Operating & Maintenance Manual

Alert-4 Ethernet LCD Master Alarm

Amico
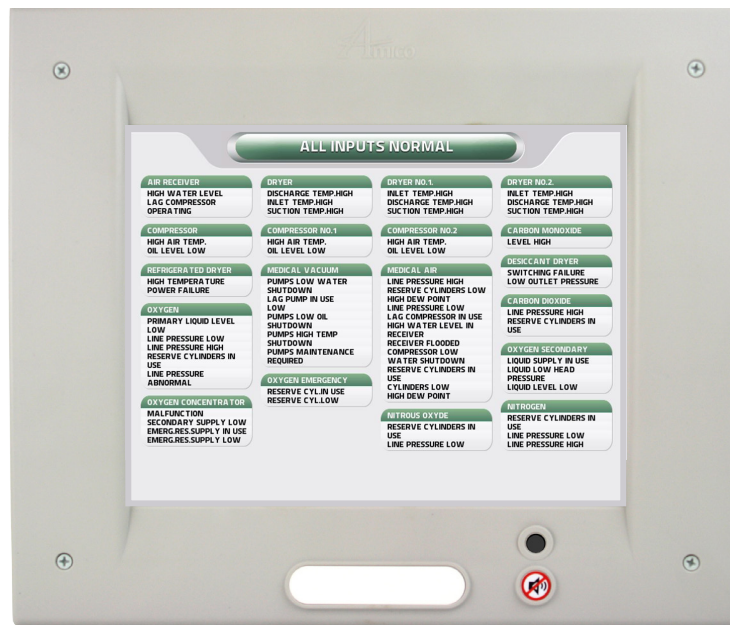
Contents

Contents

User Responsibility

The information contained in this Installation, Operation and Maintenance Manual pertains only to the Alert-4 microprocessor based digital LCD Master 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 prevent serious injury and/or death.

Introduction

The Amico Master 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 that the channel terminal port was connected. When an audible alarm is triggered, press the button to silence the alarm. To view that the terminal port channels are connected, press and hold the button for 20 seconds to display channel ID.

Under normal operation, each group will illuminate in the "GREEN - OK" position. If an alarm condition occurs, the group and channel name will illuminate as "RED" 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 capable of connecting up to 30 channels

- Ethernet capable for viewing remotely or wireless anywhere in the building

- Adjustable repeat alarm (1, 12, 24 hours or off)

- Maintenance mode available for on site repair

- Self diagnostic circuitry with error display for problem identification

- 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

- Alarm conditions can be selected as normally open or normally closed

- The Amico Alert-4 Series Master Alarm supports Internet Explorer and Google Chrome

Description of the Alarm

SHIPMENT DETAILS

When you receive an Alert-4 Master LCD series alarm from Amico Corporation, the package will consist of two main sections: the Alarm Back Box 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 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 Master 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.
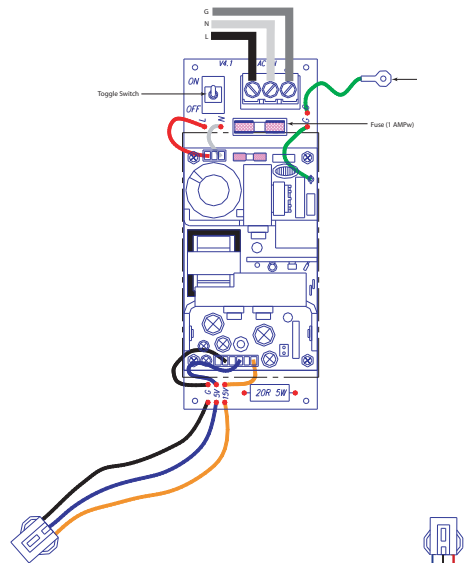
LCD MODULE

The LCD Module contains the LCD screen, microprocessor, buzzer and the "MUTE" 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.

NOTE: Contacts located on the back of the module are dry contacts only. DO NOT apply any voltage.
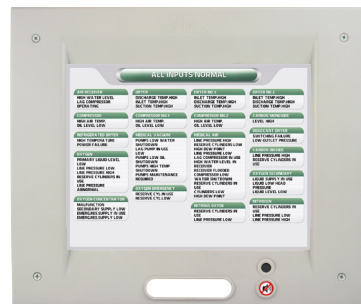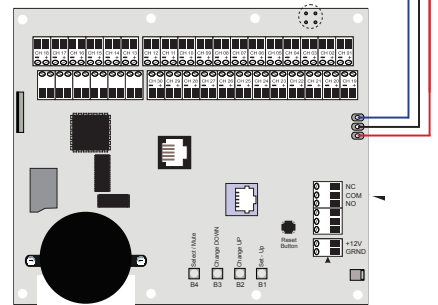
SENSOR MODULE

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 channel ID and audible**

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: FRAME/MODULE ASSEMBLY

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

ii. Remove the corner screws from the front frame section (four 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 two 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:

1. The microprocessor circuitry on Alert-4 alarm contains sophisticated integrated semiconductors. **DO NOT TOUCH** any of the components on the board. Static discharge can cause 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't touch the front panel circuit board when front panel is closed.

STEP 3: SYSTEM POWER SUPPLY

CAUTION: TURN OFF THE 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 (Appendix B).

4. Verify that power has been switched off prior to wrking on the alarm.

5. Risk of electric shock. Dissconnect power at circuit breaker before removing power supply sheild.

Installation Guide

CONNECTING

i. Connect a #22 gauge stranded, shielded twisted pair cable ONLY from the junction box to the back box assembly. Knockouts are provided throughout the alarm back box. Up to 10,000 feet [3048 m] of #22 gauge stranded, sheilded and twisted pair cable should be used.

ii. Connect the red wire from the cable to the terminal on the display module marked "+". Connect the black wire to terminal "-" as shown in the wiring diagram (see Appendix A).

iii. Repeat the above procedures with the remaining point modules using the wiring diagram.

   NOTE: #22 gauge stranded, sheilded twisted pair cable ONLY must be used, up to a distance of 10,000 ft [3048 m]. For multiple sensors, a multi contuctor stranded, sheilded and twisted pair cable MUST be used.

DRY CONTACTS

If the dry contacts for a generic alarm are 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 D for contact rating.

STEP 4: 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)
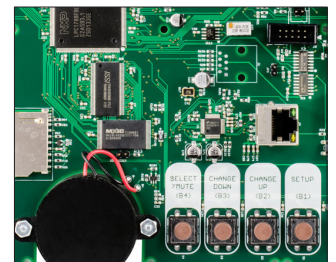
NOTE: Hold the "MUTE" button for twenty (20) seconds to display Channel ID.

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

STEP 5: 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 2, part ii. The alarm shall now be ready for use.
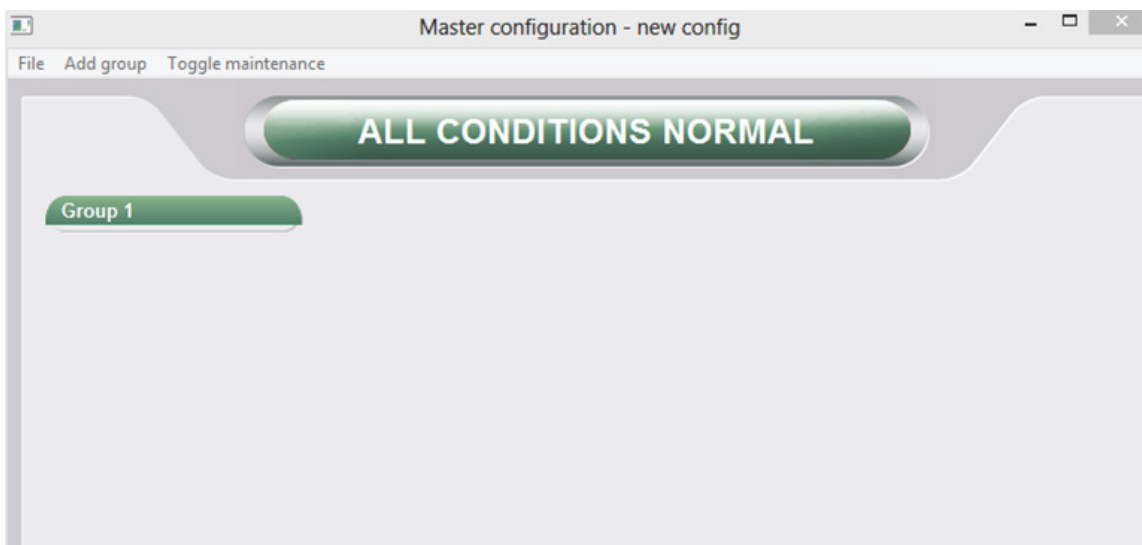
Configuration Guide

