Operating & Maintenance Manual

Alert-2 Microprocessor Based Digital Alarm System v5.9

Amico

www.amico.com

Contents

User Responsibility

The information contained in this Installation and Operation Maintenance Manual, pertains only to the ALERT-2 micro-processor based digital alarm. This product will perform to conformity with the descriptions contained 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 of Amico Corporation or its distributors. Failure to comply will void all warranty on the alarm.

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

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

WARNING: denotes steps which can prevent injury.

CAUTION: denotes steps which can prevent damage to equipment.

DANGER: denotes steps which can prevent electrical shock to equipment or to prevent serious injury and/or death.

Introduction

The AMICO Medical Gas Alarm System (ALERT-2) incorporates the latest microprocessor technology for alarm and surveillance systems. The alarm has been designed to provide user flexibility and reliability. This manual will enable the customer to install, use and maintain the alarm properly.

All Gases or Vacuum are displayed with large Red LED's for clear visibility. To facilitate the monitoring function by hospital personnel, a trend bar is provided to show the direction of the gas/vacuum pressure. Under normal operation, the gas trend indicator will be in the GREEN - OK position. If the gas pressure approaches alarm condition, the trend indicator will display a YELLOW - Caution indicator. If an alarm condition occurs, a RED-Alarm indicator will be displayed and the buzzer will sound.

There are two buttons located on the front face of the Annunciator module. They are the "TEST" and "ALARM MUTE" buttons. The function of the "Test" button is to verify that the buzzer and all the alarm LED's are in normal working condition. The function of the "Alarm Mute" button is to silence an alarm that has occurred.

A master status module monitors source equipment such as: Oxygen, Nitrous Oxide, Air compressors, Vacuum pumps, Air dryers, high/low pressure switches, etc. This module can be connected to a "Building Management System", with a piggy-back computer interface board, that attaches to the master module.

The Alert-2 microprocessor based digital alarm system complies with NFPA-99.

The Alert-2 microprocessor based digital alarm system is UL Listed to U.S. and Canadian safety standards.

FEATURES

- Individual Microprocessor on each display, sensor and master module.

- Gas specific sensors can be mounted locally or remote, up to 2,500 feet, [750m] utilizing 22 gauge twisted pair (shielded cable should be used).

- DISS gas specific sensor housed in a tamper proof enclosure. The Sensor Module is housed in an anodized aluminum and nickle-plated brass enclosure to act as an interference barrier.

- The Sensor Module is the smallest computer-calibrated temperature-compensated sensor in the industry.

- True digital LED display and trend indicator for each service monitored.

- Illuminated LED display that is visible at an angle and in dim lighting conditions.

- PSI, kPa or BAR display (switch selected).

- Self diagnostic circuitry with error display for problem identification.

- Highly accurate Solid State Pressure piezo-resistive transducer.

- Adjustable repeat alarm (1 to 60 minutes/or off) for the Area, 2 in 1 Alarm and Compact Alarm.

- Adjustable repeat alarm (1, 12, 24 hours/or off) for the Master Alarm.

- Dry contacts for remote monitoring of High and Low alarm status on the Area, 2 in 1 and Compact Alarm display module.

- 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.

- Area alarms available in 1 to 6 display modules.

- Compact alarms available in 1 to 12 display modules.

- Master alarms available in 10 to 60 points.

- 2 in 1 alarms available in 1 to 6 display modules with 5 to 30 master points.

- Area, 2 in 1, and Compact Modules can be intermixed with Master Modules to create a combination alarm.

- Built-In relay for remote annunciator applications.

- Area, 2 in 1 and Compact Module indication for calibration (flashing bar graph).

Description of the Alarm

SHIPMENT DETAILS

When you receive an ALERT-2 series alarm from Amico Corporation, the package will consist of two main sections; the Alarm Back Box and the Frame/Module Assembly. The Frame/Module assembly will be pre-configured, with the appropriate display modules, based upon the customer's specifications.

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 VAC, or 220 VAC). 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 all the modules that are pre-assembled to the customers specification. 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 the Modules

The ALERT-2 alarm is divided into 4 or 7 main modules:

COMMON TO ALL ALARMS

1. 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 LED's. 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 annunciator module. The System Power Supply can be easily removed and reinstalled by unscrewing it from the back box.

2. ANNUNCIATOR MODULE

The Annunciator Module contains the buzzer, a "Power On" LED, the "TEST" and the "ALARM MUTE" buttons. The function of the "TEST" button is to verify that the buzzer and all the LED's are in working condition. An alarm will be heard when this button is pushed and all the LED's will light up. When the button is released, the alarm will silence. The "ALARM MUTE" button is used to silence an alarm that has occurred. 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 (see Appendix B), for connection to another Amico Alarm or a Building Management System.

3. BLANK MODULE

The Blank Module is used as a filler board for future provisions of the alarm.

AREA ALARM

4. AREA DISPLAY MODULE

The Area Display Module provides a digital display of the actual pressure/vacuum of a gas being monitored. In addition a gas trend indicator bar with HIGH and LOW alarms are displayed. The trend bar has three coloured LED's: Green for Normal condition, YELLOW for Caution condition, and RED for high and low Alarm conditions.
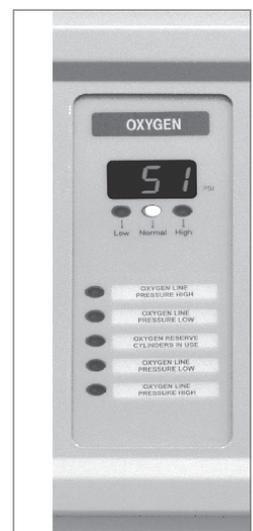
Each display module contains a gas specific colour coded label (USA or ISO colours are available). A space is also provided, at the base of the module, to identify the location that the display module monitors. The display module is field adjustable for pressure/vacuum settings, repeat alarm, and units of measure. Whenever the module is in calibration mode, the bargraph is flashing, indicating the calibration mode. Dry contacts for high and low alarms are available for remote monitoring of each module.
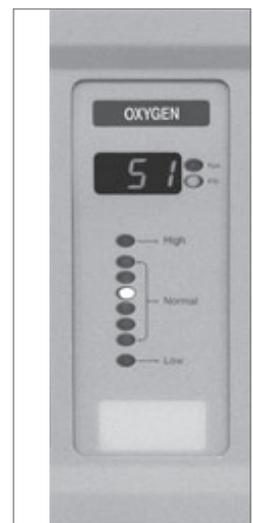
5. 2 IN 1 DISPLAY MODULE

The 2 in 1 Display Module provides a digital display of the actual pressure/vacuum of the gas being monitored. In addition, a gas trend indicator bar with High and Low alarms are displayed. This module has two coloured LEDs - Green for Normal conditions and Red for High and Low alarm conditions. It is field adjustable for pressure/vacuum settings, repeat alarms, and units of measure. Dry contacts for high and low alarms are available for remote monitoring of each module.

Each module will continuously monitor up to 5 signals from source equipment or pressure switches. If any of the signals being monitored go into an alarm condition, a Red LED will illuminate and the audible alarm will sound.

PLEASE NOTE: Contacts located on back of module are Dry Contacts only.
DO NOT apply any voltage.

6. COMPACT DISPLAY MODULE

The Compact Display Module shall have 2 displays in 1 board. The Compact Module provides a digital display of the actual pressure/vacuum of a gas being monitored. In addition a gas trend indicator bar with High and LOW alarms are displayed. The trend bar as two colored LED's: GREEN for Normal and RED for High and Low condition.

Each display module contains a gas specific colour coded label (USA or ISO colours are available). The Display Module is field adjustable for pressure/vacuum settings, repeat alarm, and unit of measure. Dry contacts for high and low alarms are available for remote monitoring of each module.

7. SENSOR MODULE

The Sensor Module contains the transducer which converts the pressure/vacuum pressure source into a digital signal that is displayed on the Display Module. The sensor module shall be housed in an anodized aluminum and nickel-plated brass enclosure to act as an interference barrier also it is temperature compensated. Each sensor is clearly labeled and colour 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. If it is not connected to the appropriate gas display module, an error message (EO2) will be displayed.

MASTER ALARM

8. MASTER/NEMA 4 STATUS MODULE

Each Master Status Module will continuously monitor up to 10 signals from source equipment and pressure switches. If any of the signals being monitored go into an alarm condition, a Red LED will illuminate and the audible alarm will sound. The module has a slow and a rapid flashing LED rate. The last alarm condition always flashes at a rapid rate, while the previously acknowledged alarms always flash at a slow rate.

PLEASE NOTE: Contacts located on back of module are Dry Contacts only.
DO NOT apply any voltage.

For Annual Test
* **Reset power to make sure all LED's light up**
* **Push and hold the 'Test' button to light up all LED's and the audible alarm**
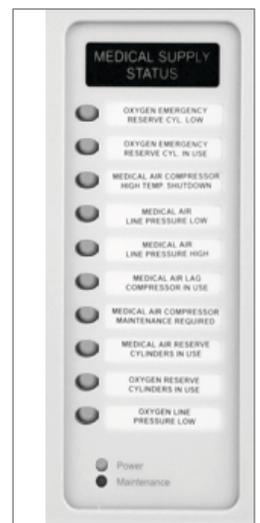
9. COMPUTER INTERFACE MODULE

The Computer Interface Module is a piggyback board that fits on top of the master status module. This module plugs into the status module via a connector, located at the bottom end of the status module. There are three mounting screws provided to secure th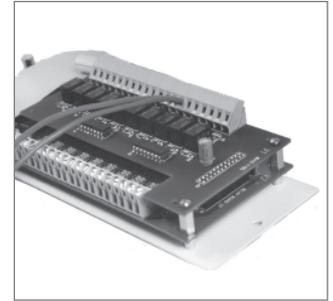is module to the status module. This module provides dry contacts for interface to a "Building Management System". The module is "Fail-Safe", closed circuit monitoring.

PLEASE NOTE: The computer interface module is **not** compatible with the 2 in 1 board.

Installation

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.

FOR LOCAL SENSOR 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 it's 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.

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 labelled gas service.

FRAME/MODULE ASSEMBLY

Step #1	Remove the frame/module assembly from its protective box.
Step #2	Remove screws from the frame section (6 screws).
Step #3	Attach the flat head screws (provided with frame in plastic bag) to the hinge. This will line up with holes on the box.
Step #4	Attach the frame wire with 2 dome head screws (provided with frame in plastic bag).
Step #5	Close the frame panel and tighten the screws on the frame plate.
Step #6	Carefully place the front frame over the fastened plate. Refasten the screws that were removed in Step #2.

CAUTION: The microprocessor circuitry on the ALERT-2 alarm contains sophisticated integrated semiconductors. If it becomes necessary to remove a module, 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.

SENSOR

LOCAL (Inside the Back Box)

1. Locate the gas specific sensor module to be installed.

2. In the back box, there are colour coded gas labels located under the DISS Demand check valves. Each label identifies where each sensor module is to be placed.

3. 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: Pressure on sensors are not to exceed **250psi** for Pressure sensors and **30"** for vacuum sensors.

OLD LOOK

The new style sensors can read pressure up to:
Mid Pressure 99 Psi
Hi Pressure 249 Psi
Vacuum 30" Hg

NEW LOOK

REMOTE (Outside the Back Box)

1. Connect a Tee (supplied by others) to the pipeline with a 1/4" NPT female connection that will accept the DISS Demand check-valve.

2. Locate the gas specific sensor module to be installed.

3. Thread the DISS Demand check-valve into the correct gas pipe line.

4. 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.
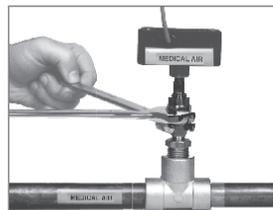
OLD LOOK
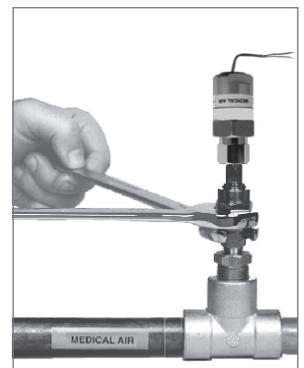
NEW LOOK

Wiring

SYSTEM POWER SUPPLY

TURN OFF THE POWER SWITCH BEFORE CHANGING ANY MODULES AND/OR DISCONNECTING ANY CABLES, OR ELSE THE FUSE WILL BLOW TO PROTECT 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 in Appendix A and as specified in the technical specification in Appendix P.

ANNUNCIATOR MODULE

1. The Annunciator Module has a female receptacle located at the top right side of the board (J1).

2. Connect the DC power cable from the System Power Supply into the receptacle connection located on the annunciator module. The connector is keyed and can only be plugged in one way, (Appendix B).

SENSOR MODULE

LOCAL (Inside the Back Box)

1. The sensor module is provided with a 6"-8" [0.1m-0.2m] 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 fromthe 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.

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

REMOTE (Outside the Back Box)

1. 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 in Appendix E.

2. 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 2,500 feet [750m] of 22 Gauge, shielded twisted pair cable can be used.

3. Connect the Red wire from the cable to the terminal on the display module marked "Sensor +". Connect the black wire to terminal "Sensor -" (see Appendix D).

4. Repeat the above procedures with the remaining sensor modules using the wiring diagram in Appendix E.

PLEASE NOTE: When remote sensors are used, a shielded or twisted pair cable is required (BELDEN #8451 or equivalent, supplied by others). Ensure that the proper gas sensor module is connected to its corresponding area display module, otherwise an error message (E02) will be displayed on the Area Display module.

AREA DISPLAY MODULE

1. If the dry contacts for High and Low 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 H.

2. See Appendix P for contact rating.

2 IN 1 DISPLAY MODULE

1. If the dry contacts for High and Low alarms are to be used for remote monitoring, connect the wires to the appropriate terminals, COM (Common), NC (Normally Closed), or NO (Normally Open), using the diagram in Appendix F.

2. Pull the remote signal wires into the alarm panel. Make the connections to the terminal blocks located on the side of the status module. The wiring fail-safe normally closed (NC) connections from the source equipment. The signal level is 5 VDC. Please refer to Appendix I.

3. ENSURE that the unused terminals are jumpered. If this is not done, the terminals that have not been jumpered will go into alarm.

COMPACT DISPLAY MODULE

1. If the dry contacts for high and low are to be used for remote monitoring, connect the wires to the appropriate terminals, Com (Common), NO (Normally Open), NC (Normally Closed), using the diagram in Appendix G.

2. See Appendix P for contact rating.

MASTER/NEMA 4 STATUS MODULE

1. Pull the remote signal wires into the alarm panel. Make the connections to the terminal blocks located on the side of the status module. The wiring is fail-safe normally closed (NC) connections from the source equipment. The signal level is 5 VDC.

2. Make the appropriate wiring connections as per the wiring diagram in APPENDIX M and N.

3. For Version 3 ENSURE that the unused terminals in the master module are jumpered. If this is not done, the terminals that have not been jumpered will go into alarm.

   For Version 4, turn off switches for any unused points (SW2).

COMPUTER INTERFACE MODULE

1. Pull the remote signal wires from the "Building management system" into the alarm panel. Make the connections to the terminal blocks located on the side of the module. The wiring is fail-safe normally open, held closed, dry contacts to the monitoring equipment.

2. Make the appropriate wiring connections as per wiring diagram in Appendix N.

CLOSING THE FRAME/MODULE ASSEMBLY

1. Swing up the frame assembly, ensuring that the stopper wires are folded into the back box.

2. Screw in the frame module to the top of the back box assembly by using the screws provided with the frame/module assembly. The alarm is now ready for use!
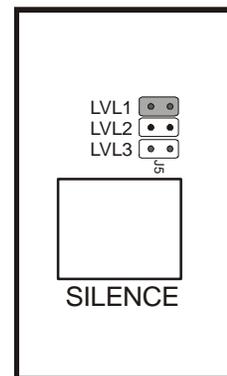
Annunciator Module

NOISE LEVEL CONTROL

Factory Default: 90 Decibels

To decrease noise level:

1. Locate jumper at J5. Move jumper to:
   LVL1 = 90 dBa.
   LVL2 = 80 dBa.
   LVL3 = 70 dBa.


CONTROL OF REMOTE ALARM BUZZER

Factory Default: Normal Condition

To silence remote alarm buzzer, when silencing the annunciator module:

1. Locate jumper at J6. Move jumper to:

   NORM =
   Remote alarm buzzer will silence when annunciator module is silenced.

   ALRM =
   Remote alarm will not silence when annunciator module is silenced. The buzzer will only silence when alarm condition has been cleared. Please refer to Appendix B.
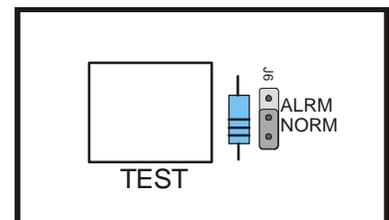
Steps to Re-Calibrate the Sensor from Area Module v4.0

1. Turn on Alarm
2. Set switches #8 & #10 the OFF position
3. Set switches #5 & #6 the ON position
4. The display will show the current reading of the pressure
5. Adjust the calibration, using the "UP" and "DOWN" push buttons, to the desired value.
6. Set switches #5 & #6 the OFF position
7. Turn on #10 if Aims is connected (do not turn on #8)

When you have completed step #7, the display module will automatically go into a "RESET" mode. This will store the data that you had entered.

