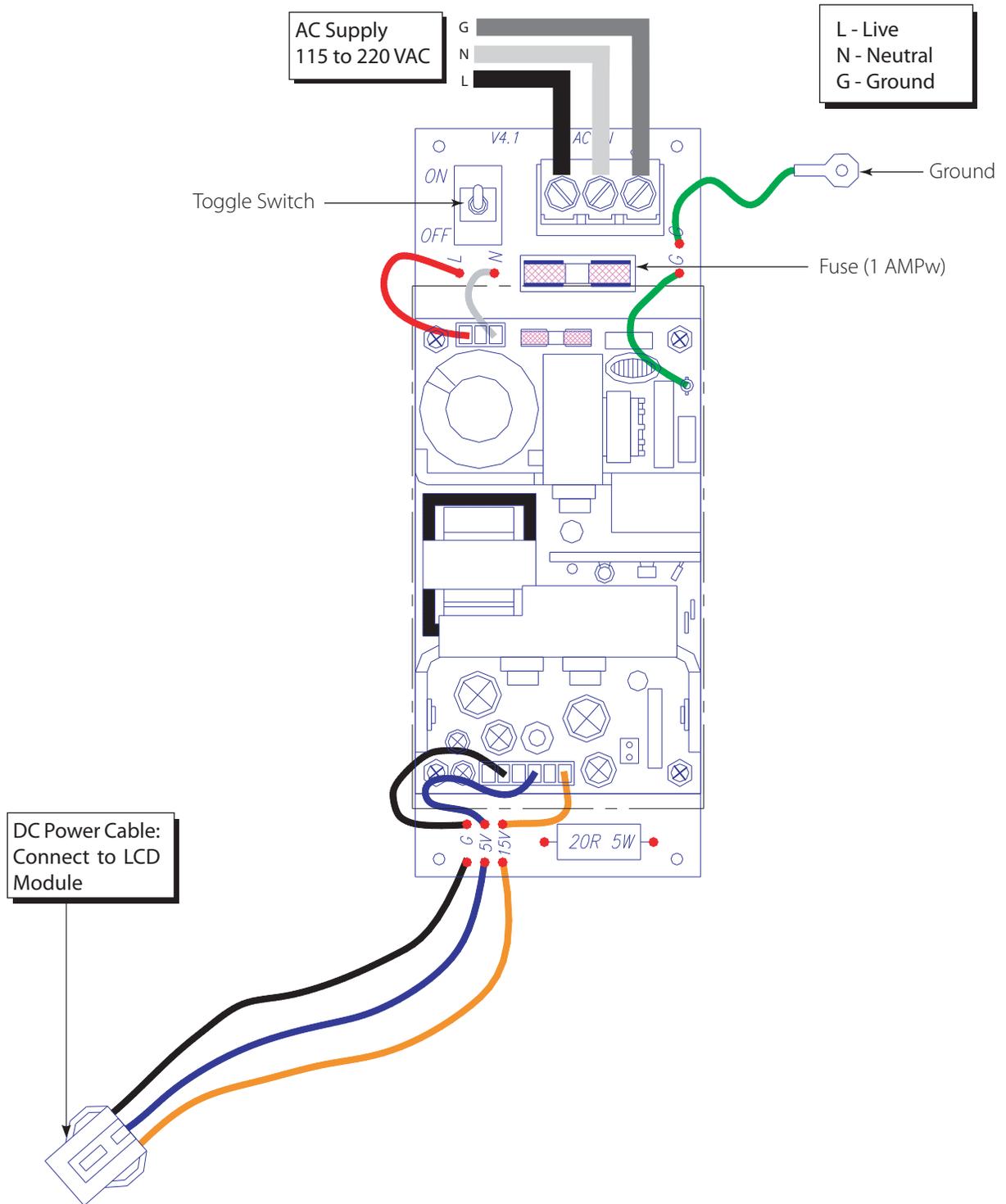
Appendix C

WIRING DIAGRAM: LCD DISPLAY MODULE - ALARM BUZZER

Optional: To Amico Universal Remote Buzzer
+12V

REMOTE BUZZER
+
S
-

NO COM NC 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

+12V
GRND

Select / Mute
Change DOWN
Change UP
Set - Up

Reset Button

B4   B3   B2   B1
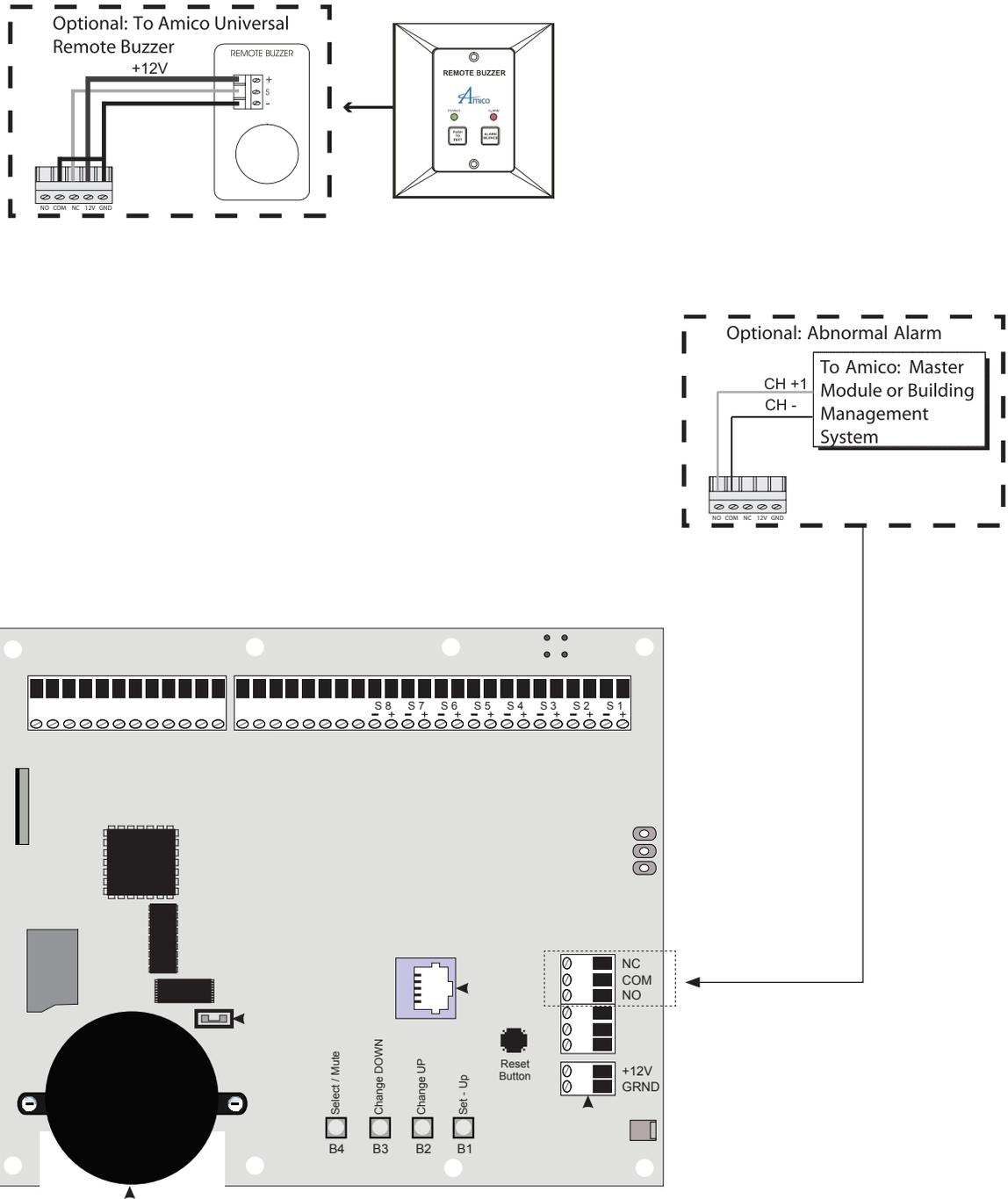
Appendix D

WIRING DIAGRAM: LCD DISPLAY MODULE - LOCAL SENSOR

OXYGEN

Sensor Module

#22 Gauge twisted pair shielded cable 6" - 8" [0.15m - 0.2m] supplied

Black

Red

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