AMICO LCD ALERT-4: MASTER ALARM ETHERNET CONFIGURATION

The module allows up to 16 characters per line. To configure the alarm channels, perform the following steps:

1. Open the Master Configuration program provided by Amico Corporation on the SD card.
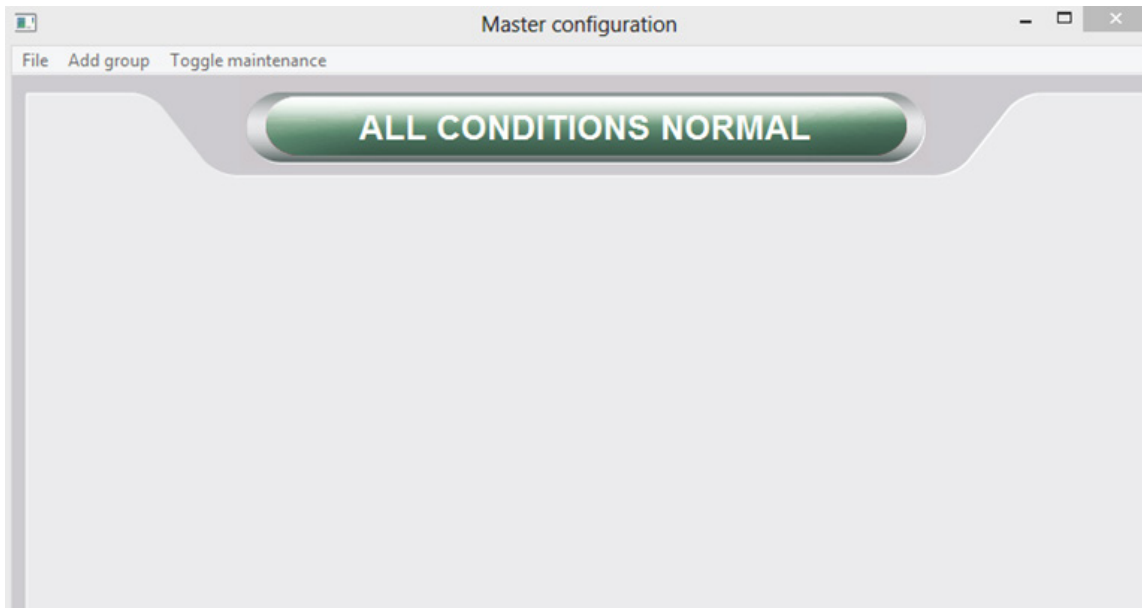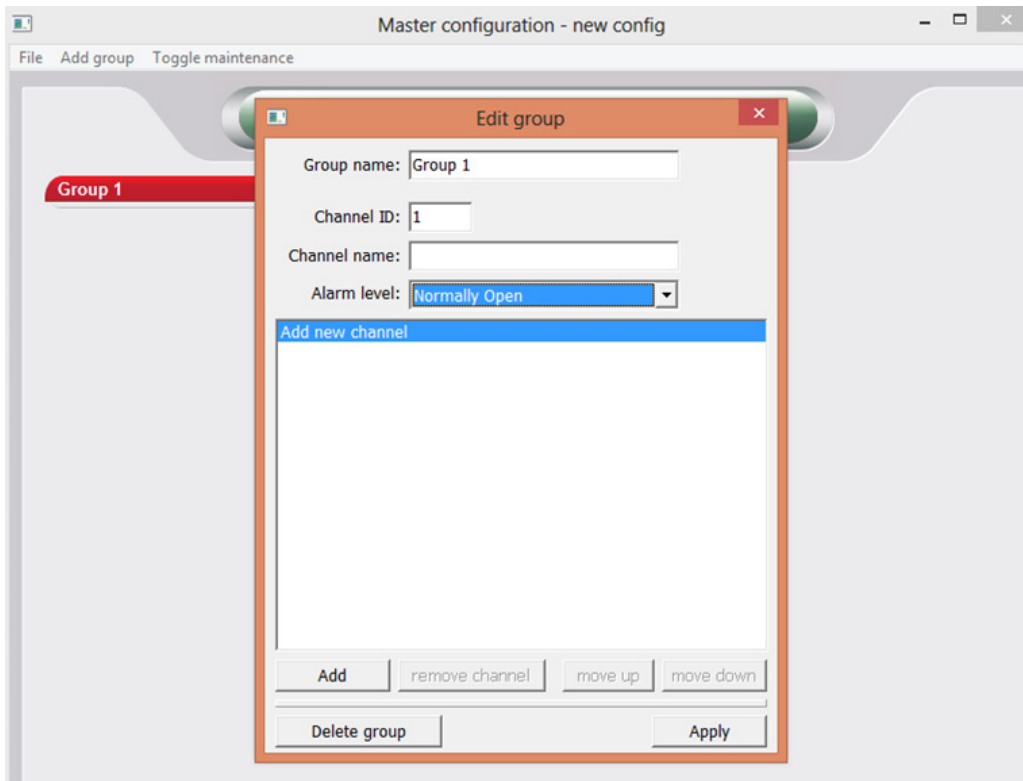

2. Click "File" located at the top left corner. Then click "Start New Config." Then click "Add Group."
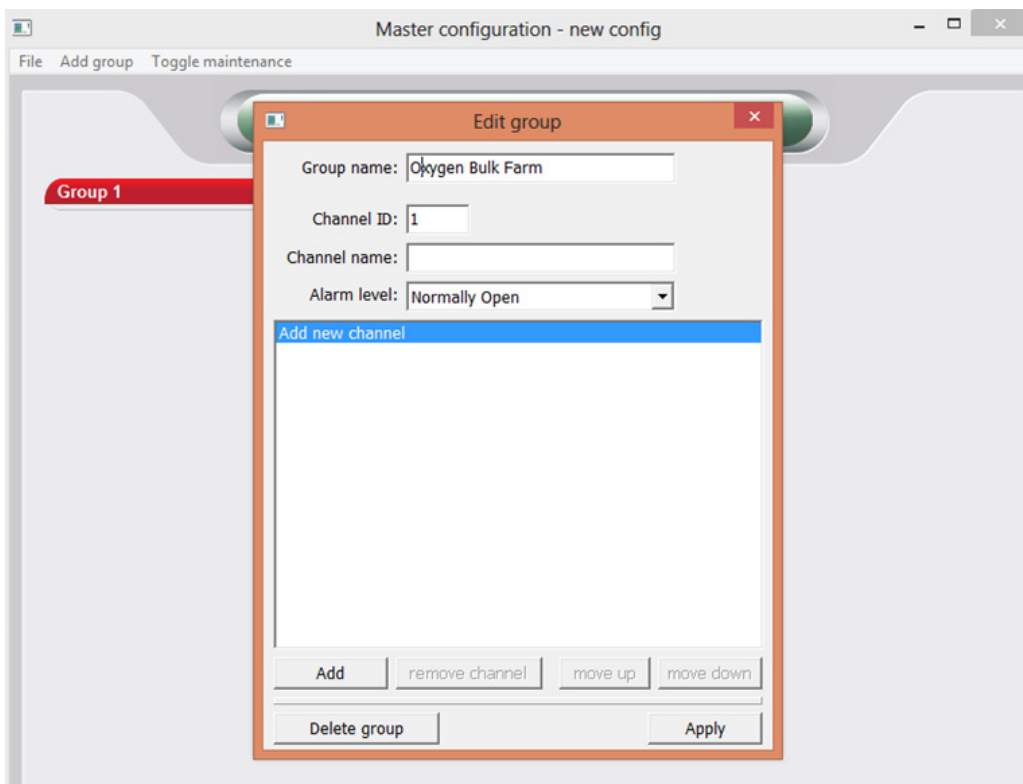
Configuration Guide

3. Double click on the "Group 1" column. The "Edit Group" window will pop up.

4. Under "Group Name," identify the medical gas source supply (e.g. Oxygen Bulk Farm).

Configuration Guide

CHANNEL NAME AND ALARM CONDITIONS.