Area, 2 in 1, Compact Display Module

A dip-switch is located on the back of the display module which is used to identify the gas of the display module. The dip-switch contains ten switch settings.

PRESSURE ONLY
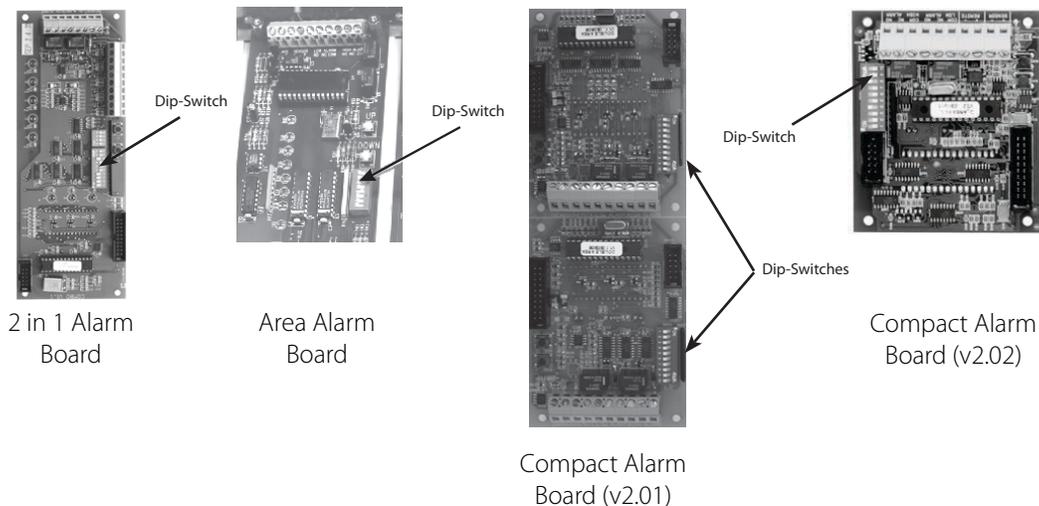Factory Default:
High = 60 Psi, Low = 40 Psi
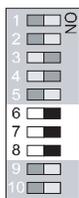Repeat time = 30 min.

HIGH PRESSURE/NITROGEN
Factory Default:
High = 195 Psi, Low = 140 Psi
Repeat time = 30 min.

Dip-Switch

Dip-Switch

Dip-Switch

Dip-Switches

2 in 1 Alarm Board

Area Alarm Board

Compact Alarm Board (v2.02)

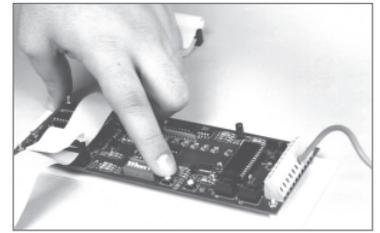Compact Alarm Board (v2.01)

During programming, the "Trend Bar" will Flash!

1. Set switch #6, #7 and #8 to the ON position.
2. The LED will display (HI-), followed by the current set point. Indicating the system is ready to accept a new High set point. Adjust set point, using the "UP" and "DOWN" push buttons, to the desired value.
3. Set switch #7 to the OFF position.
4. The LED will display (LO-), followed by the current set point. Indicating the system is ready to accept a new Low set point. Adjust set point, using the "UP" and "DOWN" push buttons, to the desired value.
5. Set switch #8 to the OFF position.
6. The LED will display (I-I-), followed by the current set point. Indicating the system is ready to accept a new Repeat time set point. Adjust set point using the "UP" and "DOWN" push buttons, to the desired value. [(Display dd=Disabled) Range from 1 to 60 Minutes]
7. Set switch #6 to the OFF position.

When you have completed step #7, the display module
will automatically go into a "RESET" mode. This will store the
data that you had entered.

PSI / kPa / BAR selection

Factory Default - PSI

For PSI mode, set the switch #4 to the ON position. The LED PSI indicator located next to the GAS
pressure reading will illuminate.

For kPa mode, set the switch #4 to the OFF position and switch #9 to the ON position. The LED kPa
indicator located next to the GAS pressure reading will illuminate.

For BAR set the switch #4 to the OFF and the switch #9 to the OFF position. The LED kPa indicator
located next to the GAS pressure reading will illuminate. (There is no separate indicator for BAR).

VACUUM ONLY
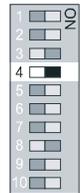Vacuum alarm set-point adjustment
Factory Default:
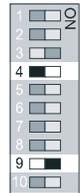High = 30"Hg, Low = 12"Hg
Repeat time = 30 min.

During programming, the "Trend Bar" will Flash!

1. Set switch #6, #7 and #8 to the ON position.

2. The LED will display (HI-), followed by the current set point. Indicating the system is ready to
accept a new High set point. Do not adjust this set point since the High set point is not used.

3. Set switch #7 to the OFF position.

4. The LED will display (LO-), followed by the current set point. Indicating the system is ready
to accept a new Low set point. Adjust set point, using the "UP" and "DOWN" push buttons, to
the desired value.

5. Set switch #8 to the OFF position.

6. The LED will display (I-I-), followed by the current set point. Indicating the system is ready to
accept a new Repeat time set point. Adjust set point using the "UP" and "DOWN"push buttons,
to the desired value. [(Display dd=Disabled) Range from 1 to 60 Minutes]
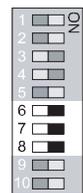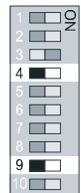
7. Set switch #6 to the OFF position.

When you have completed step #7, the display module will automatically go into a "RESET" mode.
This will store the data that you had entered.

InchHg / KPA / BAR selections

InchHg

Factory Default - InchHg

For InchHg mode, set the switch #4 to the ON position. The LED indicating InHg located next to the VACUUM source reading will illuminate.

For KPA mode, set the switch #4 to the OFF position and the switch #9 to the ON position. The LED indicating KPA located next to the VACUUM source reading will illuminate.

KPA

For BAR mode, the KPA indicating source must be changed to BAR by use of a label. Set the switch #4 to the OFF and the switch #9 to the OFF position. The LED indicating BAR located next to the VACUUM source reading will illuminate.
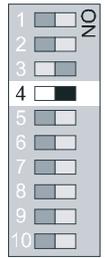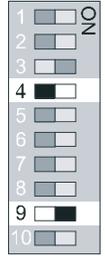
BAR
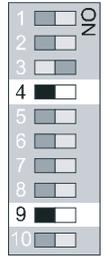
COMMON SETTINGS FOR PRESSURE AND VACUUM

Repeat Alarm Enable/Disable

Factory Default - Disable

Disable

Set switch #5 to the OFF position to disable the repeat alarm.

NOTE: When the repeat alarm function is disabled, the alarm will not repeat.

Enable

Enable Mode: (Factory Default 30 min, when enabled).

Set switch #5 to the ON position.

PLEASE NOTE: The Module with the Lowest set Repeat Time is the one that controls the Repeat Time. For example if one Module is set for 5min and one for 30min and both are Repeat Alarm enabled, the Alarm will now Repeat every 5min.

SETTING FACTORY DEFAULT

To quickly reset the module (Pressure or Vacuum) to the factory default settings as follows:

- Pressure: High set-point 60 Psi, Low set-point 40 Psi.

- Nitrogen & HP Air: High set-point 195 Psi, Low set-point 140 Psi.

- Vacuum: Low set-point 12 inchHg.

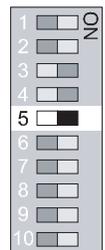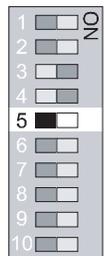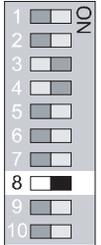- No Repeat alarm, but set for 30 min..

1. Set switch #8 to the ON position.

2. Turn the power off (wait 5 seconds) then back on.

3. Set switch #8 to the OFF position.

The module is now in the default mode.

SETTING GAS IDENTIFICATION SWITCHES

PLEASE NOTE: DO NOT tamper with switches #1, #2 and #3 on the dip-switch. Tampering with these positions will result in an error message being displayed (EO2) and will disable the electrical interlock from the gas specific sensor.

Changes to these switches should only be done by properly trained personnel, when circuit boards have to be changed in the field.

Switches # 1, #2 and #3 are used for the gas identification of the display module. These will be set at the factory and should not be tampered with in the field.

CHART OF GAS SPECIFIC SETTINGS OF DIP-SWITCHES

Oxygen
#1 - off
#2 - off
#3 - on

Vacuum
#1 - off
#2 - on
#3 - off

Medical Air
#1 - on
#2 - off
#3 - on

Nitrous Oxide
#1 - off
#2 - on
#3 - on

Nitrogen
#1 - off
#2 - off
#3 - off

Carbon Dioxide
#1 - on
#2 - on
#3 - on

WAGD
#1 - on
#2 - on
#3 - off

HP Air
#1 - on
#2 - off
#3 - off
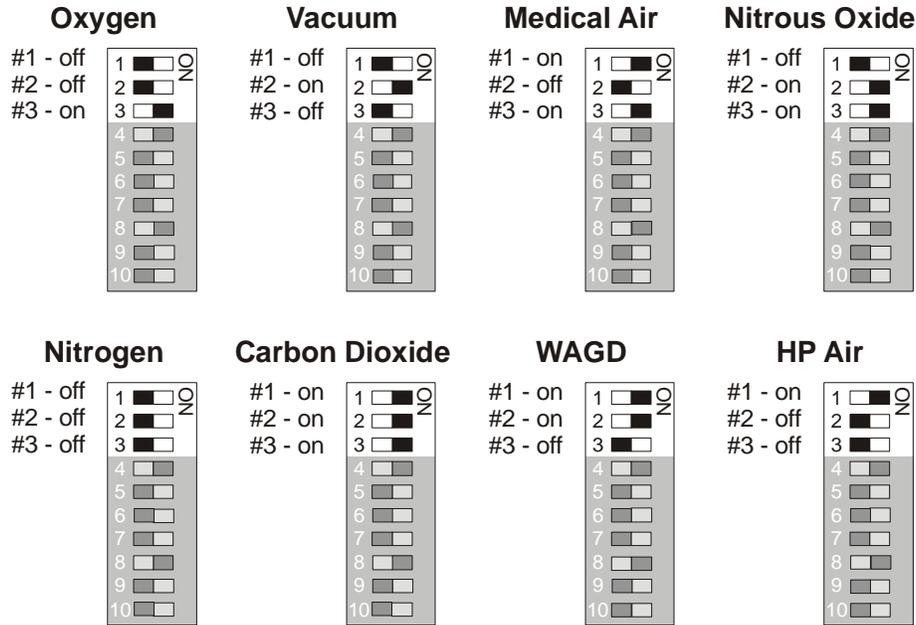
Master/NEMA 4 Status Module

REPEAT ALARM

Factory Default - Disable

	Version				Version	
	3	**4**			**3**	**4**
Disable			Set switch #1 to the OFF position. Set switch #2 to the OFF position.		OFF	OFF
Enable	5 min	1 HR	Set switch #1 to the ON position. Set switch #2 to the OFF position.		5 MIN	1 HR
Enable 12 HR	15 min	12 HR	Set switch #1 to the OFF position. Set switch #2 to the ON position.		15MIN	12 HR
Enable 24 HR	30 min	24 HR	Set switch #1 to the ON position. Set switch #2 to the ON position.		30MIN	24HR

PLEASE NOTE: The above repeat alarm only applies to the Master/NEMA 4 alarm, for the 2 in 1 please refer to page 17.

SIGNAL INPUT SELECTION   Version

3   **4**

Factory Default - Normally Closed as per NFPA 99.   NC   NC

The Amico alarm can detect field devices in the Normally Open or Normally Closed position.

For Normally Closed   Set switch #3 to the OFF position.   NO   NO

For Normally Open   Set switch #3 to the ON position.

PLEASE NOTE: The above signal input selection, applies to both alarm systems - the Master/NEMA 4 and the 2 in 1.
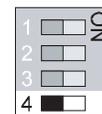

MAINTENANCE MODE

      Factory Default - Disabled

The Maintenance (or Latch) mode is used to allow hospital personnel to identify loose wiring or faulty source equipment. By putting the master module into "Latch" mode, any alarms received; even transient ones, will be latched-on so that maintenance personnel can identify the source of the problem. The Maintenance mode will disable the automatic reset, if a fault condition has been rectified. The alarm indicator can only be turned-off by pushing the "alarm silence" button on the annunciator module twice. The "Maintenance" LED will illuminate whenever the maintenance mode is enabled.
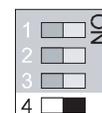

Disable   Set switch #4 to the OFF position.   **DISABLE**

Enable   Set switch #4 to the ON position.   **ENABLE**

THE MASTER MODULE SWITCH
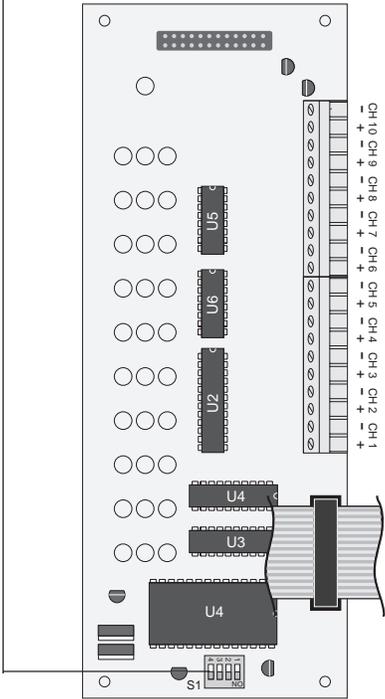
Version 3

THE MASTER MODULE SWITCH

Version 4

THE 2 IN 1 SWITCH
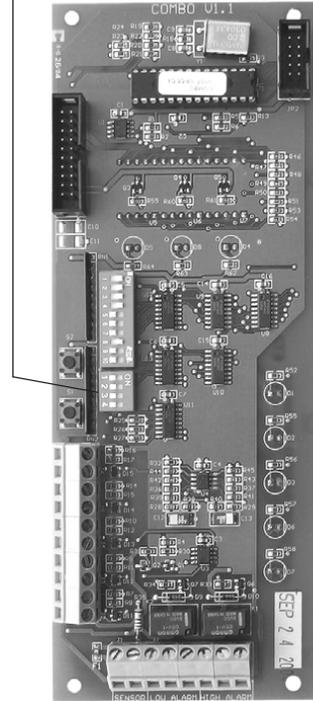
MASTERBOARD 10-CHANNEL ACTIVATION DIP-SWITCHES

The 10 Channel dip-switch is responsible for activating and deactivating each individual corresponding channel on the Masterboard.

ALL CHANNELS ACTIVATED
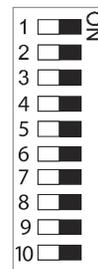
ALL CHANNELS DEACTIVATED
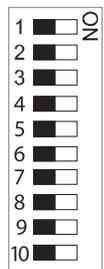
NOTE:

Version 3:   Jumper any unused points on the Master module

Version 4:   Jumper any unused points on the Master module. Turn OFF dip-switches for any unused points (Location SW-2)

Troubleshooting Guide

SYMPTOM	CAUSE	CORRECTIVE ACTION
1. An error code appears on one or more display modules.	a. The Microprocessor detected a fault and has shutdown. b. Faulty wire connection between the sensor and display module.	1. Turn power switch to OFF position. Wait for at least 5 seconds before turning on the power. The program will reset itself. 2. Check error codes at the end of this section.
2. No power on the alarm. (No LED's illuminated).	a. AC power not available. b. Fuse is blown. c. DC power plug not connected to the annunciator module. d. Defective Ribbon cable.	1. Ensure that the ON/OFF switch on the power supply module is turned ON. 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 or 220 VAC is being supplied. 1. 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 A and P. 1. Ensure that the DC power plug is firmly in it's socket on the annunciator module. 2. Replace System Power Supply unit if all the above steps fail to resolve the problem. 1. Replace the ribbon cable.

SYMPTOM	CAUSE	CORRECTIVE ACTION
3. Power light on the annunciator module is ON but LED's on other modules are not on.	a. DC power cable is not connected to the annunciator module.	1. Ensure that the DC power cable is firmly in it's socket on the annunciator module. 2. Ensure that the module(s) on the Frame/Module assembly are all connected to the ribbon cable. 3. Replace the annunciator module.
4. No audible alarm and LED's are not illuminating.	a. DC power cable is disconnected or loose.	1. Ensure that the DC power cable from the system power supply is connected to the annunciator module snugly. 2. Depress "TEST" button. If the LED's come on and there is no audible, replace the annunciator module. If this does not work, try solutions to problem #2.
5. Audible signal will not silence.	a. Faulty display module. b. Connection of the DC power cable from system power supply to annunciator module is loose. c. Faulty annunciator module.	1. Disconnect the ribbon cable from the back of the faulty display module(s) and replace the module(s). 1. Disconnect the DC power cable from the annunciator module and then reconnect. If audible alarm still persists, replace the System Power Supply unit. 1. Replace annunciator module.