NC
COM
NO

+12V
GRND

Reset Button

Select / Mute
Change DOWN
Change UP
Set - Up

B4   B3   B2   B1
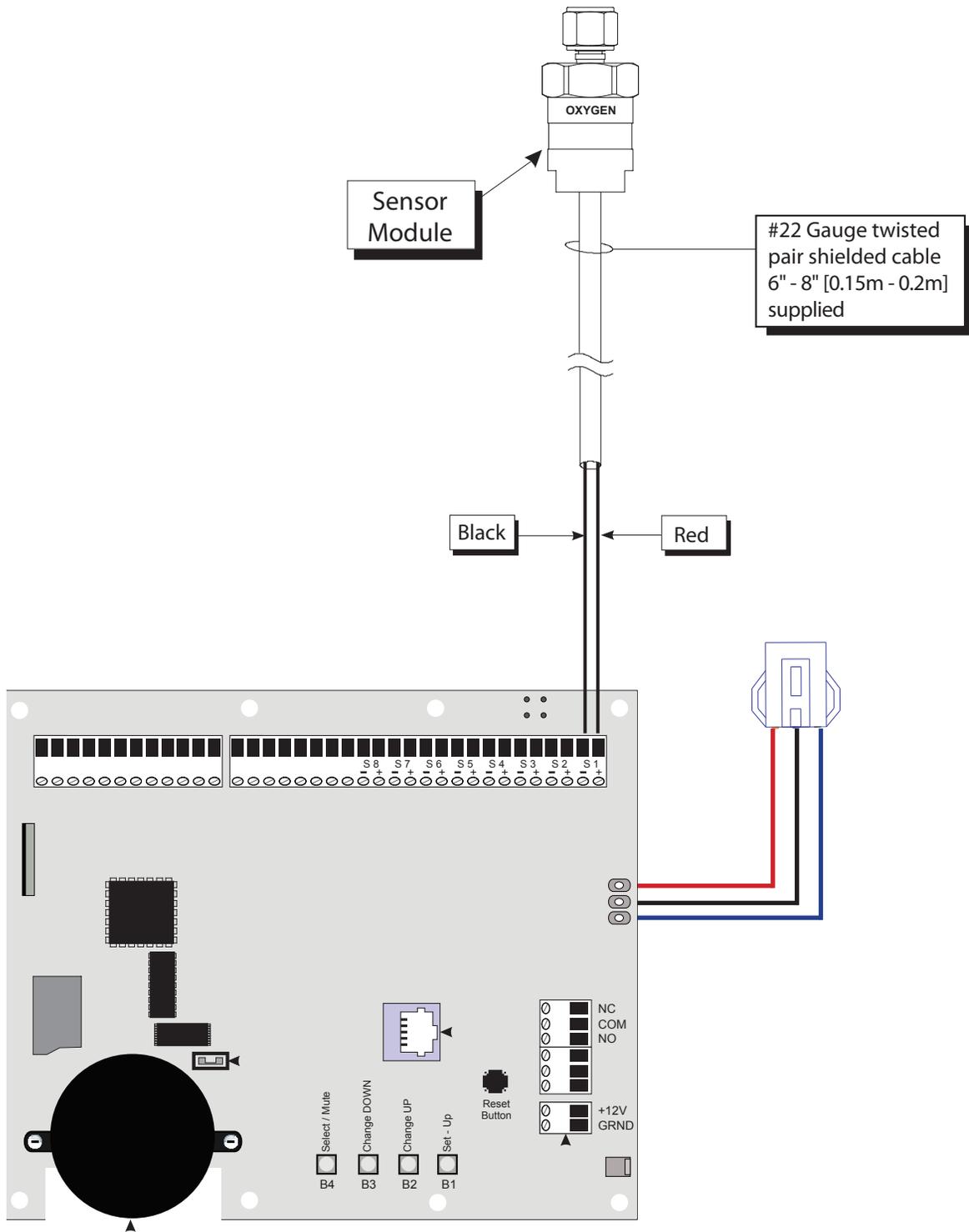
Appendix E

WIRING DIAGRAM: LCD DISPLAY MODULE - REMOTE SENSOR

Sensor Module

DISS

Oxygen Pipeline

22 Gauge twisted pair shielded cable
6"-8" [0.1m-0.2m] supplied

Junction Box (by others)

Remote location alarm

#22 Gauge twisted pair shielded cable

Black

Red

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

NC
COM
NO

+12V
GRND

Select / Mute

Change DOWN

Change UP

Set - Up

Reset Button

B4   B3   B2   B1

Note:
For multiple sensors, a multi-conductor shielded twisted pair cable should be used

Appendix F

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:	**Belden # 8451 or equivalent. #22 gauge shielded, twisted pair. (For multiple sensors a multi-conductor twisted pair, shielded cable should be used).**

    Distance: Maximum 500 ft [152.4 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 wire

    Signal: 5 VDC   -   30 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.

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