5. Under the "Channel Name" column, identify the channel name and click the "Add" button to add channels (e.g. Oxygen Primary Liquid Level Low). To set alarm conditions for a normally open or closed circuit, click the drop down arrow to change alarm conditions.
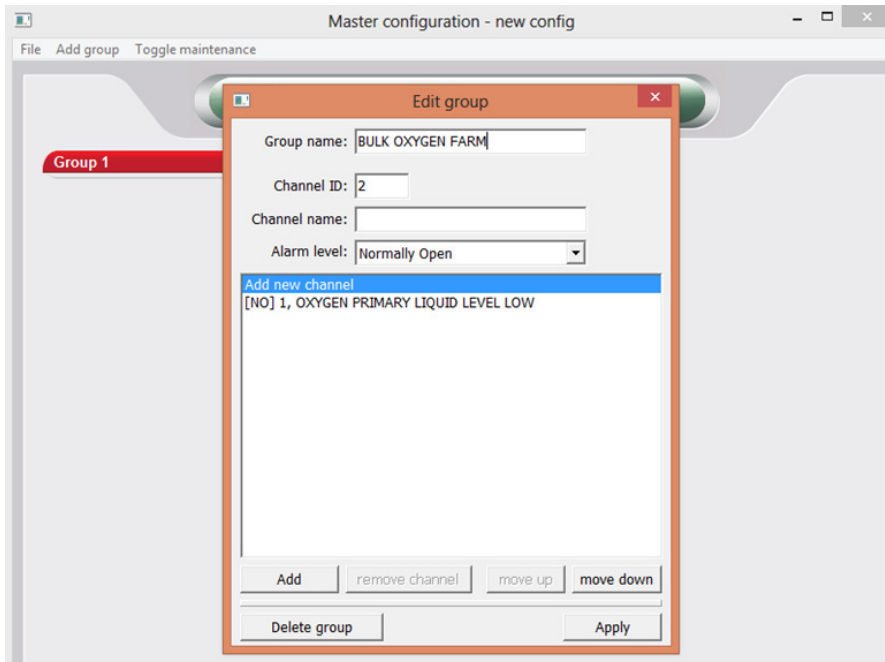
a. To modify the Group Name, double click to open the "Edit Group" window. Revise the group name then click "Apply".
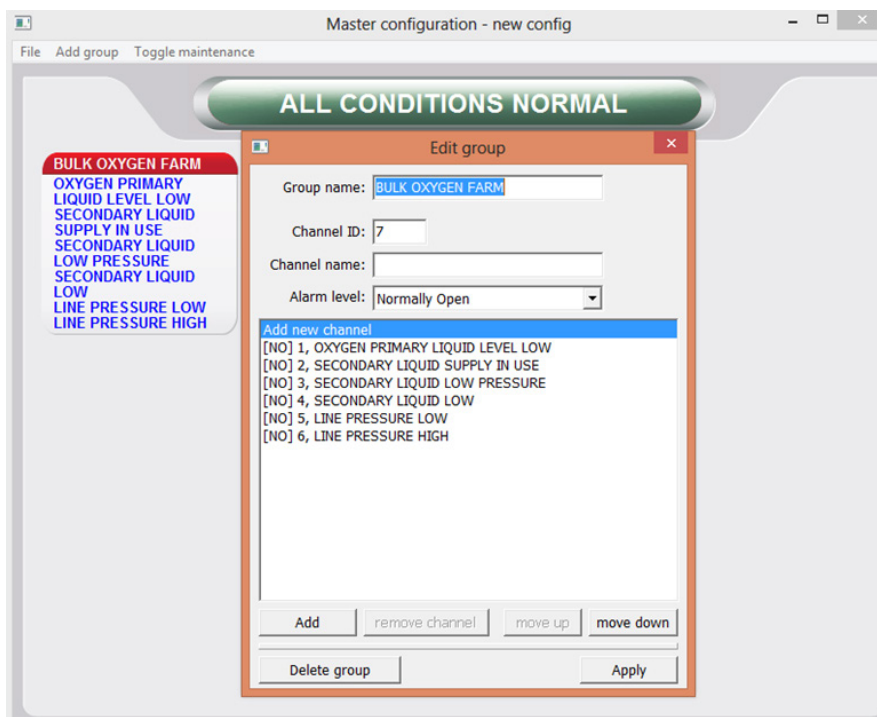
b. To modify the Channel Name, double click to open the "Edit Group" window. Click the channel you want to revise then revise the channel name. Click "Modify" then click "Apply".
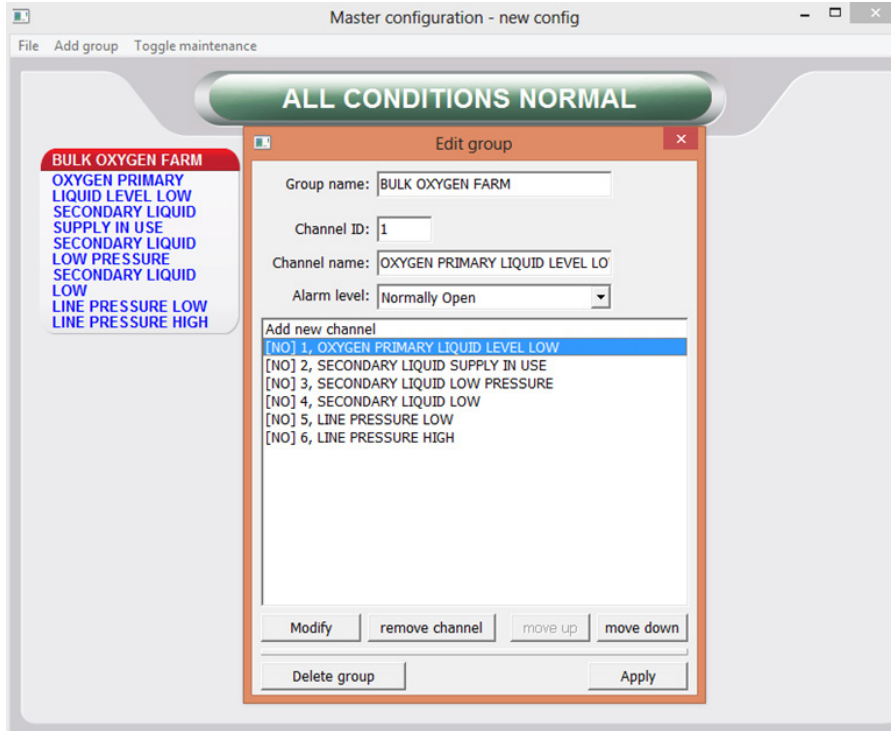
6. Click the "Apply" button to complete each group.
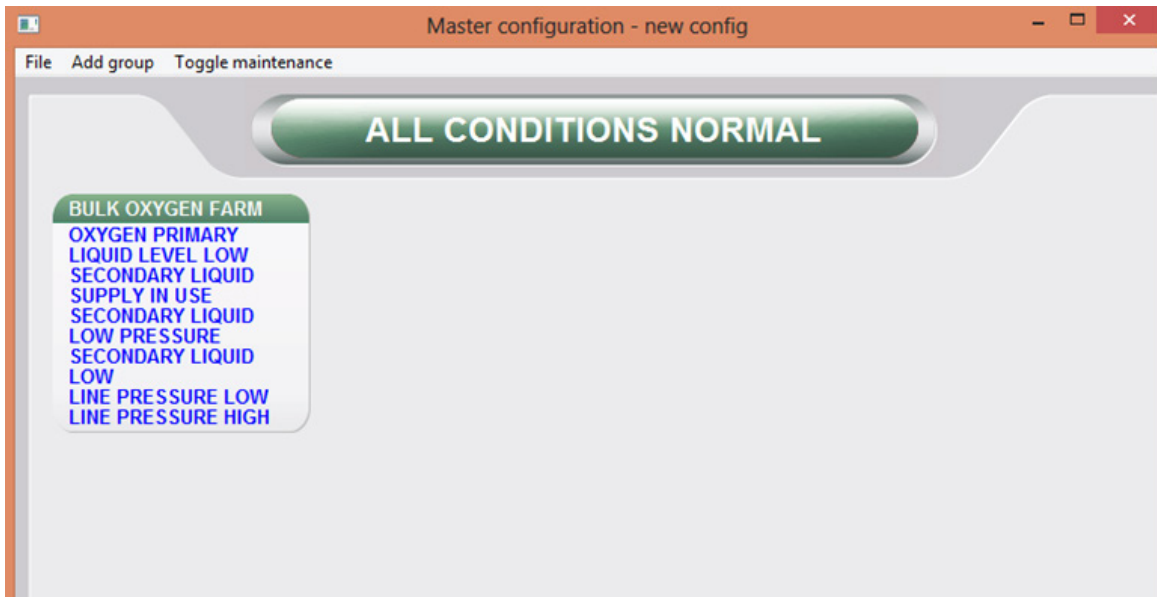
Configuration Guide

7. Save the Configuration file to the SD Card and rename the file. The file name must be saved as **master.cfg** in the "Master Configuration" file type.