6. Alarm condition exists but LED's are not illuminating.	a. Display module not properly calibrated.	1. Ensure that the system was properly ordered.
		
		Factory default settings:
		Mid Pressure:
		    Hi Pressure 60 Psi
		    Low Pressure 40 Psi
		Vacuum:
		    Low Vacuum 12 inHg
		High Pressure:
		    Hi: Nitrogen & Air 195 Psi
		    Low: Nitrogen & Air 140 Psi

| SYMPTOM	CAUSE	CORRECTIVE ACTION
		2. If calibration is required, refer to setting HIGH and LOW calibration procedure on page 18/19.
	b. Faulty display module.	1. Replace the display module.
7. Gas reading incorrect.	a. Loose connection of DISS fittings.	1. Ensure that the sensor module is properly connected to the DISS demand check-valve.
	b. Sensor module is not properly wired to the display module.	1. Ensure that the sensor module is properly wired to the display module by using wiring diagram in Appendix D or E.
	c. Defective sensor or requires calibration.	1. Replace the sensor module.
	d. The ribbon cable not properly connected to the display module.	1. Pull out the ribbon cable and connect it back in again, while ensuring that it is seated properly.
	e. Defective display module.	1. Replace the display module.

Error Code Messages on the Display Module

SYSTEM	CAUSE	CORRECTIVE ACTION	PAGE
E01	No sensor is connected.	Connect a sensor.	41 / 42
E02	Sensor and Display Module mismatched.	Ensure that the Sensor and Display Module are for the same gas.	19
E03	The High set-point was set below the Low set-point or vice versa.	Recalibrate the High and Low setpoint to proper values.	15/16
E04	Incorrect type of Sensor connected, (i.e. 250 Psi sensor on a 100 Psi range).	Connect the correct Sensor to the matching Display Module.	
E06	Cable between the sensor and display module shorted out or reversed polarity.	Reverse polarity or replace cable if defective.	41 / 42
E07	Out of Calibration / Sensor not reading gas	Replace the sensor module	41 / 42

Model Numbers

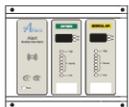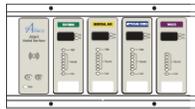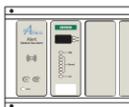## AREA ALARM

1 module =
A2AR-E-X
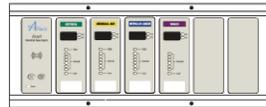2 gang back box
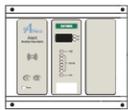
1 module =
A2AR-E-X
3 gang back box

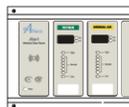2 modules =
A2AR-E-XX
3 gang back box
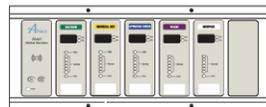
4 modules =
A2AR-E-XXXX
5 gang back box

1 module =
A2AR-E-X
4 gang back box

4 modules =
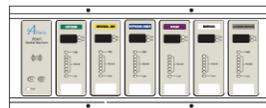A2AR-E-XXXX
7 gang back box

2 modules =
A2AR-E-XX
4 gang back box

5 modules =
A2AR-E-XXXXX
7 gang back box

3 modules =
A2AR-E-XXX
4 gang back box

6 modules =
A2AR-E-XXXXXX
7 gang back box

A2AR-L-XXXXXX

R = Remote/Local Sensors
C = Conversion

The Letter "L" Represents the Langauge:

U = English (NFPA)
E = English (CSA)
F = French (CSA)
S = Spanish (NFPA)

The Letter "X" Defines the Type of Gas:

Oxygen	= O
Medical Air	= A
MedVac	= V
Nitrous Oxide	= 2
Nitrogen	= N
Carbon Dioxide	= C
WAGD	= W
AGSS	= E
Instrument Air	= I

Example: 4 Gases, English ISO, Remore/Local pressure sensors, Oxygen, MedVac, Medical Air and Nitrous Oxide = **A2AR-E-OVA2**

NOTE: Please specify the gang back box on each alarm.

MASTER ALARM

10 functions =
A2M-E-10
2 gang back box

30 functions =
A2M-E-30
4 gang back box

10 functions =
A2M-E-10
3 gang back box

40 functions =
A2M-E-40
5 gang back box

20 functions =
A2M-E-20
3 gang back box

40 functions =
A2M-E-40
7 gang back box

10 functions =
A2M-E-10
4 gang back box

50 functions =
A2M-E-50
7 gang back box

20 functions =
A2M-E-20
4 gang back box

60 functions =
A2M-E-60
7 gang back box

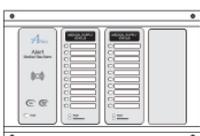## A2M(C)-L-20

C = Conversion

The Letter "L" Represents the Langauge:

E = English (CSA/NFPA)
F = French (CSA)
S = Spanish (NFPA)

Example: 2 Modules, English (20 Functions) = A2M-E-20

NOTE: Please specify the gang back box on each alarm.

COMPACT ALARM

1 module =
A2ADR-L-X
2 gang back box

1 module =
A2ADR-L-XX
3 gang back box

2 modules =
A2ADR-L-XXXX
3 gang back box

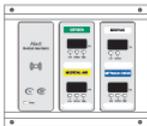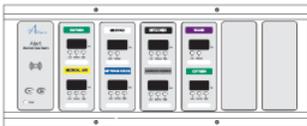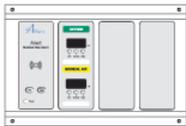1 module =
A2ADR-L-XX
4 gang back box

2 modules =
A2ADR-L-XXXX
4 gang back box

3 modules =
A2ADR-L-XXXXXX
4 gang back box

4 modules =
A2ADR-L-XXXXXXXX
5 gang back box
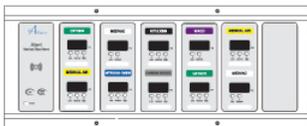
4 modules =
A2ADR-L-XXXXXXXX
7 gang back box

5 modules =
A2ADR-L-XXXXXXXXXX
7 gang back box

6 modules =
A2ADR-L-XXXXXXXXXXXX
7 gang back box

NOTE: Please specify the gang back box on each alarm.

Example: English NFPA - Oxygen, Medical Air, MedVac, Nitrous Oxide, Nitrogen, Carbon Dioxide = **A2ADR-U-OAV2NC**

R = Remote/Local Sensors
C = Conversion Series

A2ADR-L-XXXXXXXXXXXX

The Letter "L" Represents the Langauge:

U = English (NFPA)
E = English (CSA)
F = French (CSA)
S = Spanish (NFPA)

The Letter "X" Defines the Type of Gas:

Oxygen	= O
Medical Air	= A
MedVac	= V
Nitrous Oxide	= 2
Nitrogen	= N
Carbon Dioxide	= C
WAGD	= W
AGSS	= E
Instrument Air	= I

"X" indicates the order of gases, as shown above.

NEMA 4 ALARM

A2MN-L-XX

The Letter "L" Represents the Langauge:

E = English (CSA/NFPA)
F = French (CSA)
S = Spanish (NFPA)

The Letters "XX" Defines the Number of Functions:

10 = 10 Functions

20 = 20 Functions

COMPACT MASTER COMBINATION ALARM

Use the Model number for the Area Alarm and add "M" for each Master module.

Example: 3 Gases, English ISO, Remote/Local Sensors, Oxygen, Vacuum, Medical Air and 2 Master Modules = **A2ADR-E-OVAMM**.

2 modules = **A2ADR-U-XXM**
3 gang back box

2 modules = **A2ADR-U-XXM**
4 gang back box

3 modules = **A2ADR-U-XXMM**
4 gang back box

3 modules = **A2ADR-U-XXXXM**
4 gang back box
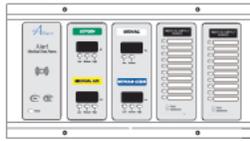
4 modules = **A2ADR-U-XXXXMM**
5 gang back box

4 modules = **A2ADR-U-XXXXMM**
7 gang back box
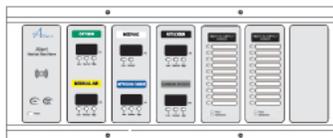
5 modules = **A2ADR-U-XXXXXXMM**
7 gang back box
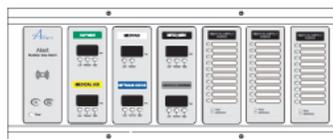
6 modules = **A2ADR-U-XXXXXXMMM**
7 gang back box

NOTE: Please specify the gang back box on each alarm
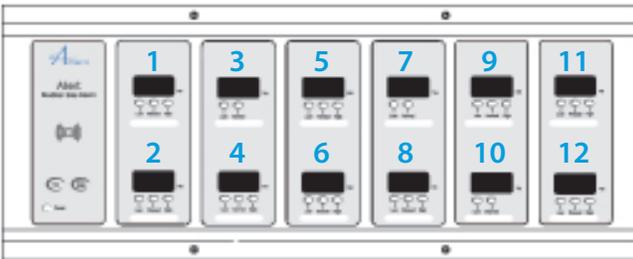
A2ADR-U-XXXXXXMMM

Each "M" Stands for 10 Functions

R = Remote/Local Sensors
C = Conversion

U = English (NFPA)
E = English (CSA)
F = French (CSA)
S = Spanish (NFPA)

The Letter "X" Defines the Type of Gases::

Oxygen	= O
Medical Air	= A
MedVac	= V
Nitrous Oxide	= 2
Nitrogen	= N
Carbon Dioxide	= C
WAGD (NFPA)	= W
AGSS (ISO)	= E
Instrument Air	= I

2 in 1 Area Alarm

1 MODULE=
A2AR-E-1
2 gang back box

1 MODULE=
A2AR-E-1
3 gang back box

2 MODULES=
A2AR-E-11
3 gang back box

1 MODULE=
A2AR-E-1
4 gang back box

2 MODULES=
A2AR-E-11
4 gang back box

3 MODULES=
A2AR-E-111
4 gang back box

4 MODULES=
A2AR-E-1111
5 gang back box
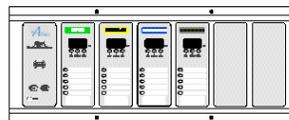
4 MODULES=
A2AR-E-1111
7 gang back box
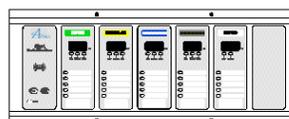
5 MODULES=
A2AR-E-11111
7 gang back box
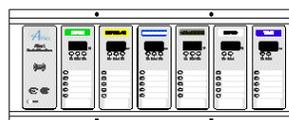
6 MODULES=
A2AR-E-111111
7 gang back box

Example: 4 Gases, English CSA, Remote/Local pressure sensors,
Oxygen, Medical Air, MedVac, Nitrous Oxide = **A2AR-E-1111**
(O,A,V,2)

NOTE: Please specify the gang back box on each alarm.

R = Remote/Local Sensors
C = Conversion Series

A2AR-L-1111

The Number of the Digit "1" Defines the Number of Gases:

1	=	1 Gas
11	=	2 Gases
111	=	3 Gases
111111	=	6 Gases

The Letter "X" Defines the Type of Gas:

Oxygen	= O
Medical Air	= A
MedVac	= V
Nitrous Oxide	= 2
Nitrogen	= N
Carbon Dioxide	= C
WAGD	= W
AGSS	= E
Instrument Air	= I

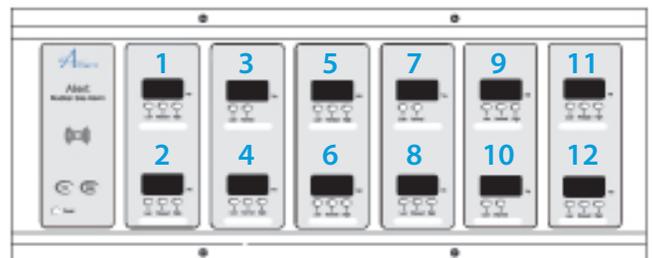### The Letter "L" Represents the Langauge:

U = English (NFPA)
E = English (CSA)
F = French (CSA)
S = Spanish (NFPA)

Spare Part Numbers

MODEL NUMBER	DESCRIPTION
A2-MAN-ALM-ENG	Alert-2 alarm manual English
A2P-ANNU-CB	Annunciator circuit board assembly
A2P-ANNU-EB	Annunciator module English Alert-2
A2P-POWER-V2	Power supply module Alert-2
A2P-AREA-E-AIR	Area alarm module ISO-AIR Eng. Alert-2
A2P-AREA-E-CO2	Area alarm module ISO-CO2 Eng. Alert-2
A2P-AREA-E-EVA	Area alarm module ISO-EVA Eng. Alert-2
A2P-AREA-E-N2O	Area alarm module ISO-N2O Eng. Alert-2
A2P-AREA-E-NIT	Area alarm module ISO-NIT Eng. Alert-2
A2P-AREA-E-OXY	Area alarm module ISO-OXY Eng. Alert-2
A2P-AREA-E-VAC	Area alarm module ISO-VAC Eng. Alert-2
A2P-AREA-U-AIR	Area alarm module USA - AIR Alert-2
A2P-AREA-U-ARG	Area alarm module USA-ARGON Eng. Alert-2
A2P-AREA-U-DAI	Area alarm module DENTAL-AIR Eng. Alert-2
A2P-AREA-U-HELB	Area alarm module USA-HELIUM Alert-2
A2P-AREA-U-HEO	Area alarm module USA-HELIOX Alert-2
A2P-AREA-U-HPA	Area alarm module HP-AIR Eng. Alert-2
A2P-AREA-U-LAI	Area alarm module LAB-AIR Eng. Alert-2
A2P-AREA-U-OXY	Area alarm module USA - OXY Alert-2
A2P-AREA-U-VAC	Area alarm module USA - VAC Alert-2
A2P-AREA-U-WAG	Area alarm module USA - WAG Eng. Alert-2
A2P-AREA-CB-AIR	Area circuit board assembly - AIR
A2P-AREA-CB-CO2	Area circuit board assembly - CO2
A2P-AREA-CB-EVA	Area circuit board assembly - EVA
A2P-AREA-CB-N2O	Area circuit board assembly - N2O
A2P-AREA-CB-NIT	Area circuit board assembly - NIT
A2P-AREA-CB-OXY	Area circuit board assembly - OXY
A2P-AREA-CB-VAC	Area circuit board assembly - VAC
A2P-SENS-E-AIR	Sensor module ISO-AIR Eng. Alert-2
A2P-SENS-E-CO2	Sensor module ISO-CO2 Eng. Alert-2
A2P-SENS-E-EVA	Sensor module ISO-EVA Eng. Alert-2
A2P-SENS-E-N2O	Sensor module ISO-N2O Eng. Alert-2
A2P-SENS-E-NIT	Sensor module ISO-NIT Eng. Alert-2
A2P-SENS-E-OXY	Sensor module ISO-OXY Eng. Alert-2
A2P-SENS-E-VAC	Sensor module ISO-VAC Eng. Alert-2

MODEL NUMBER	DESCRIPTION
A2P-SENS-U-AIR	Sensor module USA-AIR Eng. Alert-2
A2P-SENS-U-ARG	Sensor module USA-ARGON Eng. Alert-2
A2P-SENS-U-DAI	Sensor module USA-DENTAL AIR Eng. Alert-2
A2P-SENS-U-HEL	Sensor module USA-HEL Eng. Alert-2
A2P-SENS-U-HEO	Sensor medule USA-HELIOX Alert-2
A2P-SENS-U-HPA	Sensor module HP-AIR Eng. Alert-2
A2P-SENS-U-LAI	Sensor module USA LAB AIR Eng. Alert-2
A2P-SENS-U-OXY	Sensor module USA-OXY Eng. Alert-2
A2P-SENS-U-VAC	Sensor module USA-VAC Eng. Alert-2
A2P-SENS-U-WAG	Sensor module USA-WAG Eng. Alert-2
A2P-MAST-E-AME	Master alarm module - English 10 points
A2P-MAST-E-ISO	Master alarm module - ISO English10 points
A2P-MAST-CB	Master circuit board Assembly Alert-2
A2P-BLANK	Alert-2 alarm module blank (filler)
A2P-BOXASS-2	Alarm back box Assembly 2-station Alert-2
A2P-BOXASS-3	Alarm back box Assembly 3-satation Alert-2
A2P-BOXASS-4	Alarm back box Assembly 4-station Alert-2
A2P-BOXASS-5	Alarm back box Assembly 5-station Alert-2
A2P-BOXASS-7	Alarm back box Assembly 7-station Alert-2
A2P-COMP-10	Computer interface Module English 10-pts.
A2P-FRMASS-2B	Alarm frame assembly 2-station Alert-2
A2P-FRMASS-3B	Alarm frame assembly 3-station Alert-2
A2P-FRMASS-4B	Alarm frame assembly 4-station Alert-2
A2P-FRMASS-5B	Alarm frame assembly 5-station Alert-2
A2P-FRMASS-7B	Alarm frame assembly 7-station Alert-2
A2P-PIPE	Pressure module pipe assembly (Alert-2)
A2P-RIBBON-3	Ribbon cable assembly 3-station Alarm
A2P-RIBBON-4	Ribbon cable assembly 4-station Alarm
A2P-RIBBON-7	Ribbon cable assembly 7-station Alarm
A2P-RIBBON-8	Ribbon cable assembly 8-station for 7 gas alarm
A2P-RIB-COMP-03	RIBBON CABLE ASSY 1 STN COMPACT ALARM
A2P-RIB-COMP-05	RIBBON CABLE ASSY 2 STN COMPACT ALARM
A2P-RIB-COMP-07	RIBBON CABLE ASSY 3 STN COMPACT ALARM
A2P-RIB-COMP-09	RIBBON CABLE ASSY 4 STN COMPACT ALARM
A2P-RIB-COMP-13	RIBBON CABLE ASSY 6 STN COMPACT ALARM
A2P-RIB-COMP-15	RIBBON CABLE ASSY 7 STN COMPACT ALARM
A2P-COMB-E-AGS	Combo Board Alarm Module ISO - AGSS
A2P-COMB-E-AIR	Combo Board Alarm Module ISO - AIR

MODEL NUMBER	DESCRIPTION
A2P-COMB-E-CO2	Combo Board Alarm Module ISO - CO2
A2P-COMB-E-EVA	Combo Board Alarm Module ISO - EVA
A2P-COMB-E-N2O	Combo Board Alarm Module ISO - N2O
A2P-COMB-E-NIT	Combo Board Alarm Module ISO - NIT
A2P-COMB-E-OXY	Combo Board Alarm Module ISO - OXY
A2P-COMB-E-VAC	Combo Board Alarm Module ISO - VAC
A2P-COMB-U-AIR	Combo Board Alarm Module USA - AIR
A2P-COMB-U-OXY	Combo Board Alarm Module USA - OXY
A2P-COMB-U-VAC	Combo Board Alarm Module USA - VAC
A2P-COMB-U-WAG	Combo Board Alarm Module USA - WAGD
A2P-COMBO-CB	Combo Circuit Board Assem. - ALL GASES
A2X-BOX-2-FILL	Alarm box Filler Frame 2 Station
A2X-BOX-3-FILL	Alarm Box Filler Frame 3 Station
A2X-BOX-4-FILL	Alarm Box Filler Frame 4 Station
A2X-BOX-5-FILL	Alarm Box Filler Frame 5 Station
A2X-BOX-7-FILL	Alarm Box Filler Frame 7 Station
A2X-PLATE-RETR3	Retro-fit Plate Filler for 3 Function
A2X-PLATE-RETR4	Retro-fit Plate Filler for 4 Function
A2X-PLATE-RETR5	Retro-fit Plate Filler for 5 Function
A2X-PLATE-RETR7	Retro-fit Plate Filler for 7 Function
A2P-COMPACT-CB	Compact Area Circuit Board Assembly-All Gases
A2P-MYLCPB-E-AGS	Compact Board Mylar Bottom (ISO) - AGS
A2P-MYLCPB-E-AIR	Compact Board Mylar Bottom (ISO) - AIR
A2P-MYLCPB-E-CO2	Compact Board Mylar Bottom (ISO) - CO2
A2P-MYLCPB-E-N2O	Compact Board Mylar Bottom (ISO) - N2O
A2P-MYLCPB-E-NIT	Compact Board Mylar Bottom (ISO) - NIT
A2P-MYLCPB-E-OXY	Compact Board Mylar Bottom (ISO) - OXY
A2P-MYLCPB-E-VAC	Compact Board Mylar Bottom (ISO) - VAC
A2P-MYLCPB-E-IAIR	Compact Board Mylar Bottom (ISO) -IAIR
A2P-MYLCPB-U-AIR	Compact Board Mylar Bottom (NFPA) - AIR
A2P-MYLCPB-U-OXY	Compact Board Mylar Bottom (NFPA) - OXY
A2P-MYLCPB-U-VAC	Compact Board Mylar Bottom (NFPA) - VAC
A2P-MYLCPB-U-WAG	Compact Board Mylar Bottom (NFPA) - WAG
A2P-MYLCPB-U-IAIR	Compact Board Mylar Bottom (NFPA) - IAIR
A2P-MYLCPT-E-AGS	Compact Board Mylar Top (ISO) - AGS
A2P-MYLCPT-E-AIR	Compact Board Mylar Top (ISO) - AIR
A2P-MYLCPT-E-CO2	Compact Board Mylar Top (ISO) - CO2
A2P-MYLCPT-E-N2O	Compact Board Mylar Top (ISO) - N2O
A2P-MYLCPT-E-NIT	Compact Board Mylar Top (ISO) - NIT
A2P-MYLCPT-E-OXY	Compact Board Mylar Top (ISO) - OXY
A2P-MYLCPT-E-VAC	Compact Board Mylar Top (ISO) - VAC
A2P-MYLCPT-E-IAIR	Compact Board Mylar Top (ISO) - IAIR
A2P-MYLCPT-U-AIR	Compact Board Mylar Top (NFPA) - AIR
A2P-MYLCPT-U-OXY	Compact Board Mylar Top (NFPA) - OXY
A2P-MYLCPT-U-VAC	Compact Board Mylar Top (NFPA) - VAC
A2P-MYLCPT-U-WAG	Compact Board Mylar Top (NFPA) - WAG
A2P-MYLCPT-U-IAIR	Compact Board Mylar Top (NFPA) - IAIR
A2P-MYLCP-BLNK	Compact Board Mylar - Blank
A2P-MYLCP-COVER	Compact Board Mylar - Cover

Dimensions

AREA ALARM

Inch
[mm]
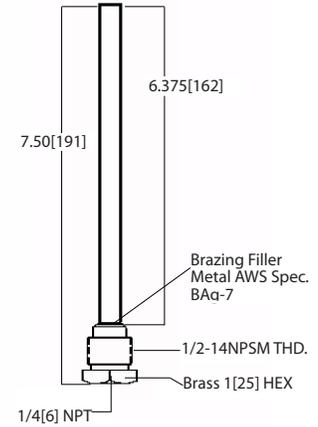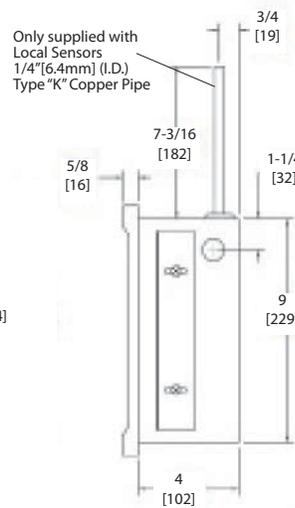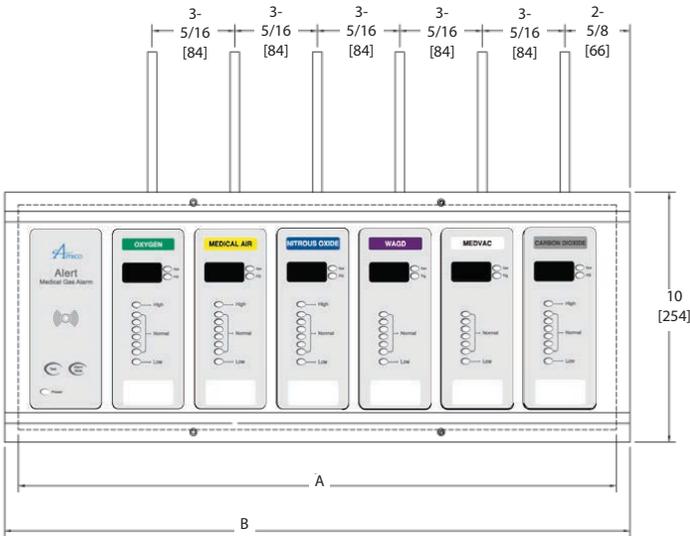
3-5/16 [84]   3-5/16 [84]   3-5/16 [84]   3-5/16 [84]   3-5/16 [84]   2-5/8 [66]

OXYGEN   MEDICAL AIR   NITROUS OXIDE   WAGD   MEDVAC   CARBON DIOXIDE

Amico
Alert
Medical Gas Alarm

10 [254]

A

B

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

3/4 [19]

7-3/16 [182]

5/8 [16]

1-1/4 [32]

9 [229]

4 [102]

6.375[162]

7.50[191]

Brazing Filler Metal AWS Spec. BAα-7

1/2-14NPSM THD.

Brass 1[25] HEX

1/4[6] NPT

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

Number of Display Modules	A	B	Gang
1 module	7 (178)	8 (203)	2
From 1 to 2 modules	11 (272)	12 (305)	3
From 1 to 3 modules	14 (356)	15 (381)	4
From 1 to 4 modules	17 (439)	18 (465)	5
From 1 to 6 modules	24 (610)	25 (635)	7

Local/Remote Sensor

1.88 [48]

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

Wrench Flats 1 [25]

DISS CONNECTOR

(approximate, can vary)

1/2" Conduit Connection
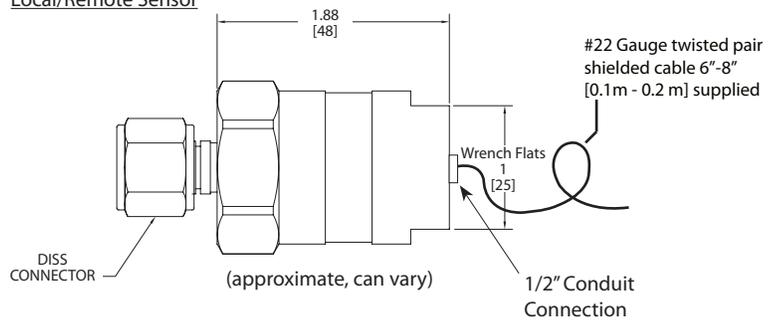
1/2"-14 NPSM [13] (see Thread Specs.)
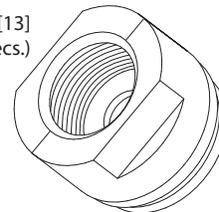
MASTER ALARM

Inch
[mm]
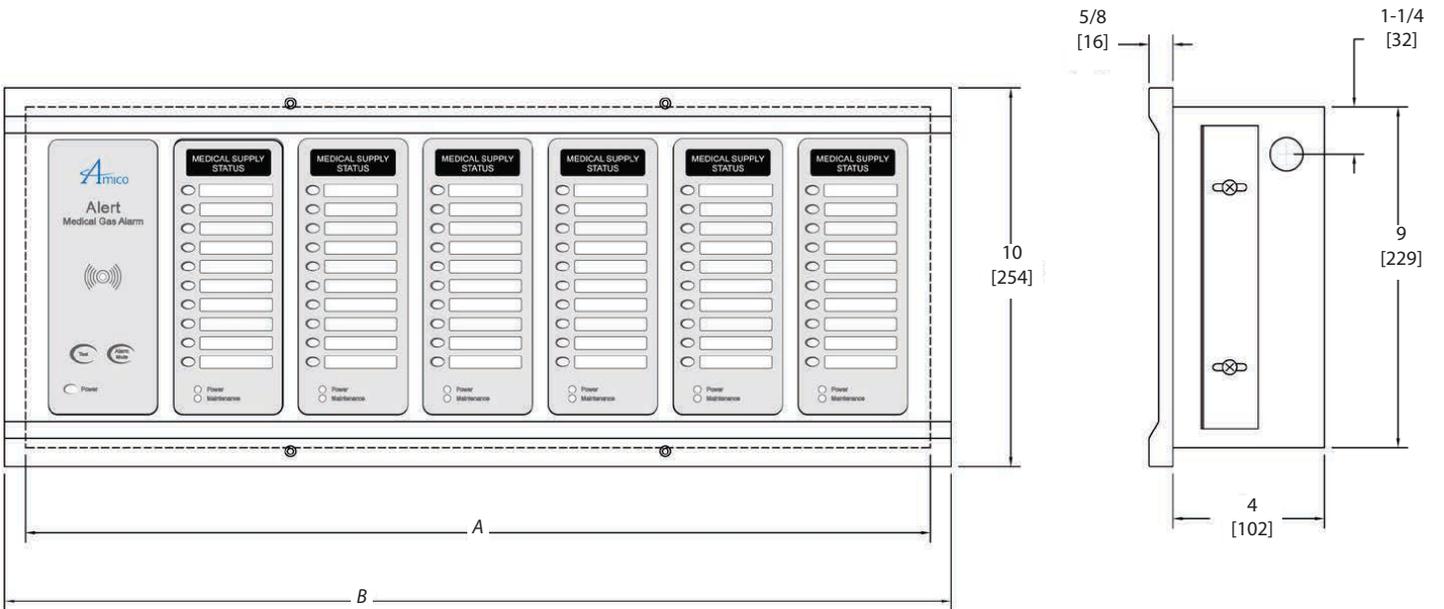
Number of Display Modules	A	B	Gang
1 module	7 (178)	8 (203)	2
From 1 to 2 modules	11 (272)	12 (305)	3
From 1 to 3 modules	14 (356)	15 (381)	4
From 1 to 4 modules	17 (439)	18 (465)	5
From 1 to 6 modules	24 (610)	25 (635)	7

COMPACT ALARM

Inch
[mm]
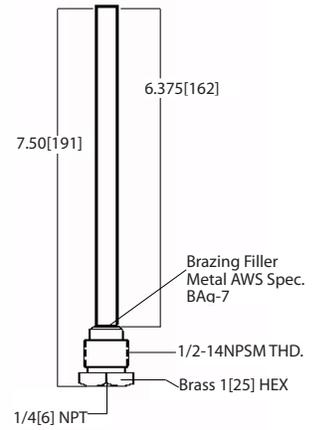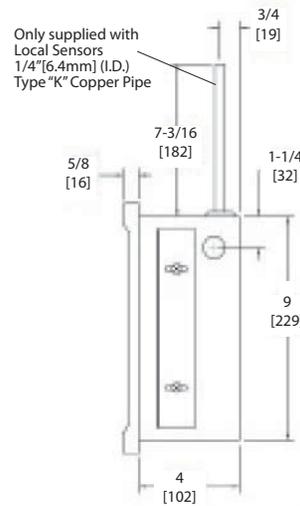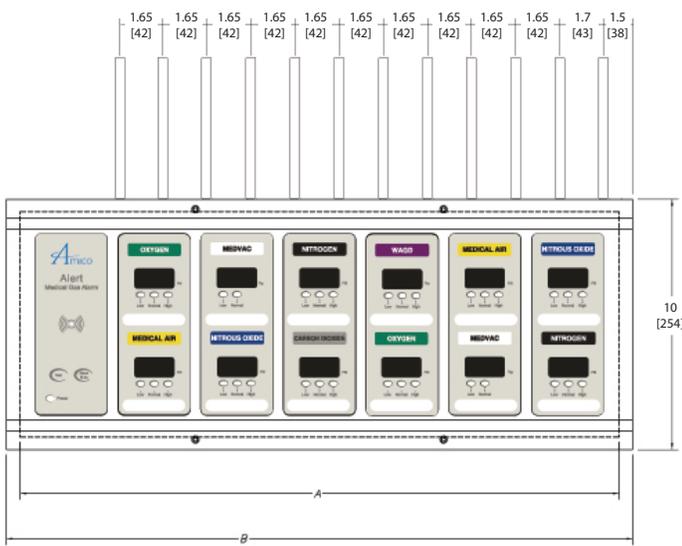
Number of Display Modules	A	B	Gang
1 module	7 (178)	8 (203)	2
From 1 to 2 modules	11 (272)	12 (305)	3
From 1 to 3 modules	14 (356)	15 (381)	4
From 1 to 4 modules	17 (439)	18 (465)	5
From 1 to 6 modules	24 (610)	25 (635)	7

Local/Remote Sensor

1.88
[48]

Note: DISS Demand check valves by 1/4" NPT, supplied with each remote sensor.