8. To load the configuration file into the master alarm, follow the instructions under "Installation Guide" on page 16 of this manual.

Configuration Guide

NETWORK SETUP

⚠ **CAUTION:** Have the information systems personnel set up the network interface. Before making any changes to the network setting, notify information systems personnel.

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 (1GB preferable)

Setup

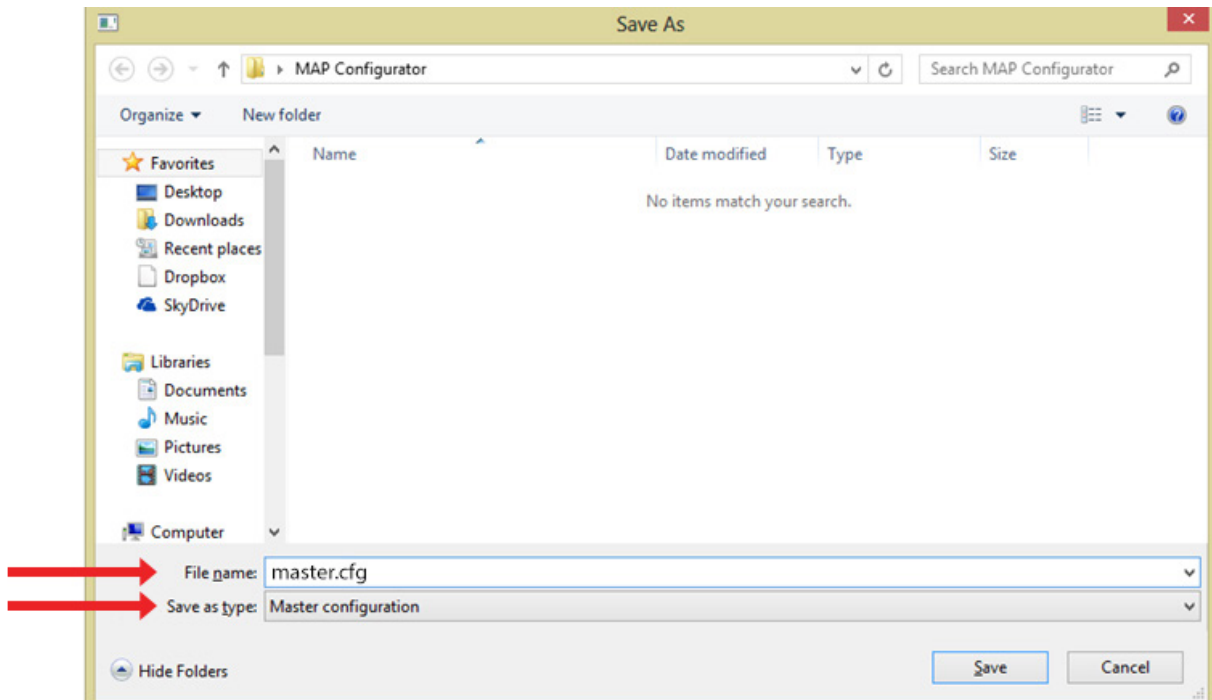- Connect the Alert-4 Master Alarm to an Ethernet switch using a cat 5 Ethernet cable
- For direct connection to PC, connect the Master Alarm to the PC using a cat 5 Ethernet cable

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.

- The Amico Alert-4 Master Alarm will be set to factory default settings. The IP Address, Subnet Mask and Gateway will be set as follows:

        IP Address: 192.168.1.100
        Gateway: 192.168.1.1
        Subnet Mask: 255.255.255.0

- Static IP configuration needs to be used to connect to the Hospital Network
- Upon power-up, the device will immediately begin using the static IP configuration
- Each alarm requires a different IP address to connect to the network
- 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.
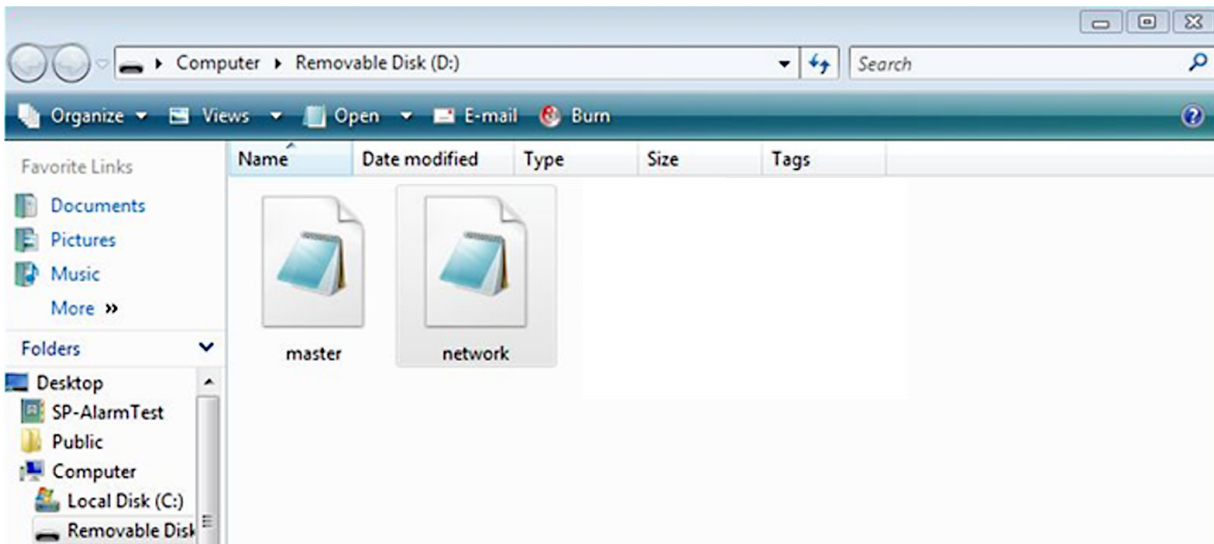
Change the default IP address to the desired IP address, Gateway and Subnet Mask; then save the file by clicking "File" then "Save."
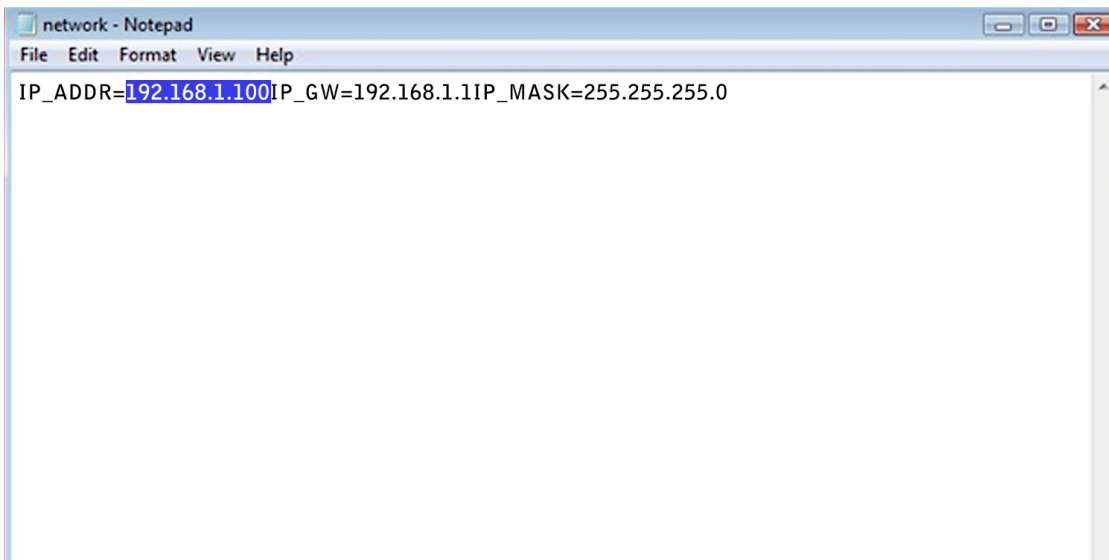
When all files are saved on the SD card, insert the SD Card into the SD Card Slot on the LCD Alarm board (Refer to Appendix A).