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

DISS CONNECTOR

Wrench Flats 1 [25]

(approximate, can vary)

1/2" Conduit Connection
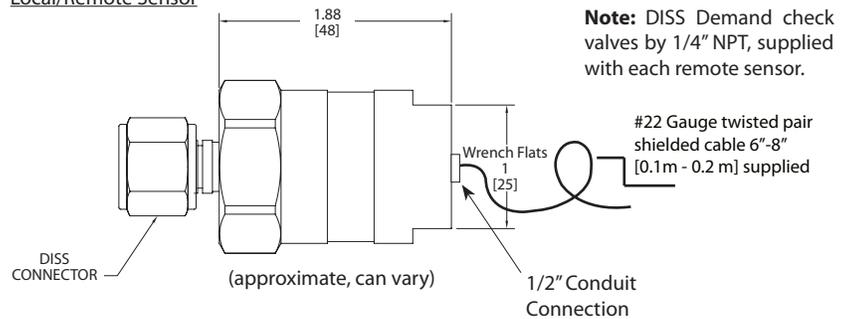
1/2"-14 NPSM [13] (see Thread Specs.)
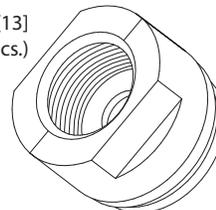
COMPACT MASTER COMBINATION ALARM

Inch
[mm]
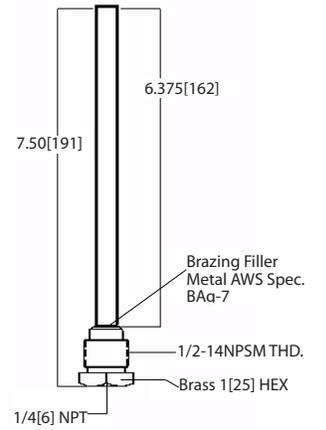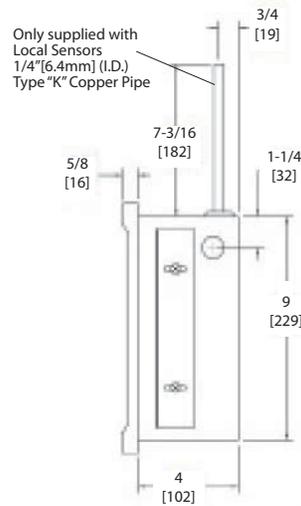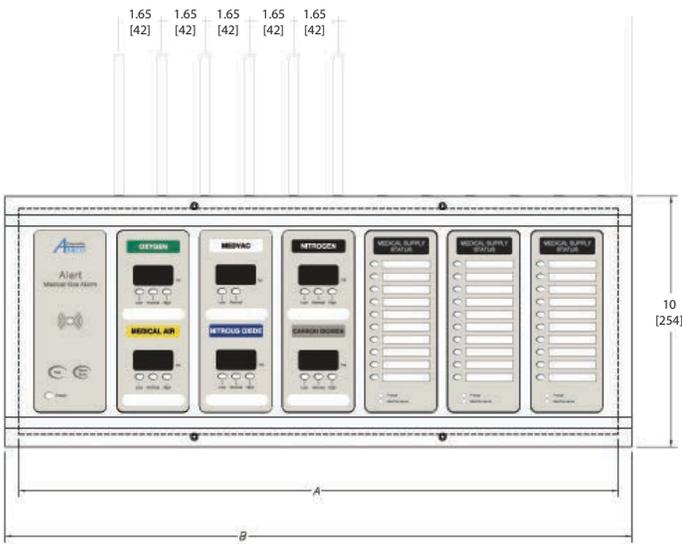
1.65 [42] 1.65 [42] 1.65 [42] 1.65 [42] 1.65 [42]

10 [254]

A

B

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

3/4 [19]

7-3/16 [182]

5/8 [16]

1-1/4 [32]

9 [229]

4 [102]

6.375 [162]

7.50 [191]

Brazing Filler
Metal AWS Spec.
BAg-7

1/2-14NPSM THD.

Brass 1[25] HEX

1/4[6] NPT

Number of Display Modules	A	B	Gang
1 module	7 (178)	8 (203)	2
From 1 to 2 modules	11 (272)	12 (305)	3
From 1 to 3 modules	14 (356)	15 (381)	4
From 1 to 4 modules	17 (439)	18 (465)	5
From 1 to 6 modules	24 (610)	25 (635)	7

Local/Remote Sensor

1.88 [48]

Wrench Flats
1 [25]

DISS
CONNECTOR

(approximate, can vary)

1/2" Conduit
Connection

Note: DISS Demand check
valves by 1/4" NPT, supplied
with each remote sensor.

#22 Gauge twisted pair
shielded cable 6"-8"
[0.1m - 0.2 m] supplied
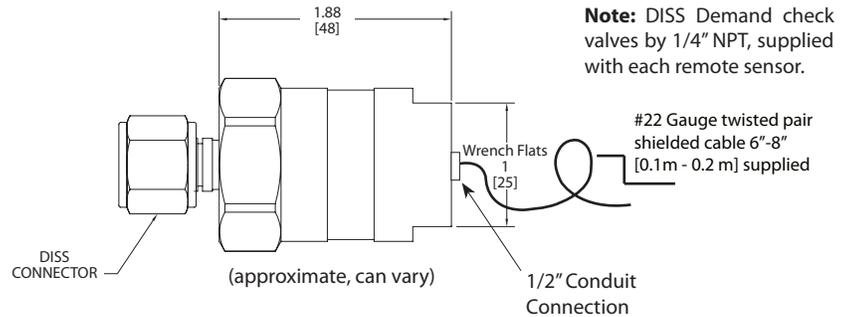
1/2"-14 NPSM [13]
(see Thread Specs.)

2 in 1 ALARM

Inch
[mm]
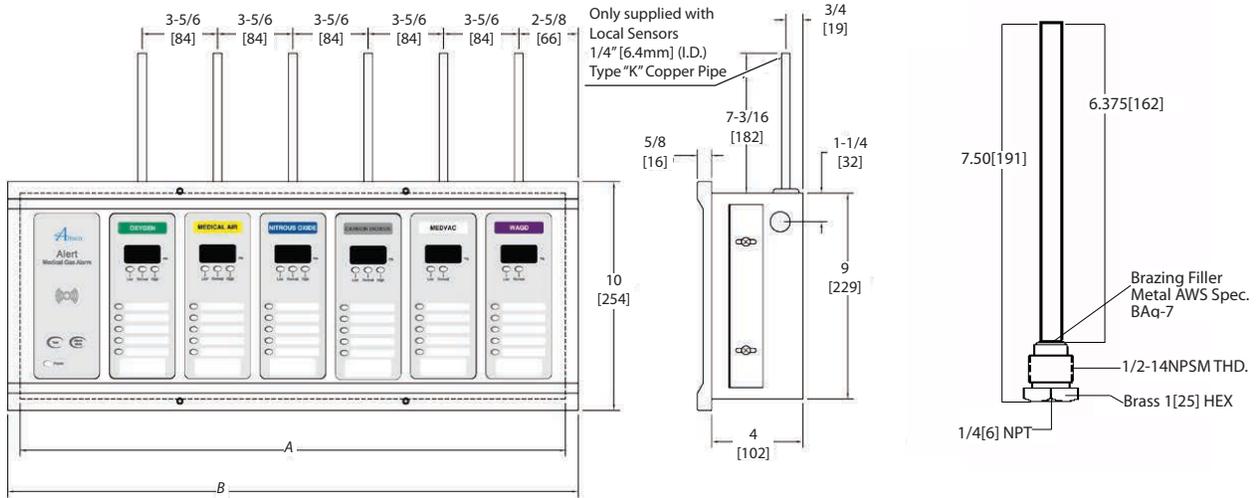
| 3-5/6 [84] | 3-5/6 [84] | 3-5/6 [84] | 3-5/6 [84] | 3-5/6 [84] | 2-5/8 [66] |

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

3/4 [19]

7-3/16 [182]

5/8 [16]

1-1/4 [32]

10 [254]

9 [229]

4 [102]

6.375[162]

7.50[191]

Brazing Filler
Metal AWS Spec.
BAg-7

1/2-14NPSM THD.

Brass 1[25] HEX

1/4[6] NPT

Note: DISS Demand check valves by 1/4" NPT, supplied with each remote sensor.

Number of Display Modules	A	B	Gang
1 module	7 (178)	8 (203)	2
From 1 to 2 modules	11 (272)	12 (305)	3
From 1 to 3 modules	14 (356)	15 (381)	4
From 1 to 4 modules	17 (439)	18 (465)	5
From 1 to 6 modules	24 (610)	25 (635)	7

Local/Remote Sensor

1.88 [48]

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

Wrench Flats
1 [25]

DISS
CONNECTOR

(approximate, can vary)

1/2" Conduit
Connection
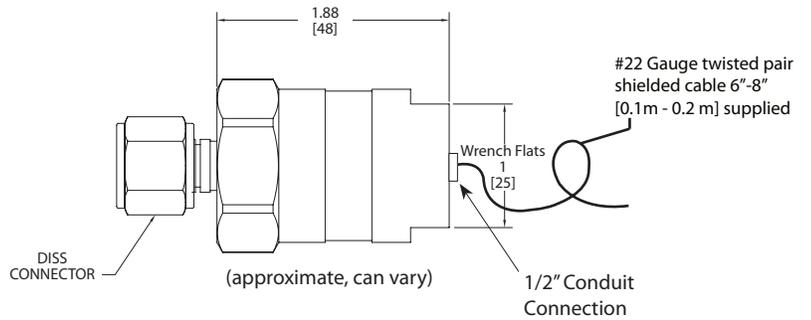
1/2"-14 NPSM [13]
(see Thread Specs.)

NEMA 4 ALARM

Inch
[mm]

Top View

10.50
[267]

8.50
[216]

Side View

6.125
[156]

Top View

14.55
[370]

12.55
[319]

Side View

8.625
[219]
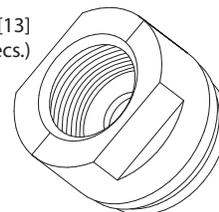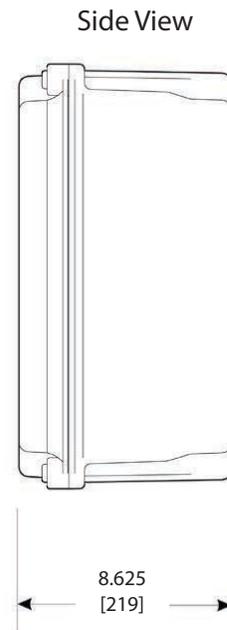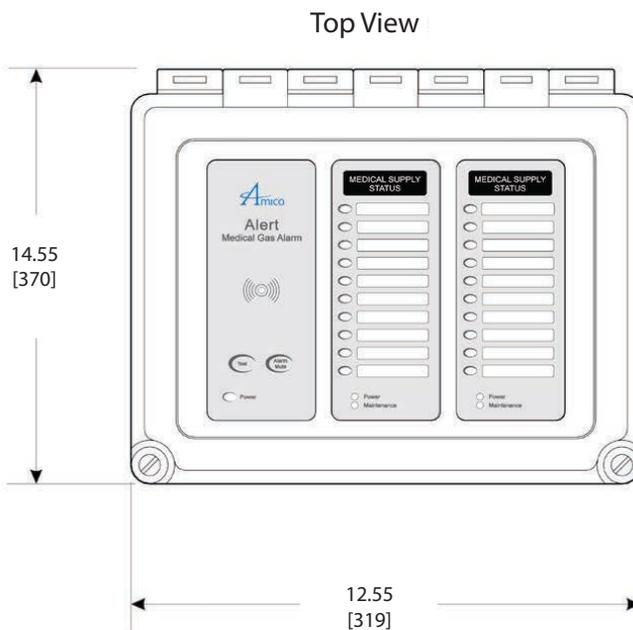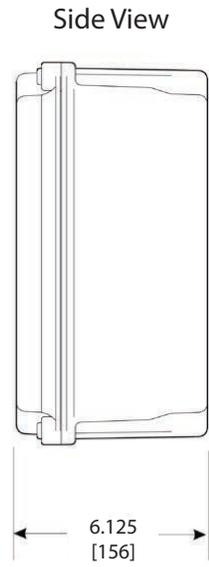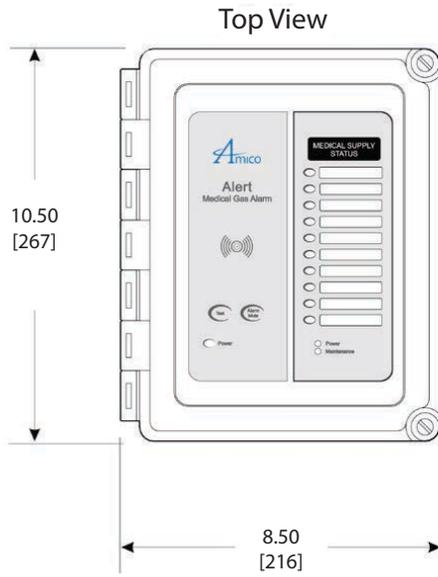
Wiring Diagram Auto-Switching Power Supply

AC Supply
115 to 220 VAC

G
N
L

L - Live
N - Neutral
G - Ground

V4.1   AC IN

ON

Toggle Switch

OFF

Ground

Fuse (1 AMPw)

20R 5W

DC Power Cable:
Connect to
Annunciator Module
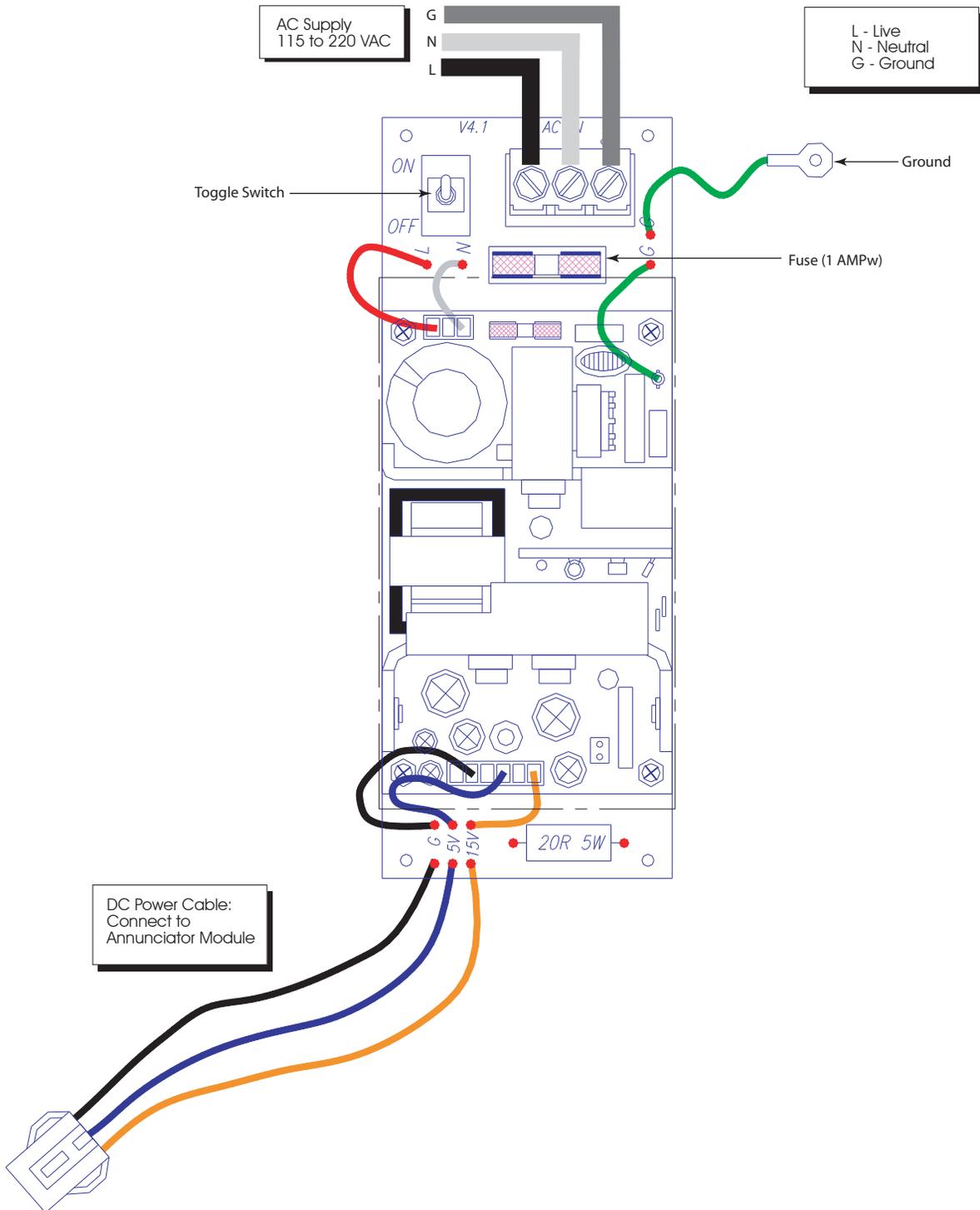
Appendix B