Configuration Guide

To load the channel name configuration file and the network configuration file, press and hold the Reset button and the Setup button at the same time for two se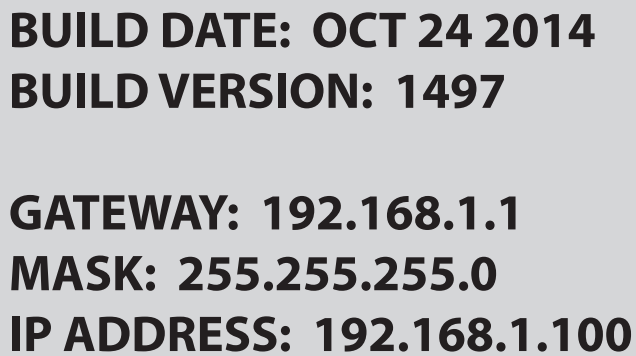conds; then let go of the Reset button while still holding down the Setup button, until the new channel name configuration file and network configuration file are uploaded to the Master Alarm.

When loading is completed, the screen will display the new channel name configuration and new network configuration, as shown below:

BUILD DATE: OCT 24 2014
BUILD VERSION: 1497

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 above steps. If the problem persists, contact Amico Corporation for further assistance.

- 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 master alarm. Then you can proceed to remove the card.
- Once the card has been removed, restart the LCD Alarm to ensure that the configurations and network setting have been saved onto the LCD Alarm.

CONNECTING TO ALARM

- Start your web browser (Google Chrome or Internet Explorer)
- Enter the device IP address in the browser's address bar (e.g. http://192.168.1.1XX)

   NOTE: To find the device IP Address, press the Reset button on the back of the Alert-4 Master 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 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 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 to the alarm panel from a 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)

⚠️ **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.

A4 Alarm iPhone App

NOTE: Phones must be connected to WiFi prior to connecting to the A4 Alarms

1. From your iPhone's browser (Safari) type in the IP address of the device you are connecting to.
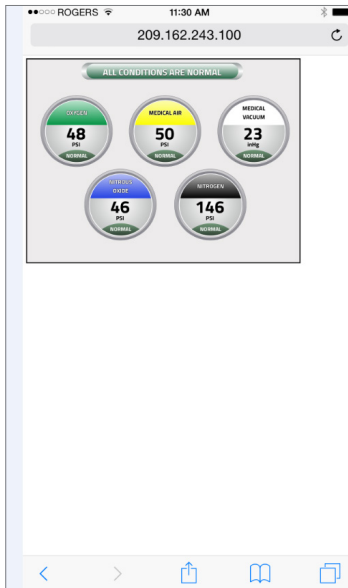
2. At the bottom of the screen you will see an icon depicting an arrow, click the icon and click "Add to Home Screen".

3. The screen will prompt you to name the App icon. The name can be either a device name or it can be a location where the device is installed.
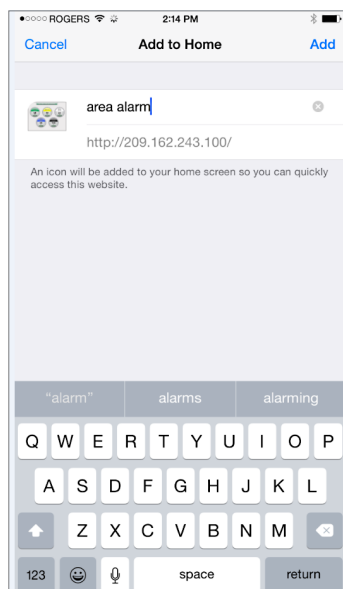
4. The App icon will be displayed on the Home Screen.
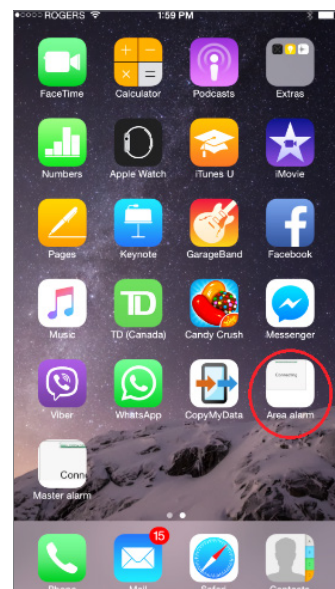
A4 Alarm Android App

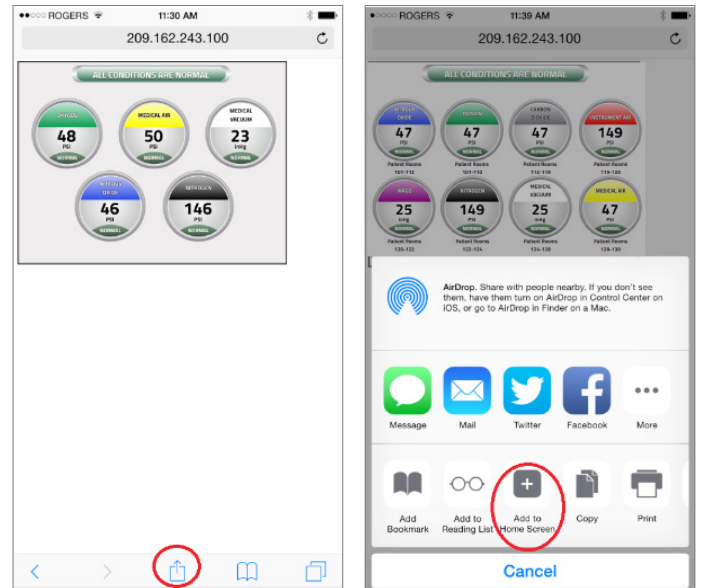**NOTE:** Phones must be connected to WiFi prior to connecting to the A4 Alarms