Wiring Diagram Annunciator
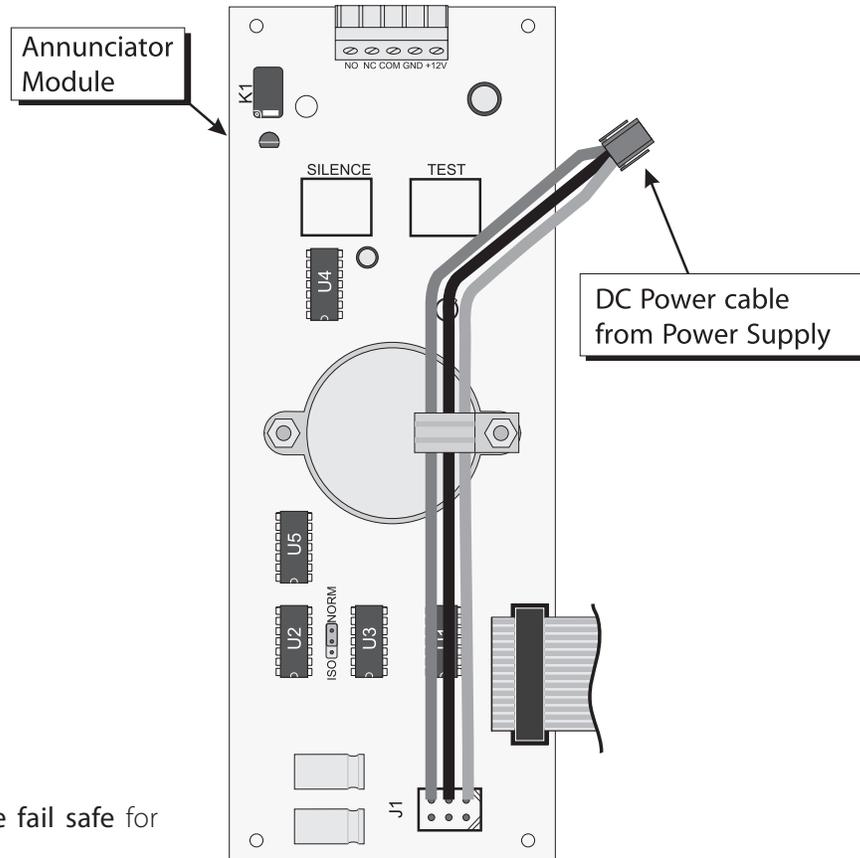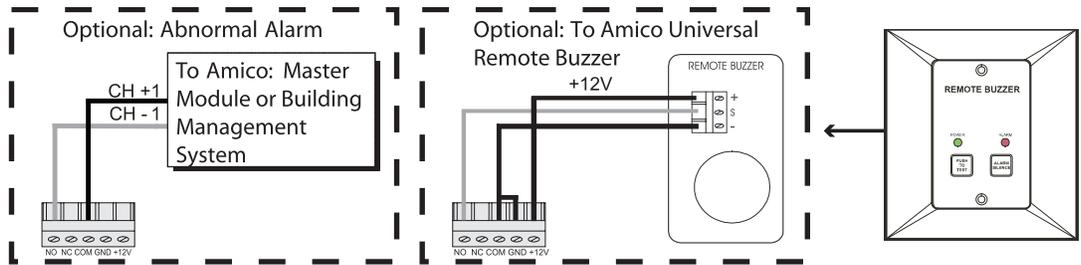
Optional: Abnormal Alarm

CH +1
CH - 1

To Amico: Master Module or Building Management System

NO NC COM GND +12V

Optional: To Amico Universal Remote Buzzer
+12V

REMOTE BUZZER

+
S
-

NO NC COM GND +12V

REMOTE BUZZER

POWER   ALARM

PUSH TO TEST   ALARM SILENCE

Annunciator Module

NO NC COM GND +12V

K1

SILENCE   TEST

U4

DC Power cable from Power Supply

U5

ISO   NORM

U2   U3

J1

NOTE:

Relays on the annunciator **are fail safe** for version 3.1 or newer.

Relays **are not fail safe** for version 3.0 or older.

Appendix C

Wiring Diagram Automatic Voice/Pager Dialing System
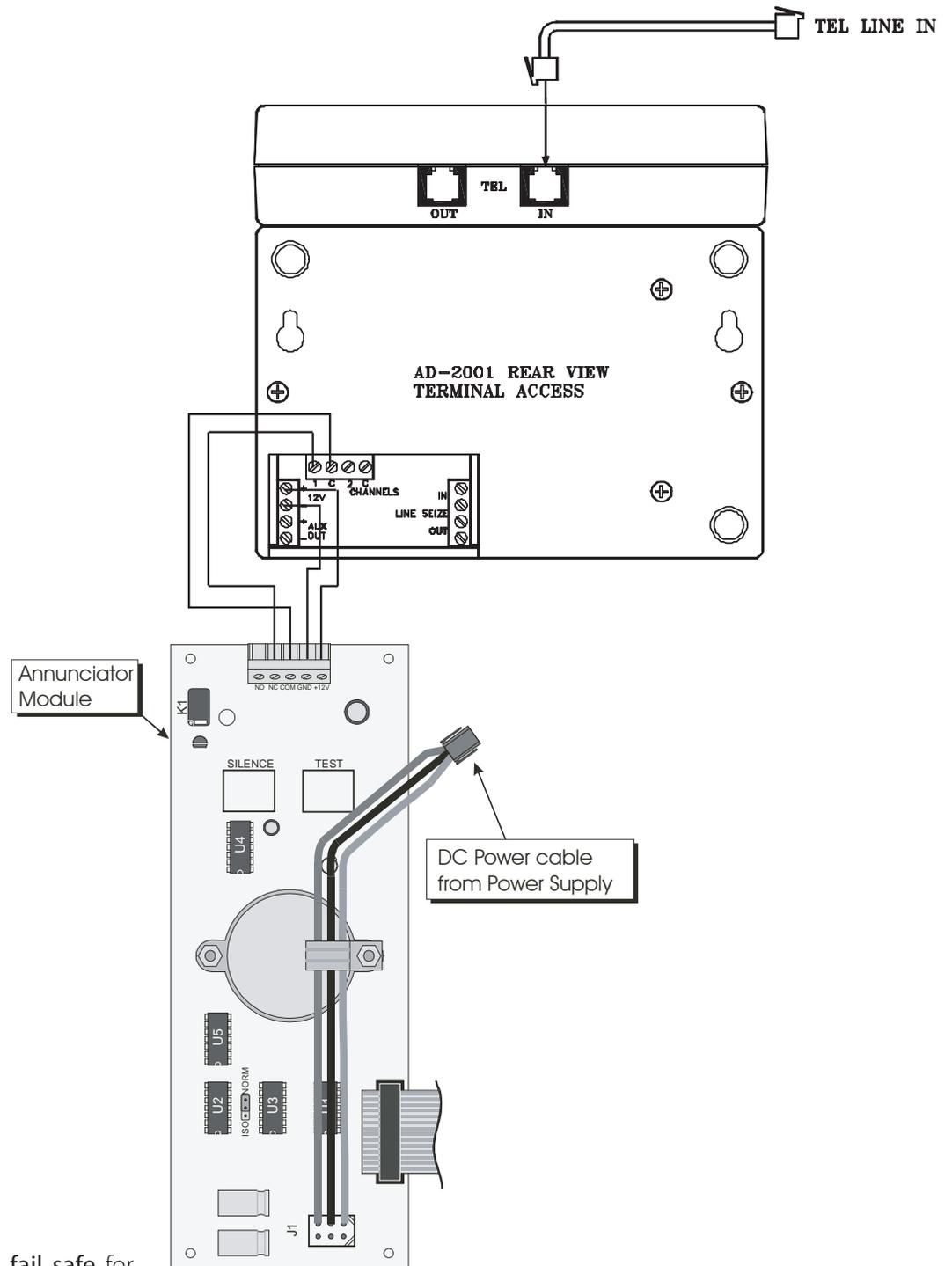
TEL LINE IN

TEL
OUT   IN

AD—2001 REAR VIEW
TERMINAL ACCESS

CHANNELS
12V
IN
LINE SEIZE
OUT
AUX
OUT

Annunciator
Module

NO NC COM GND +12V

K1

SILENCE   TEST

U4

DC Power cable
from Power Supply

U5

U2   U3   U1

ISO   NORM

J1

NOTE:

Relays on the annunciator **are fail safe** for version 3.1 or newer.

Relays **are not fail safe** for version 3.0 or older.

Appendix D

Wiring Diagram Area Display Module - Local Sensor

Sensor
Module

OXYGEN

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

Black   Red

Area
Display
Module

SLAVE   SENSOR   LOW ALARM   HIGH ALARM
 -   +   -   +   NO NC COM   NO NC COM

Dry contacts for
remote monitoring of
High and Low alarms

K2

K1

U2

U4

S1 DOWN

UP

S3 S2

U11

U12   U1   U3

1
2
3
4
5
6
7
8
9
10

NO

U3

R19

U6   U7   U8

U10   PAL1   PAL2   U9   U13
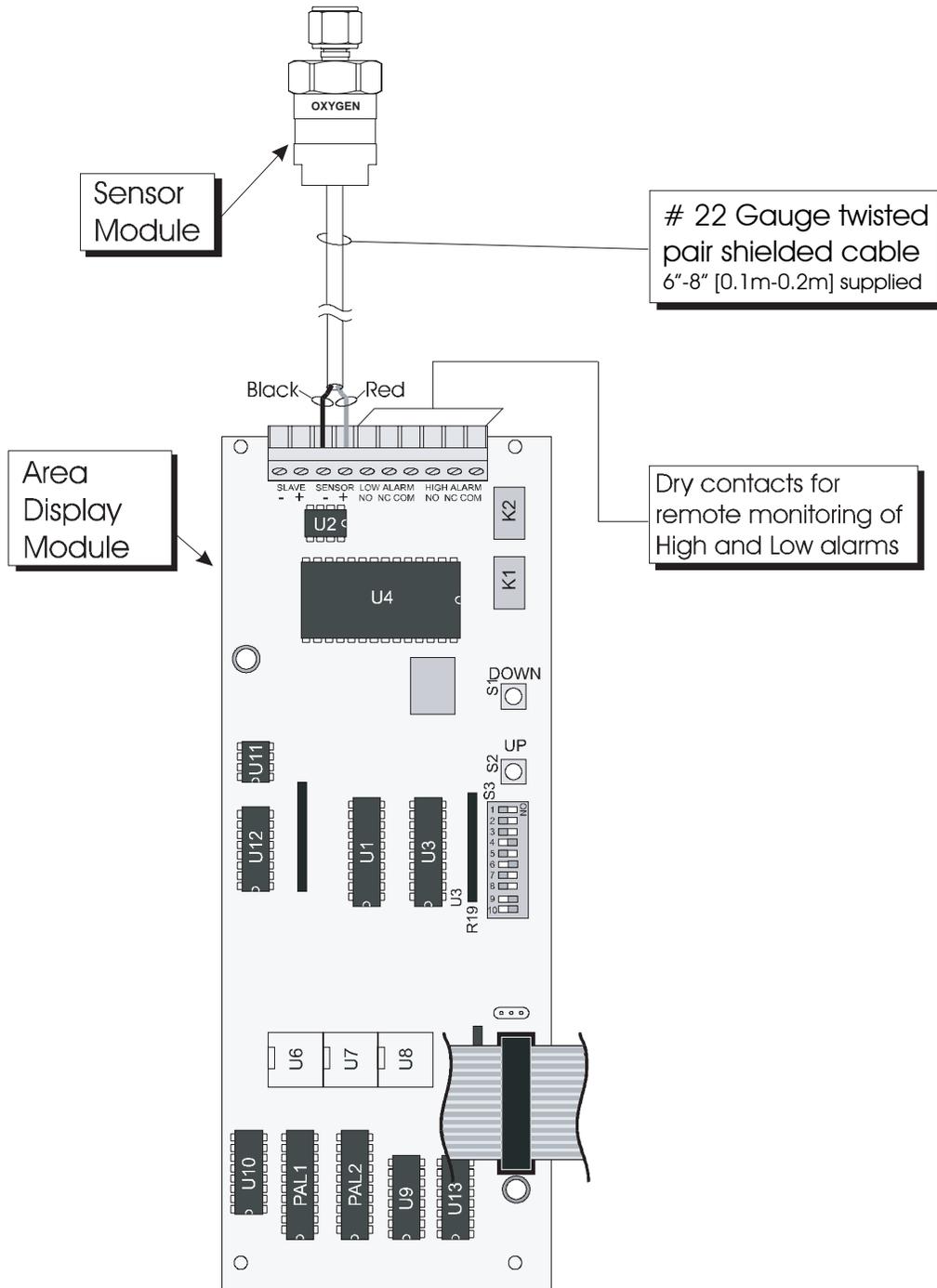
Appendix E

Wiring Diagram Area Display Module - Remote Sensor

NOTE:

For multiple sensors, a multi-conductor twisted pair, shielded cable should be used.
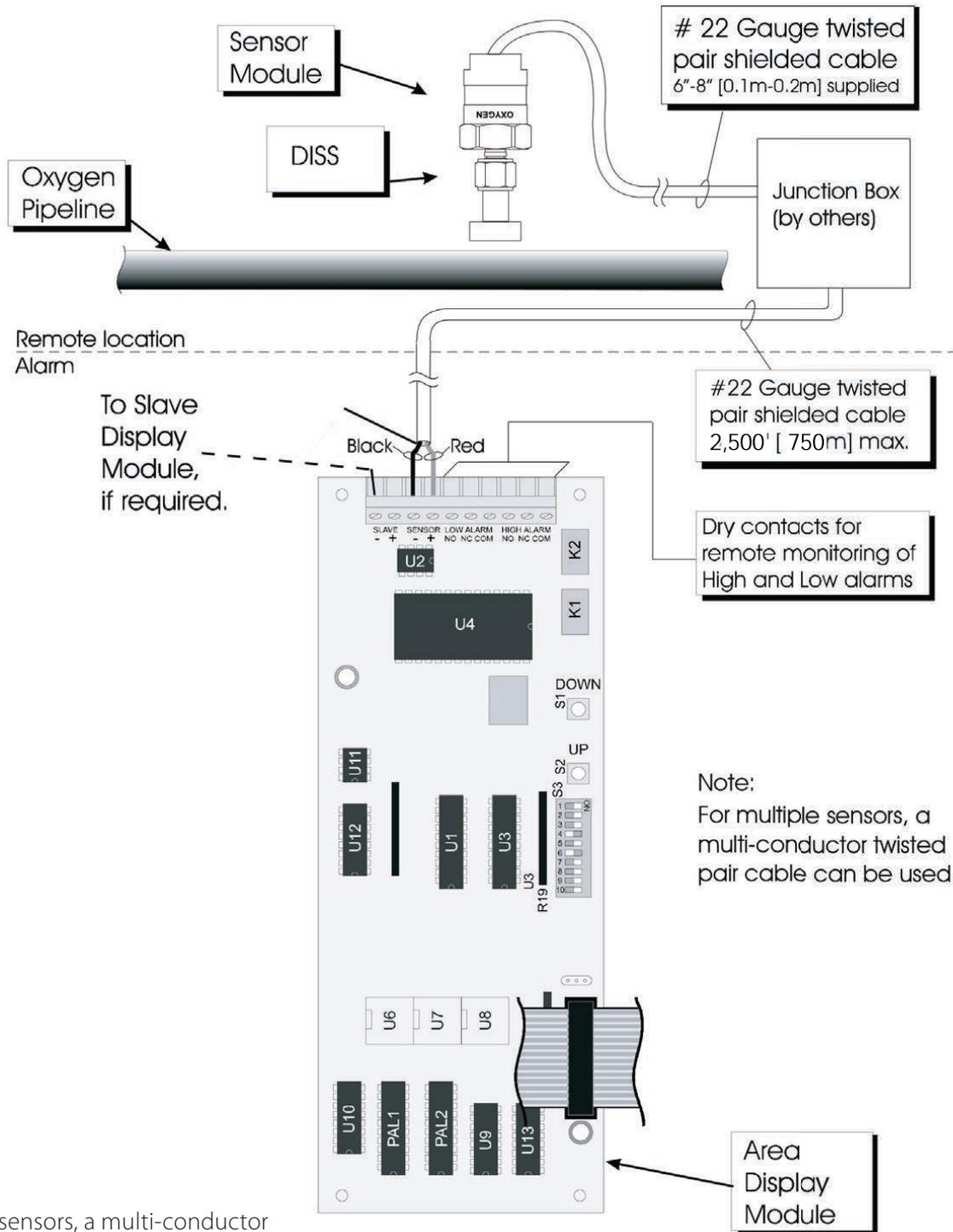
Appendix F