1. From your Android phone's browser type in the IP address of the device you are connecting to. Click the flag button at the bottom of the screen to Bookmark it.
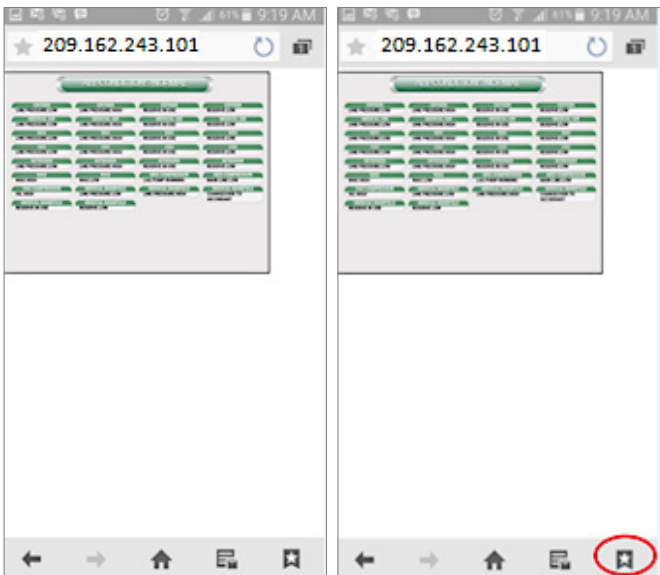
2. Go to the Bookmarks page and select "Add shortcut on home screen."
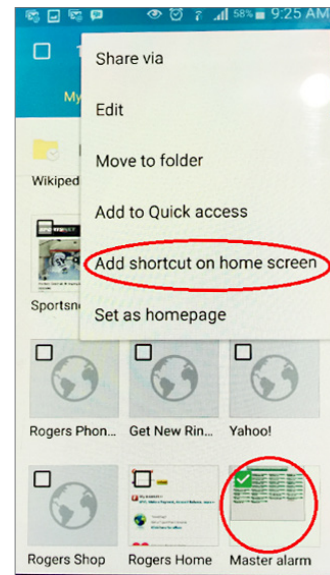
3. The Shortcut icon will be displayed on the Home Screen.
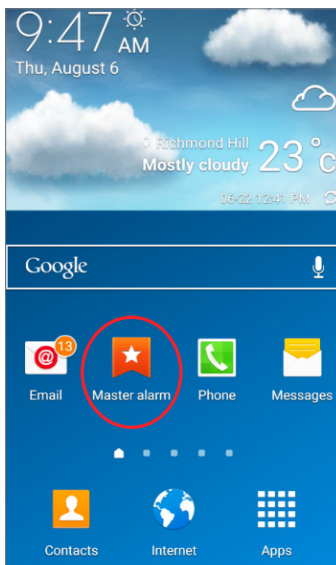
4. The shortcut icon name can be edited by clicking "Edit." The name can be either a device name or it can be a location where the device is installed. Click "Save" to commit your changes.
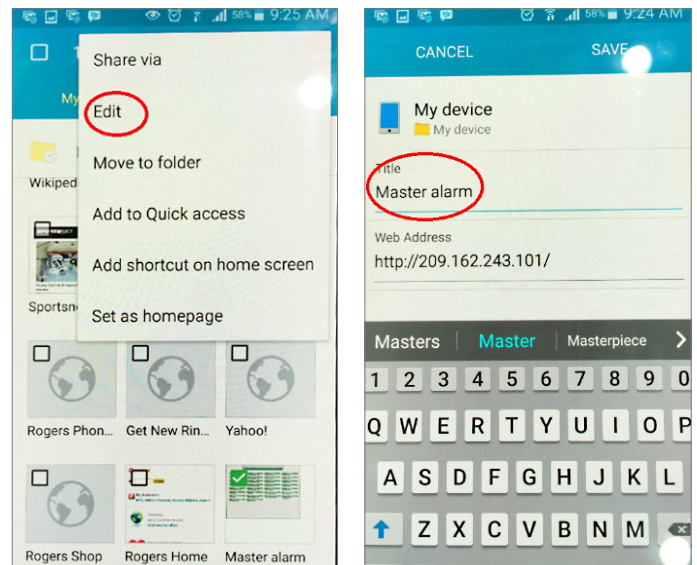
Network Diagrams

DIRECT CONNECTION

SIMPLE UNMANAGED NETWORK

Switch
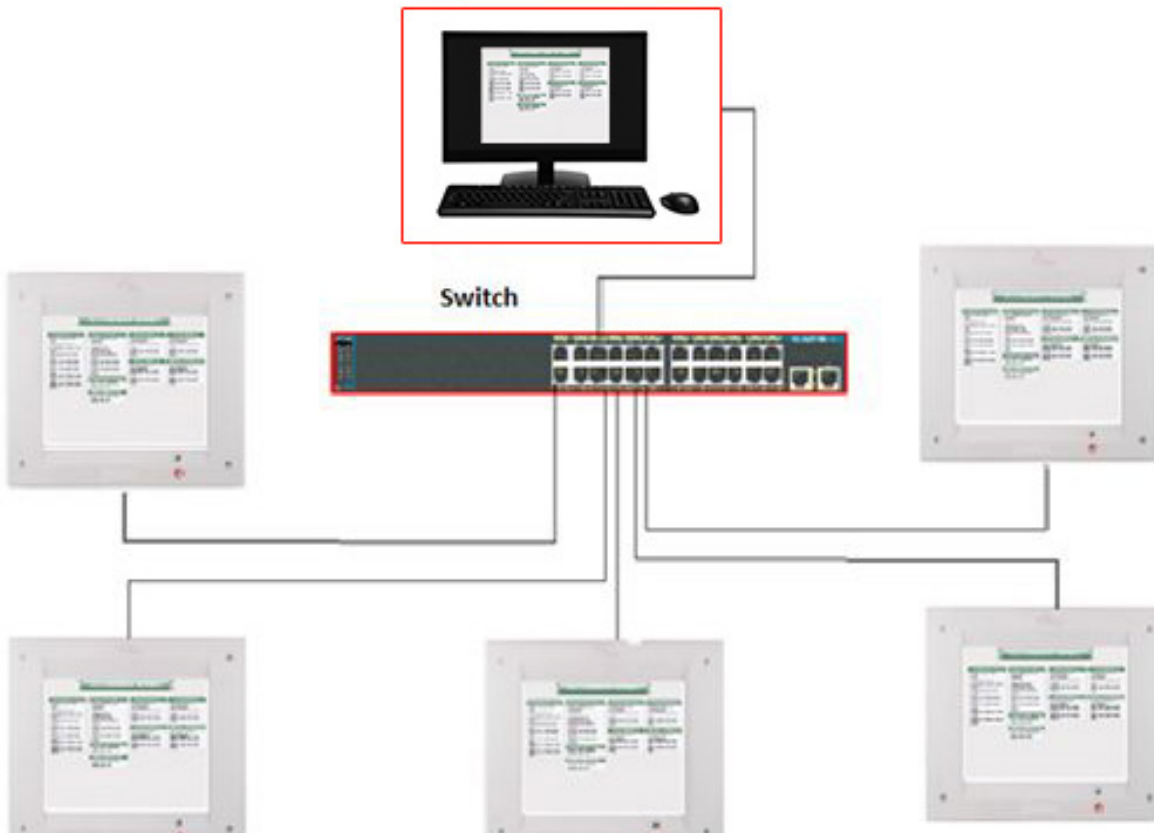
Network Diagrams

COMPLEX MANAGED NETWORK
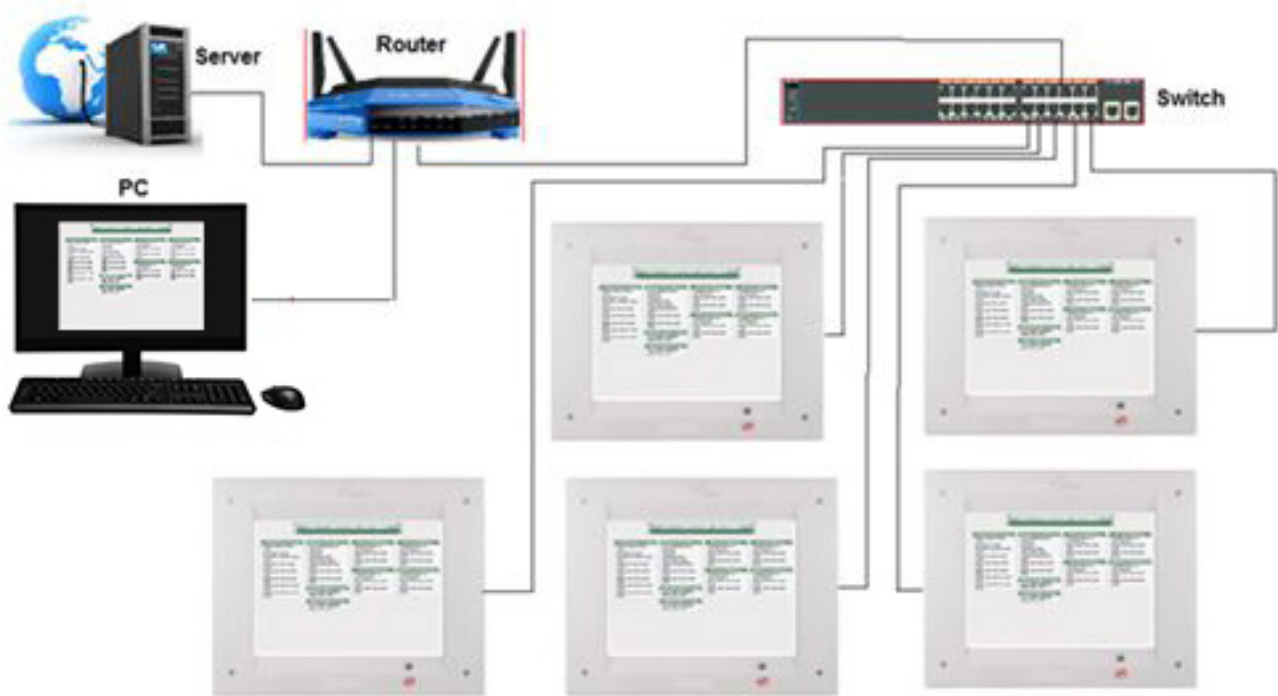
Spare Part Numbers

ACCESSORIES/MISCELLANEOUS

Model Number	Description
A2P-POWER-V2	Power Supply Module Alert-2
A2P-BOXASS-3LCD	Alarm Back Box Assembly 3-Station Alert-2
A4M-MASTER-FRAME	Master Alarm Frame Assembly for AL4-Ethernet
A3P-LCD-SCREEN	LCD Screen
A3P-RIBBON-CABLE	Ribbon Cable 3" long
A2X-BOX-3-FILL	Alert-2 Alarm Box Filler Frame 3-Station
A3X-A-TERM-LAB30	Terminal Block Label 30 points
A3X-LCD-LABEL	LCD Alarm Front Label
A3X-LCD-LABEL-MUTE	Alert-3 Mute Label

Maintenance Mode

FACTORY DEFAULT − DISABLED

The Maintenance Mode is used to allow hospital personnel to identify loose wiring or faulty source equipment. By enabling the Maintenance Mode any alarms received, even transient ones, will be latched-on so that the maintenance personnel can identify the source of the problem.

TO ENABLE OR DISABLE MAINTENANCE MODE:

- Press the Setup button and select the Maintenance Mode by pressing the B4 button
- Use the Up and Down buttons to activate the Maintenance Mode to either Enable or Disable

The display will show "Maintenance Mode Active" when Maintenance Mode is enabled.

Troubleshooting

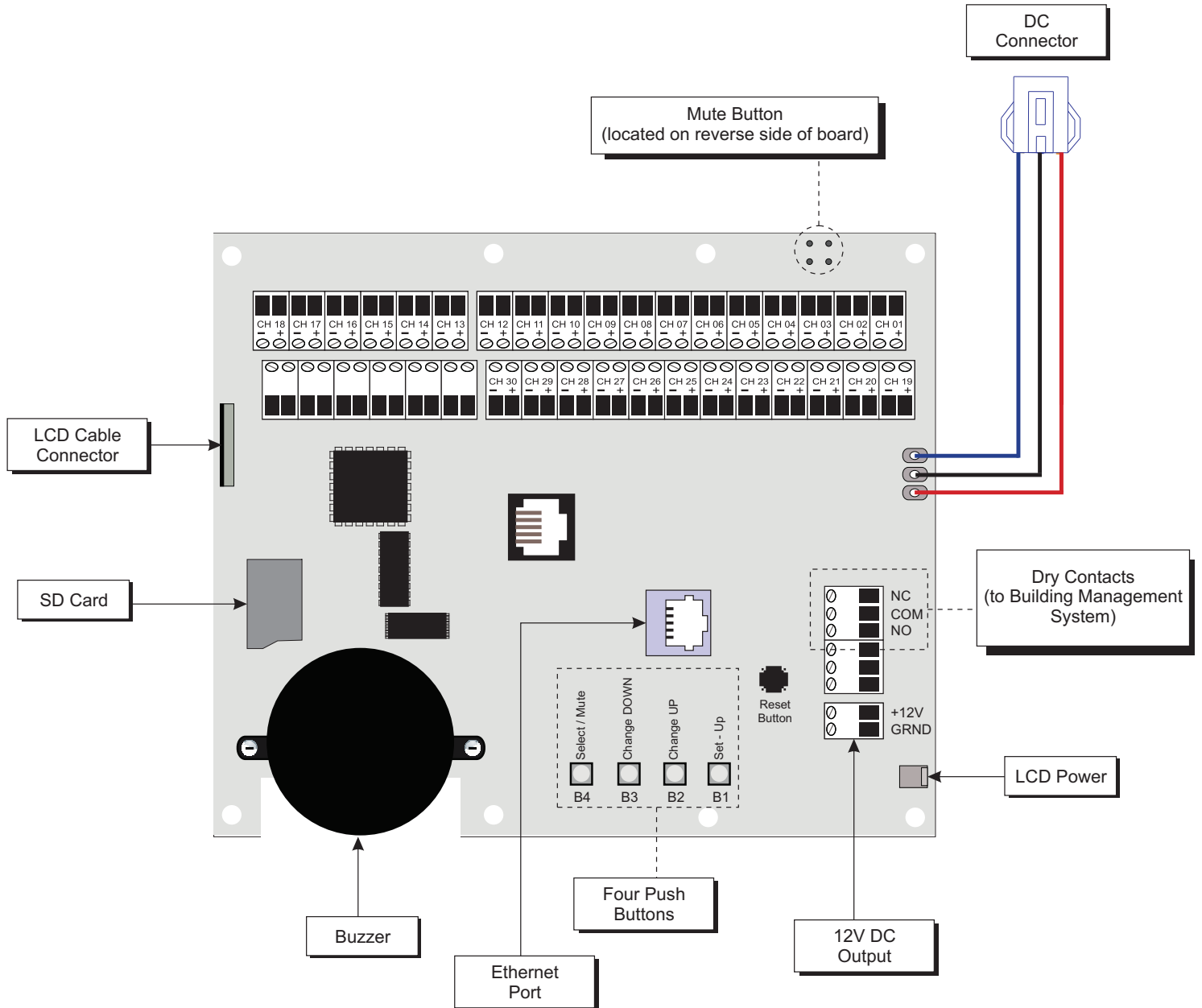| Symptom	Cause	Corrective Action
No power on the alarm	AC power not available	a. Ensure that the ON/OFF switch on the power supply module is turned ON (see Appendix B). b. AC wiring not connected. c. Check the building electrical breaker to ensure that the power is ON. d. Check the voltage at the terminal 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 the LCD screen	Loose ribbon cable from LCD screen to board	a. Ensure that the cable is firmly in its socket on the LCD screen and board. 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 the 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.

Appendix A

WIRING DIAGRAM: CIRCUIT BOARD

DC Connector

Mute Button
(located on reverse side of board)

LCD Cable Connector

SD Card

Buzzer

Ethernet Port

Four Push Buttons

CH 18 CH 17 CH 16 CH 15 CH 14 CH 13 CH 12 CH 11 CH 10 CH 09 CH 08 CH 07 CH 06 CH 05 CH 04 CH 03 CH 02 CH 01

CH 30 CH 29 CH 28 CH 27 CH 26 CH 25 CH 24 CH 23 CH 22 CH 21 CH 20 CH 19

Select / Mute Change DOWN Change UP Set - Up

B4 B3 B2 B1

Reset Button

NC
COM
NO

+12V
GRND

Dry Contacts
(to Building Management System)

LCD Power

12V DC Output

⚠️ **CAUTION:**

1. Keep the sheild drain wires as short as possible and taped to prevent from grounding, so they cannot touch the fromt 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

V4.1   AC N

ON

OFF

Toggle Switch

Ground

Fuse (1 AMP)