Wiring Diagram 2 in 1 Display Module

OXYGEN

Sensor Module

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

Black   Red

Dry contacts for remote monitoring of High and Low alarms

Source Equipment

NO NC   COM NO NC COM   − +

CH 5
CH 4
CH 3
CH 2
CH 1

C
NC
C
NC
C
NC
C
NC
C
NC

Dry contacts only, no voltage

2 in 1 Module

Note: Jumper any unused points

COMBO V1.1
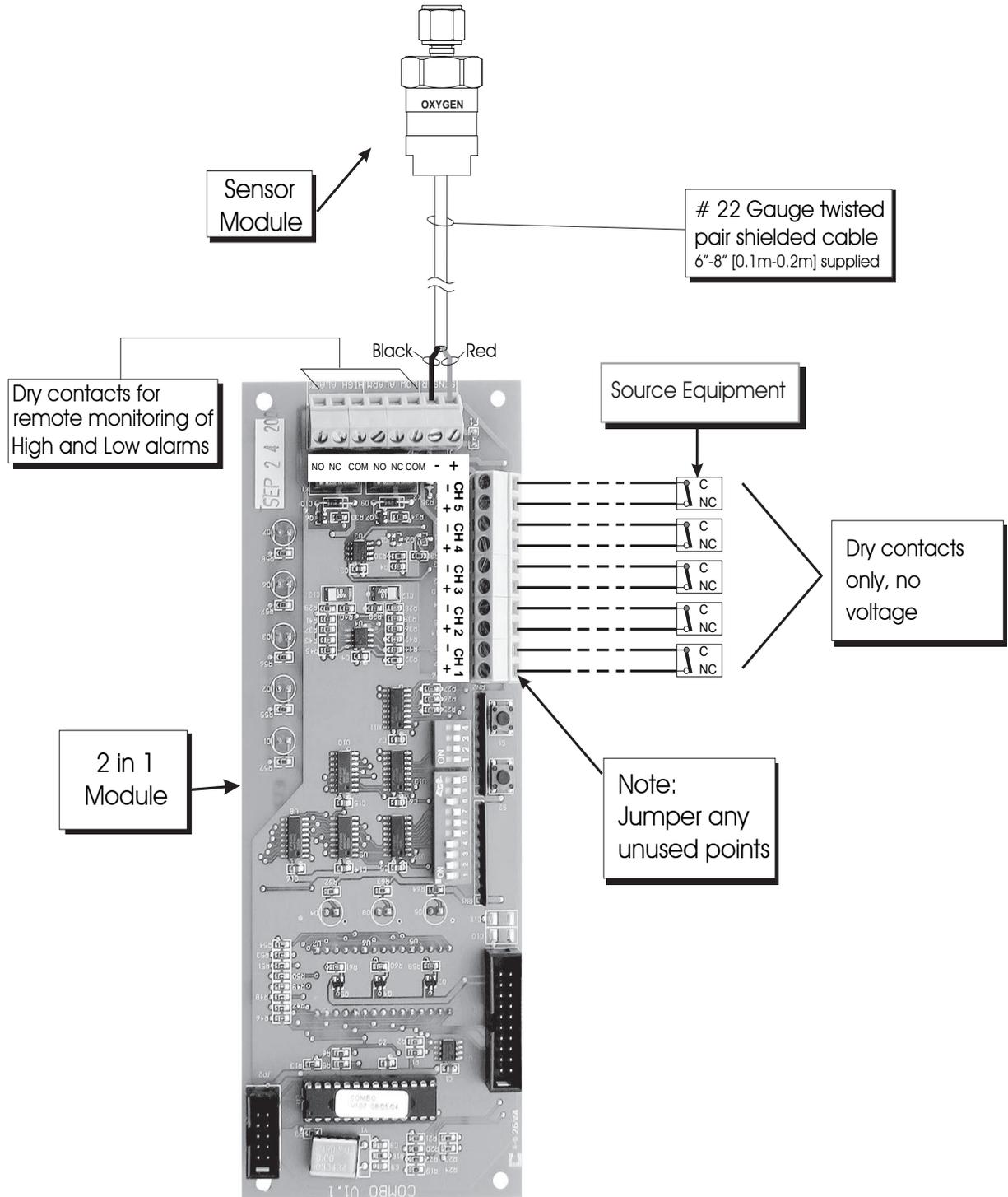
Appendix G

Wiring Diagram Compact Module
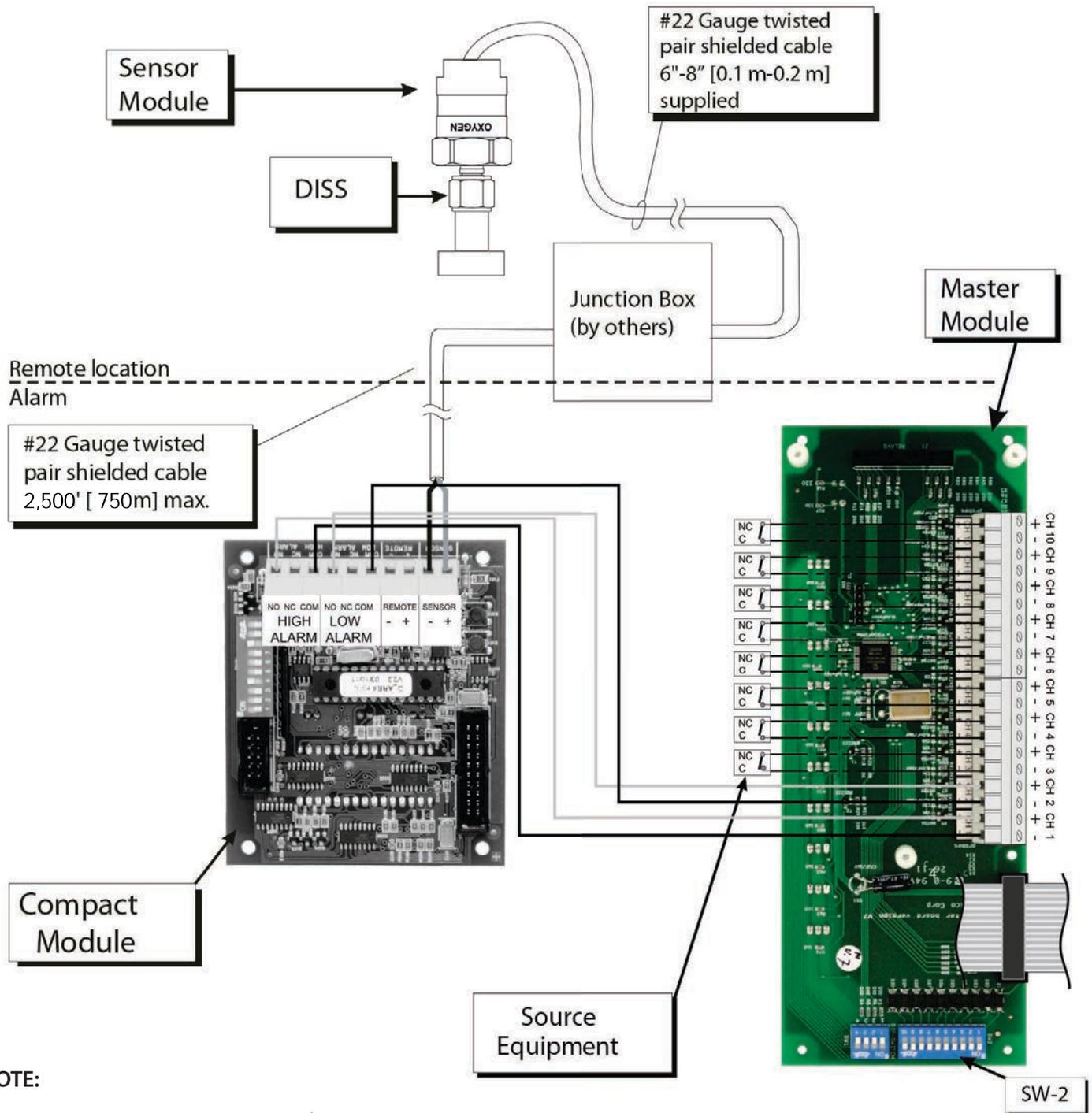
Sensor Module

DISS

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

OXYGEN

Junction Box (by others)

Master Module

Remote location Alarm

#22 Gauge twisted pair shielded cable 2,500' [750m] max.

NO NC COM   NO NC COM   REMOTE   SENSOR
HIGH   LOW   - +   - +
ALARM   ALARM

Compact Module

Source Equipment

SW-2

NOTE:

Version 3:   Jumper any unused points on the Master module

Version 4:   Jumper any unused points on the Master module. Turn OFF dip-switches for any unused points (Location SW-2)

Appendix H

Wiring Diagram Area Module to Master Module

NOTE:

Version 3:   Jumper any unused points on the Master module

Version 4:   Jumper any unused points on the Master module.
Turn OFF dip-switches for any unused points (Location SW-2)

Appendix I

Wiring Diagram 2 in 1 Module to Master Module

NOTE:

Version 3: Jumper any unused points on the Master module

Version 4: Jumper any unused points on the Master module. Turn OFF dip-switches for any unused points (Location SW-2)

Appendix J

Wiring Diagram Abnormal Condition

Area Module

Master Module

Area Module labels: SLAVE − +, SENSOR − +, LOW ALARM NO NC COM, HIGH ALARM NO NC COM, K2, K1, U2, U4, DOWN S1, UP S2, S3, R19, U3, U1, U3, U11, U12, U6, U7, U8, U10, PAL1, PAL2, U9, U13

Master Module labels: NC C (×8), CH 10 CH 9 CH 8 CH 7 CH 6 CH 5 CH 4 CH 3 CH 2 CH 1, + −, SW-2

Source Equipment

NOTE:

Version 3:   Jumper any unused points on the Master module

Version 4:   Jumper any unused points on the Master module.
Turn OFF dip-switches for any unused points (Location SW-2)

Appendix K

Wiring Diagram Area Slave

Alarm #1

Alarm #2

SLAVE — + SENSOR — + LOW ALARM NO NC COM HIGH ALARM NO NC COM

SLAVE — + SENSOR — + LOW ALARM NO NC COM HIGH ALARM NO NC COM

OXYGEN   MEDICAL AIR   MEDVAC

Note: Set the gas specific dip switch on each area slave panel

NOTE: "The slave alarm does not work with **A2P-POWER-CONV**, both Alarm must be attached the **A2P-POWER-V2**"

Appendix L

Wiring Diagram Master/NEMA 4 Module

Master
Module

Source
Equipment

CH 10 CH 9 CH 8 CH 7 CH 6 CH 5 CH 4 CH 3 CH 2 CH 1

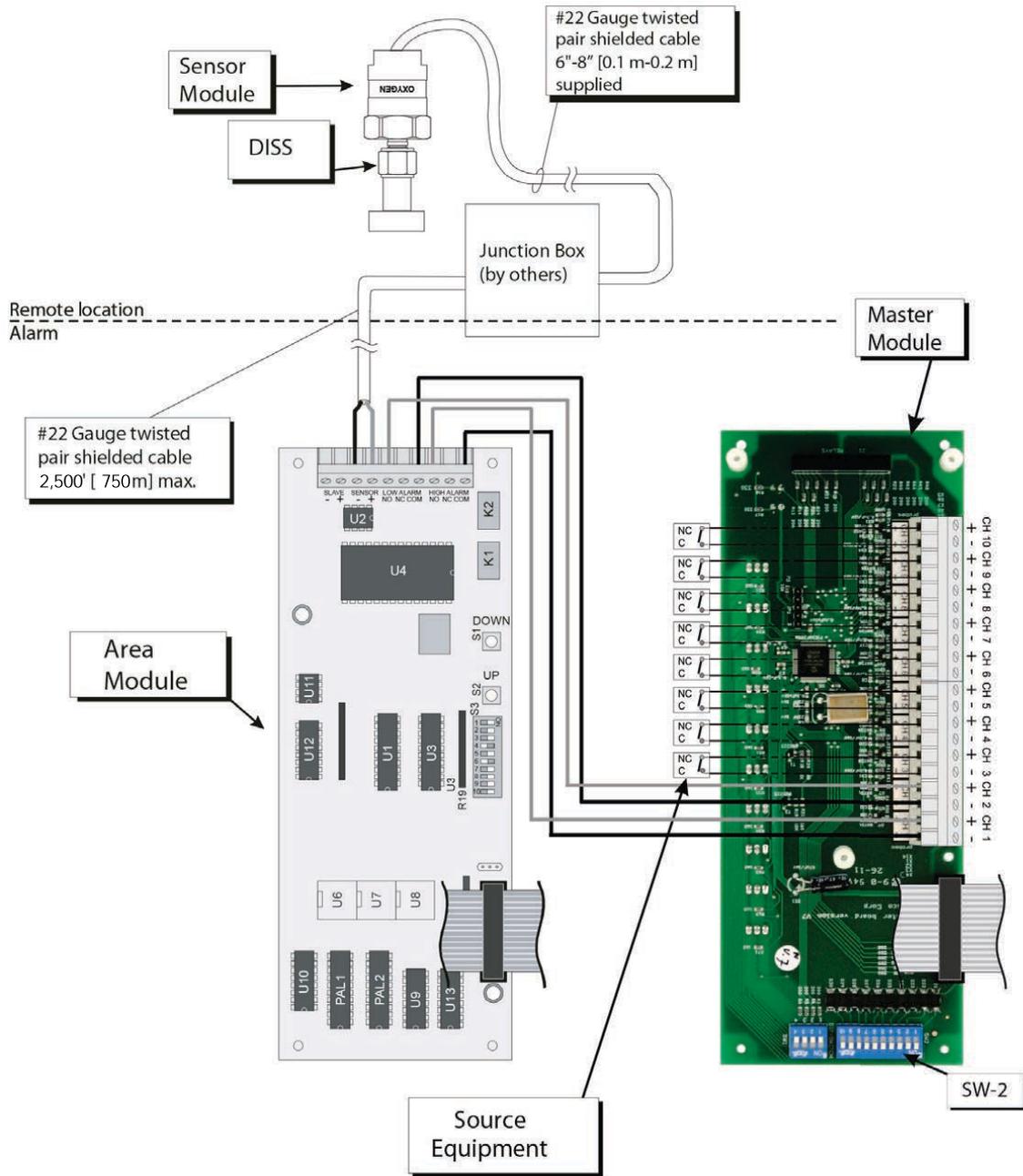Dry Contacts only

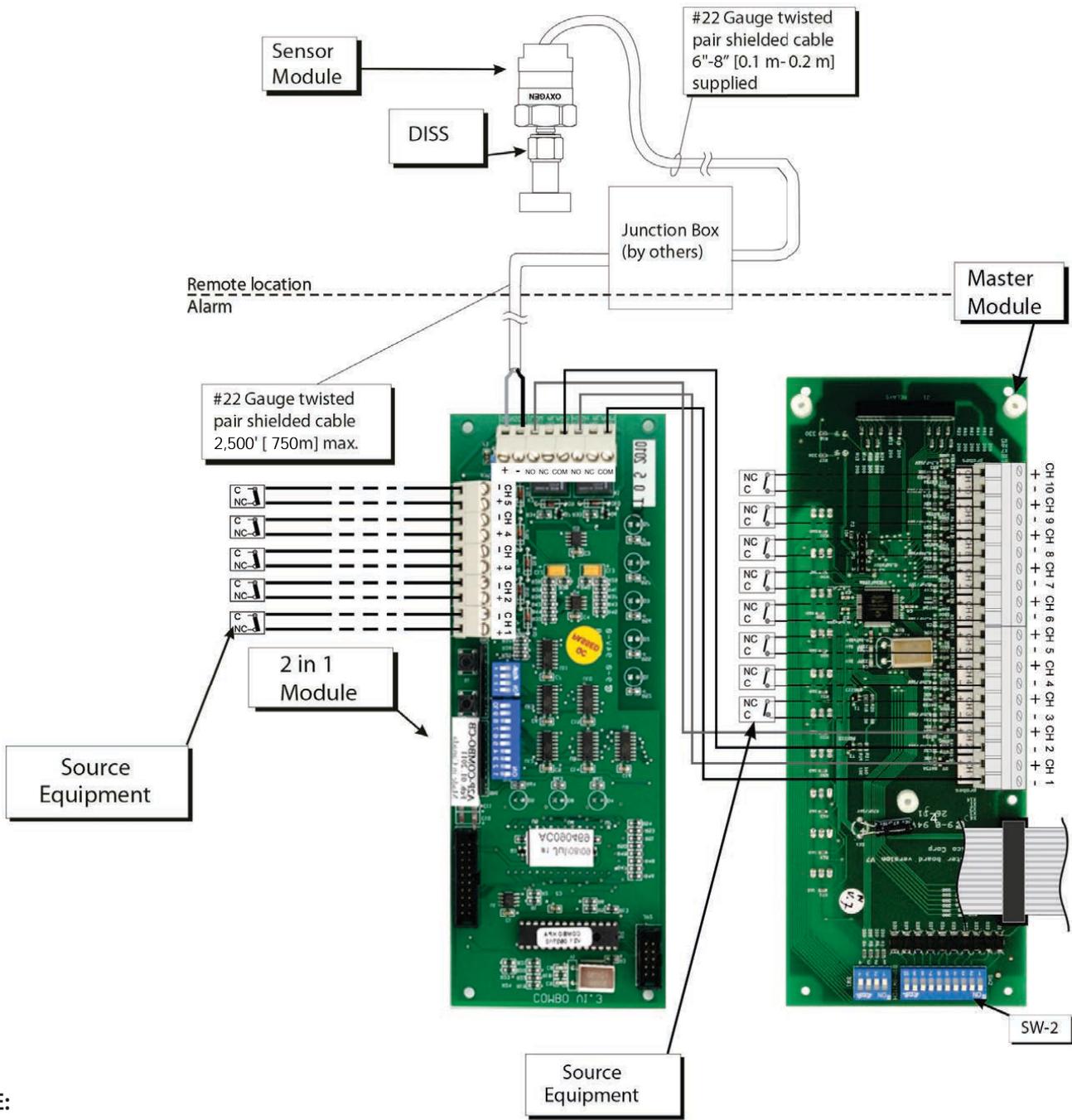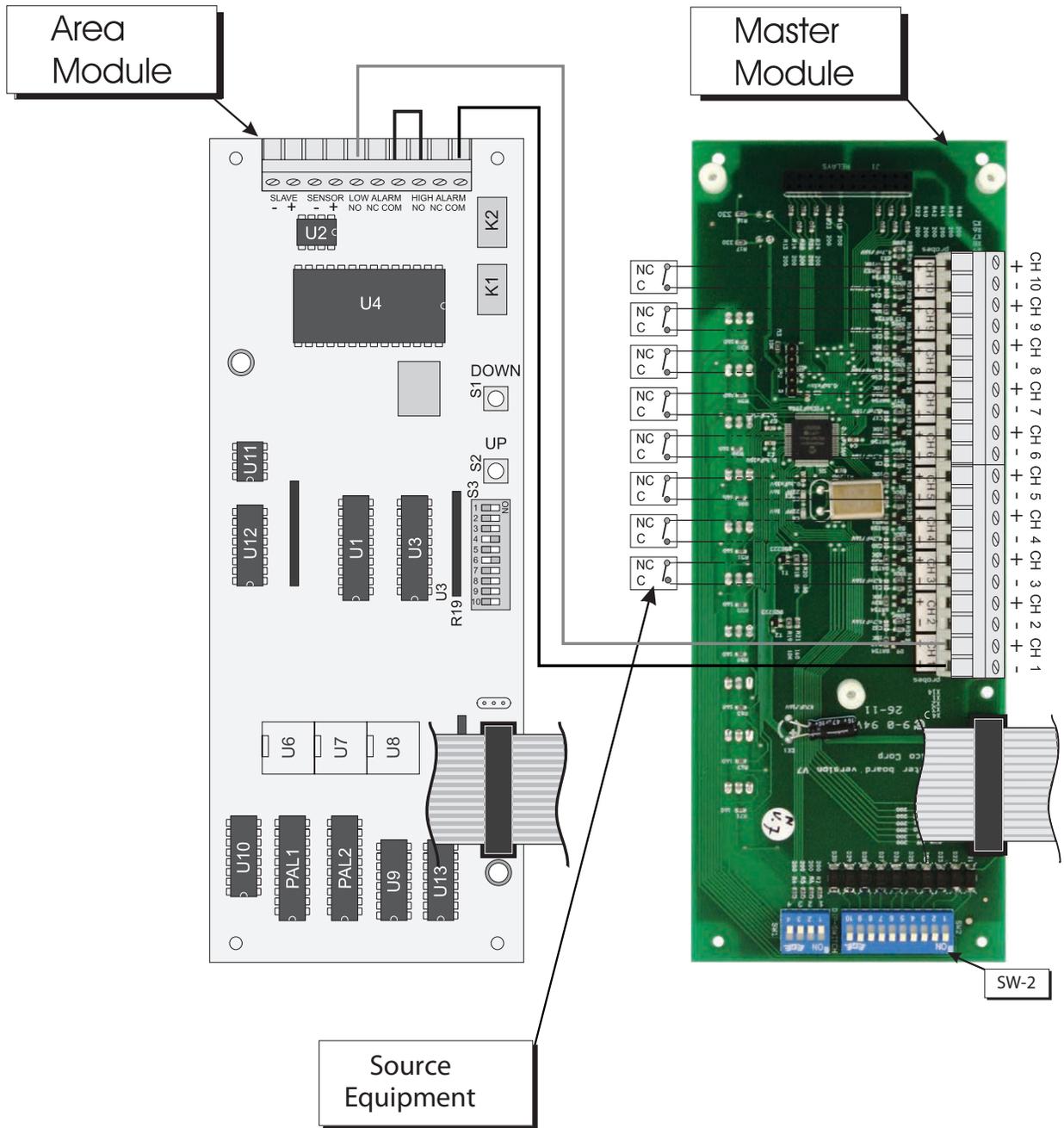No Voltage