20R 5W

G 5V 15V

DC Power Cable:
Connect to LCD
Module
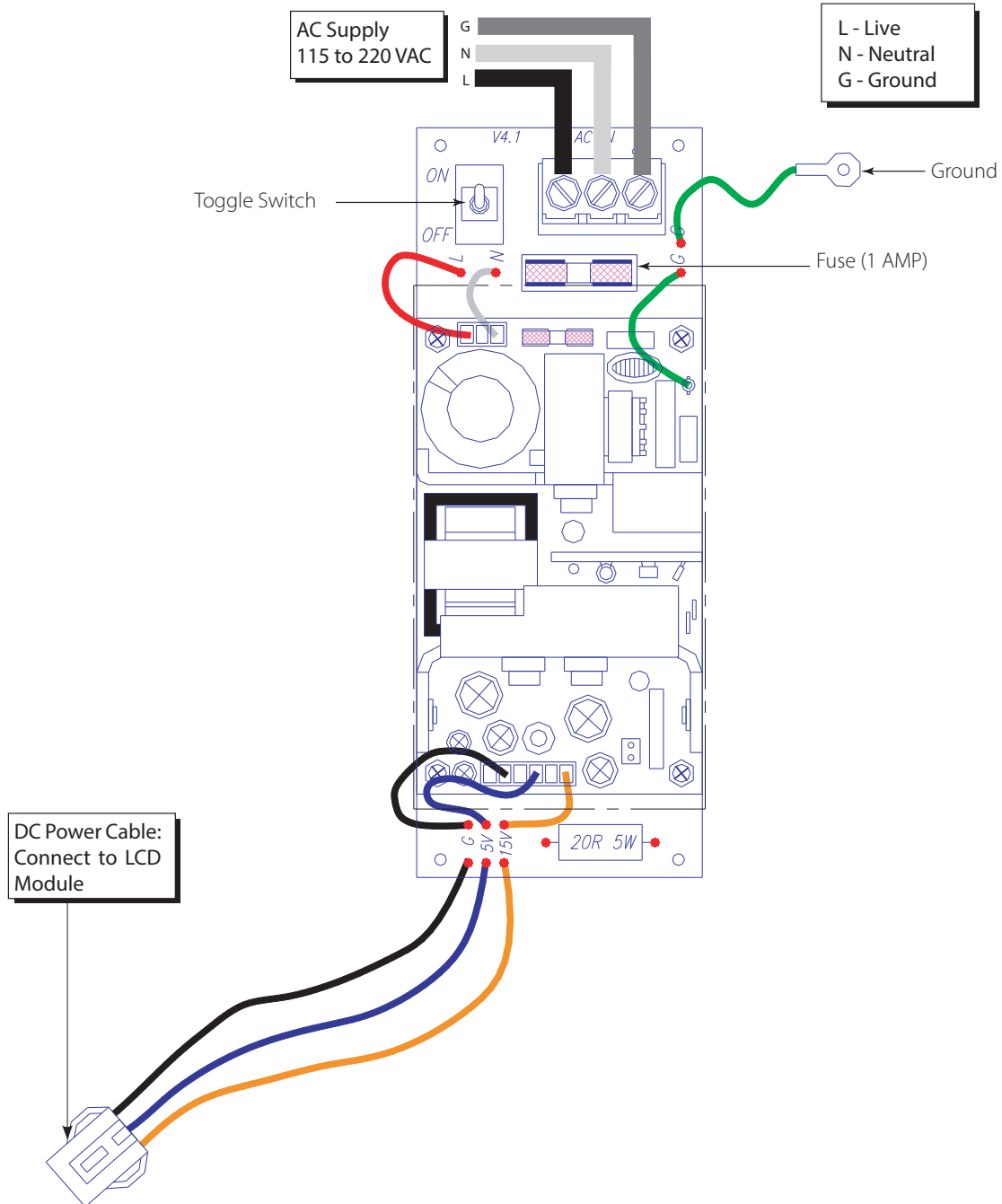
CAUTION:

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 Universal Remote Buzzer

+12V

REMOTE BUZZER
+
S
−

NC COM NO 12V GND

REMOTE BUZZER
Amico
POWER   ALARM
PUSH TO TEST   ALARM SILENCE

CH 18 CH 17 CH 16 CH 15 CH 14 CH 13 CH 12 CH 11 CH 10 CH 09 CH 08 CH 07 CH 06 CH 05 CH 04 CH 03 CH 02 CH 01
− +   − +   − +   − +   − +   − +   − +   − +   − +   − +   − +   − +   − +   − +   − +   − +   − +   − +
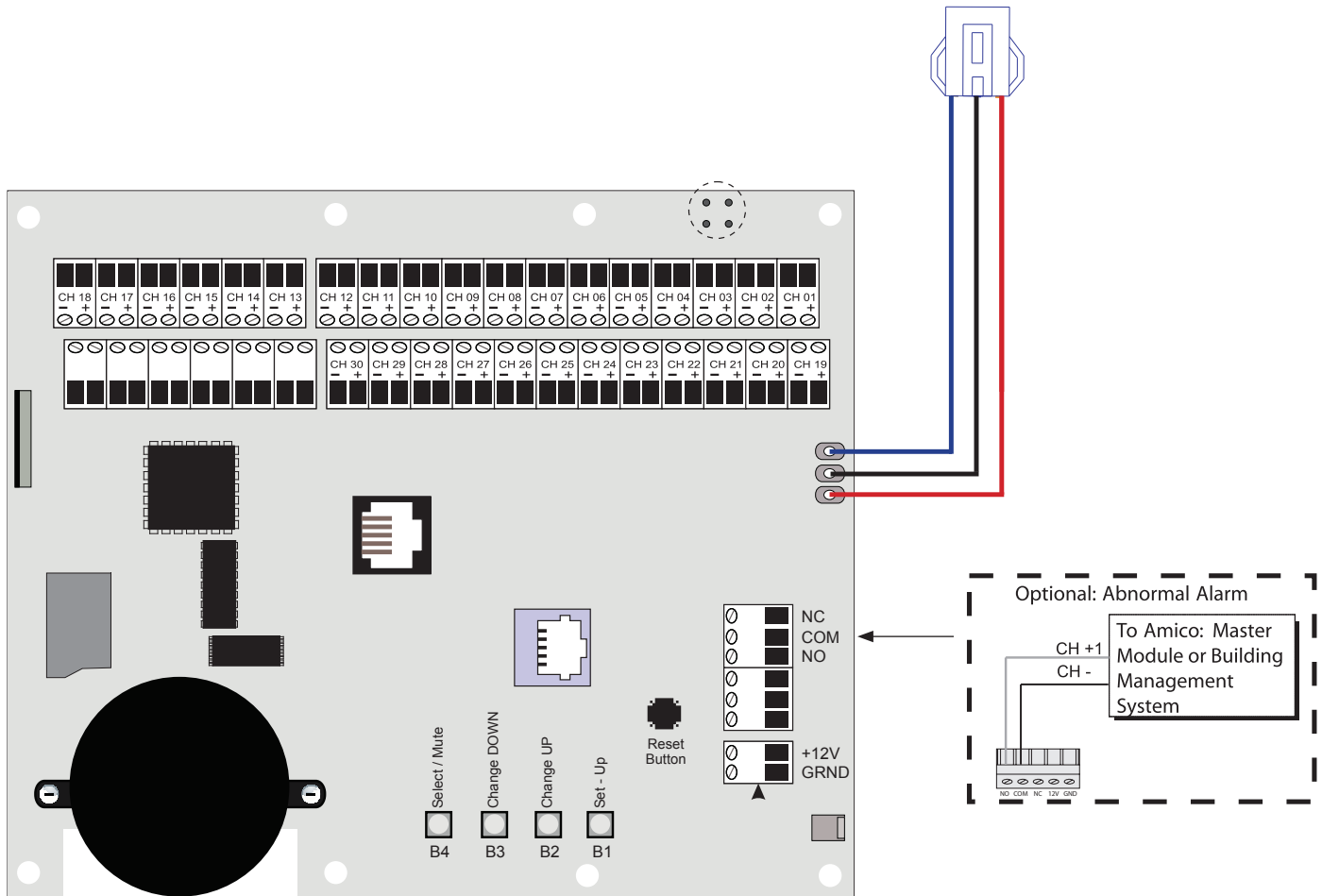
CH 30 CH 29 CH 28 CH 27 CH 26 CH 25 CH 24 CH 23 CH 22 CH 21 CH 20 CH 19
− +   − +   − +   − +   − +   − +   − +   − +   − +   − +   − +   − +

Select / Mute   Change DOWN   Change UP   Set - Up
B4   B3   B2   B1

Reset
Button

NC
COM
NO

+12V
GRND

Optional: Abnormal Alarm

To Amico: Master
Module or Building
Management
System

CH +1
CH −

NO COM NC 12V GND

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Appendix D

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 Master Alarm to Source Equipment:
      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.**

LCD Alarm to Master:
      Distance: Maximum 10,000 ft [3048 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 E

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 should not be installed near radio transmitters, electrical motors, electrical control room, switchgear, 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 or master alarms to source equipment

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

   9. Do not ground the shield drain wire 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)

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 Input.

Notes

Notes

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