SW-2

NOTE:

Version 3:   Jumper any unused points on
the Master module

Version 4:   Jumper any unused points on the Master module.
Turn OFF dip-switches for any unused points (Location SW-2)

Wiring Diagram Pressure Switch Connection to a Master Alarm

Master Module

Source Equipment

Low Alarm Signal

Red

Vacuum

NO   C

Blue   Purple

Green
(for Ground)

wiring code

Ground - Green
Common - Purple
Normally Closed -Red
Normally Open -Blue

not required

Blue   Yellow

NO   C

Brown   Orange   Purple   Red

Six Leads
18" Long (Approx.)

3/4" NPT Conduit
Connection

Circuit No. 1
Calibrated Dial

Circuit No. 2
Calibrated Dial

Green
(for Ground)

Brown   C   Orange   NC   Purple   C   Red   NO

High Alarm Signal

Low Alarm Signal

Gas

(OXY, AIR, N^{2}O, CO^2)

9/32" x 5/8"
Mounting
Hole (Typ.)

1/4" NPT
Gas Service
Connection

2 - 1/2"
3 - 1/2"

Nitrogen

C   NO   NC

Switch for
High Alarm

C   NO   NC

Switch for
Low Alarm

wiring code

Circuit #1 for Low
Common - Purple
Normally Closed - Blue
Normally Open - Red

Circuit #2 for High
Common - Brown
Normally Closed - Orange
Normally Open - Yellow

Circuit No. 1	Circuit No. 2
Red Blue	Purple Brown Orange Yellow
NO	C C NC

NOTE: There are 2 NIT switches, one for high alarm and one for low alarm.

Appendix N

Wiring Diagram Computer Interface Module

Computer Interface Module

Source Equipment

Dry contacts for interface with:
Building Management System.
Contacts are Common
and NC, open on Alarm.
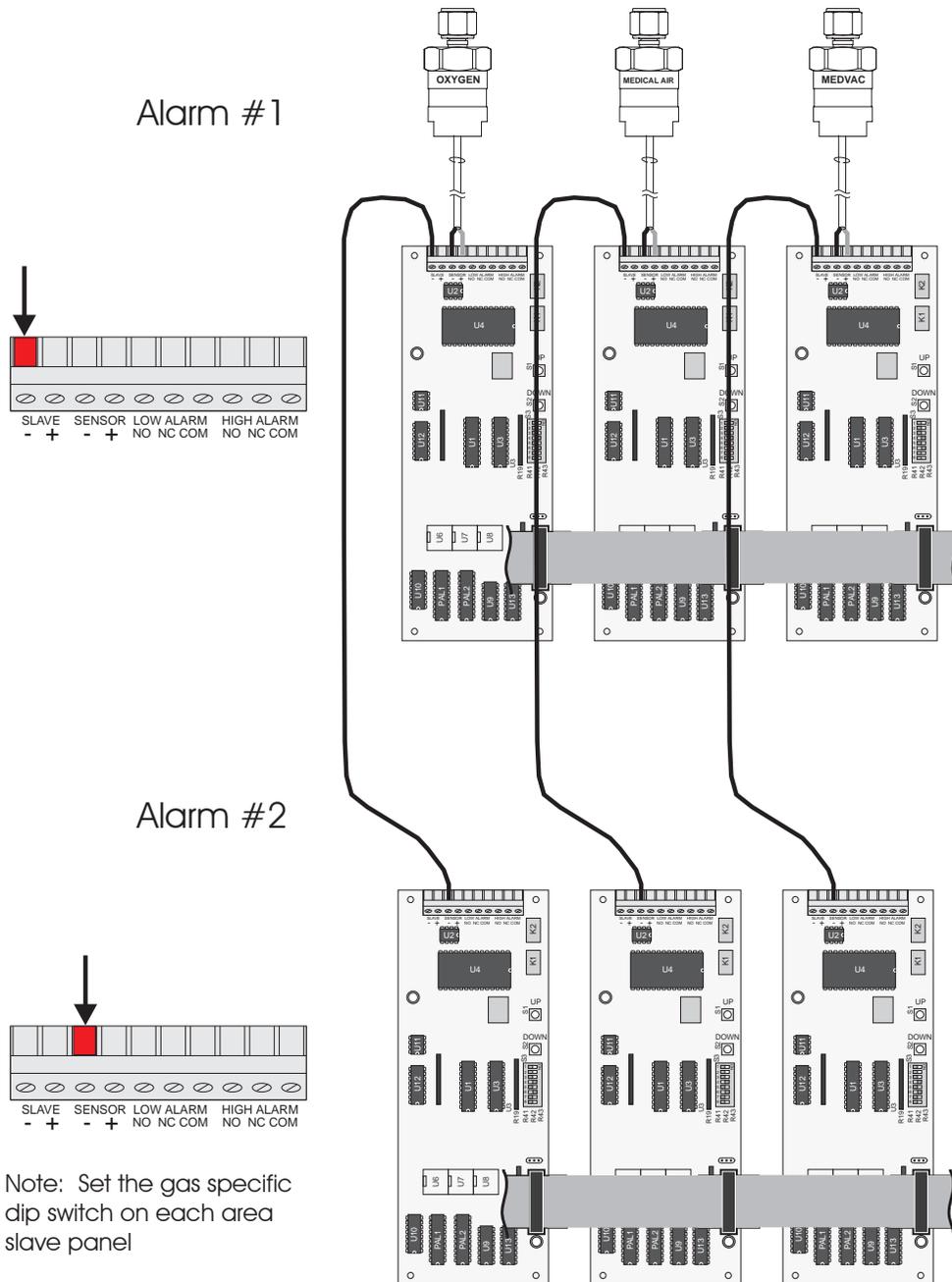
Ratings:
24VDC 0.1A

Master Module

SW-2

NOTE:

Version 3: Jumper any unused points on
the Master module

Version 4: Jumper any unused points on the Master module.
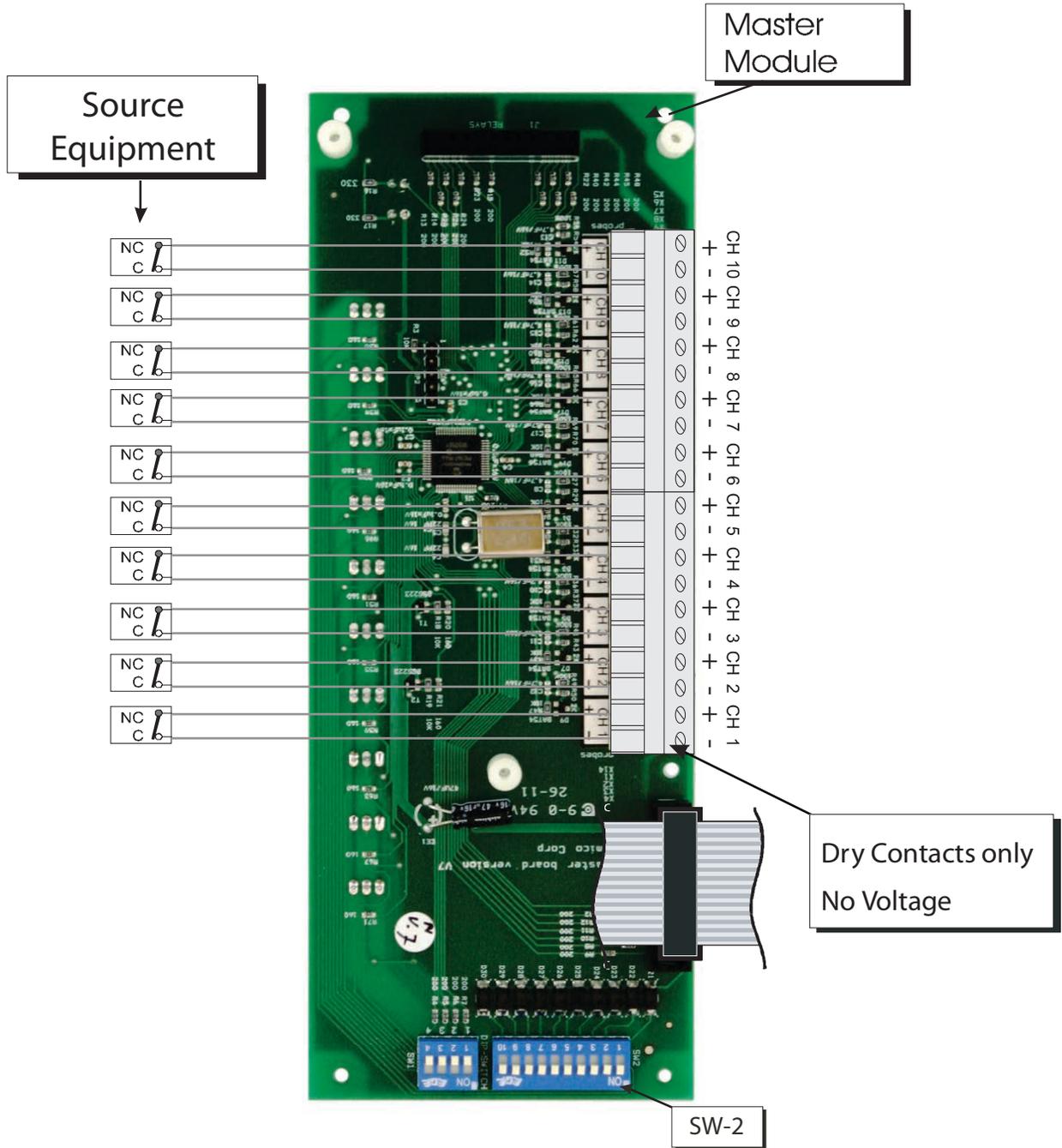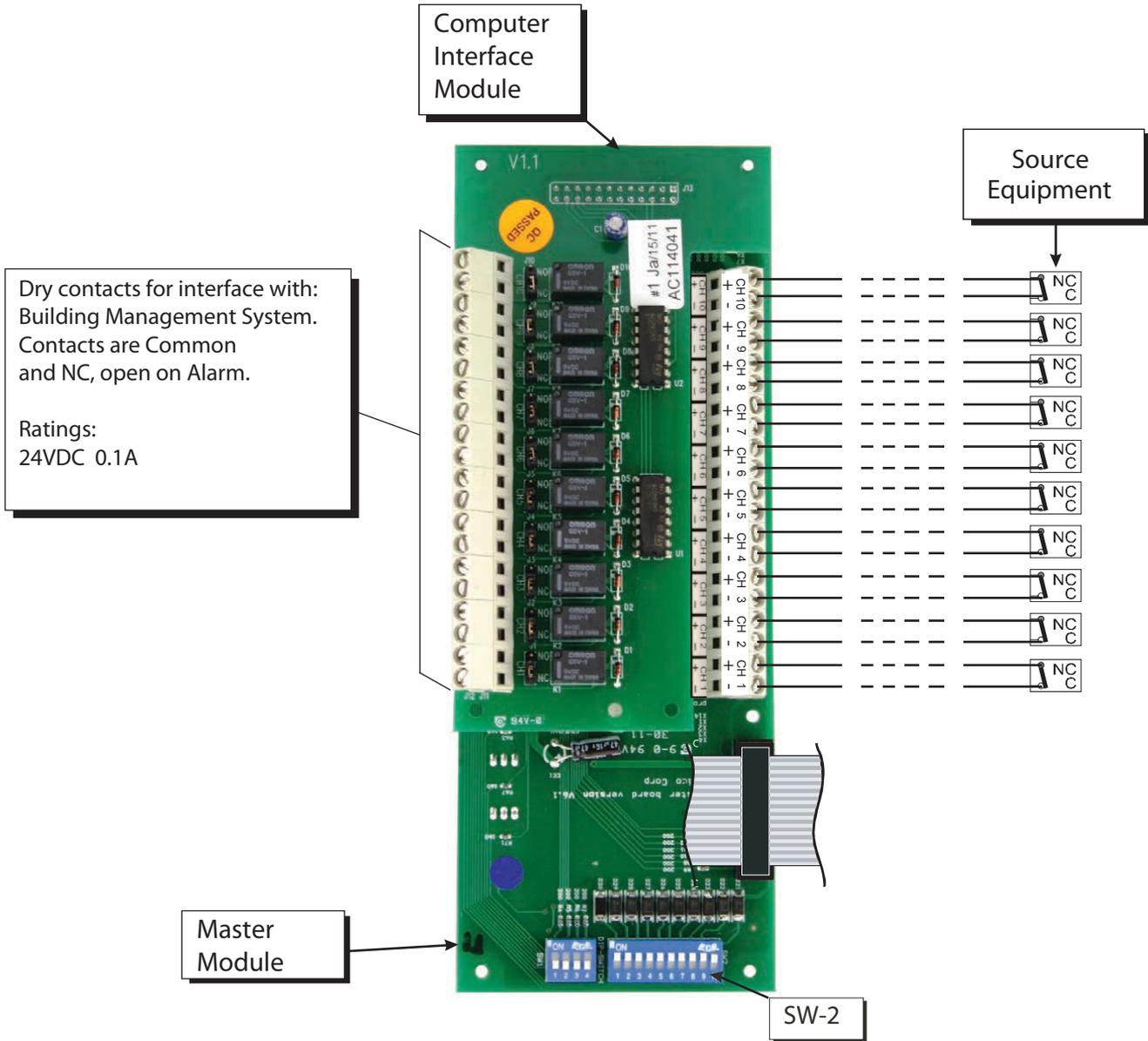Turn OFF dip-switches for any unused points (Location SW-2)

Appendix O

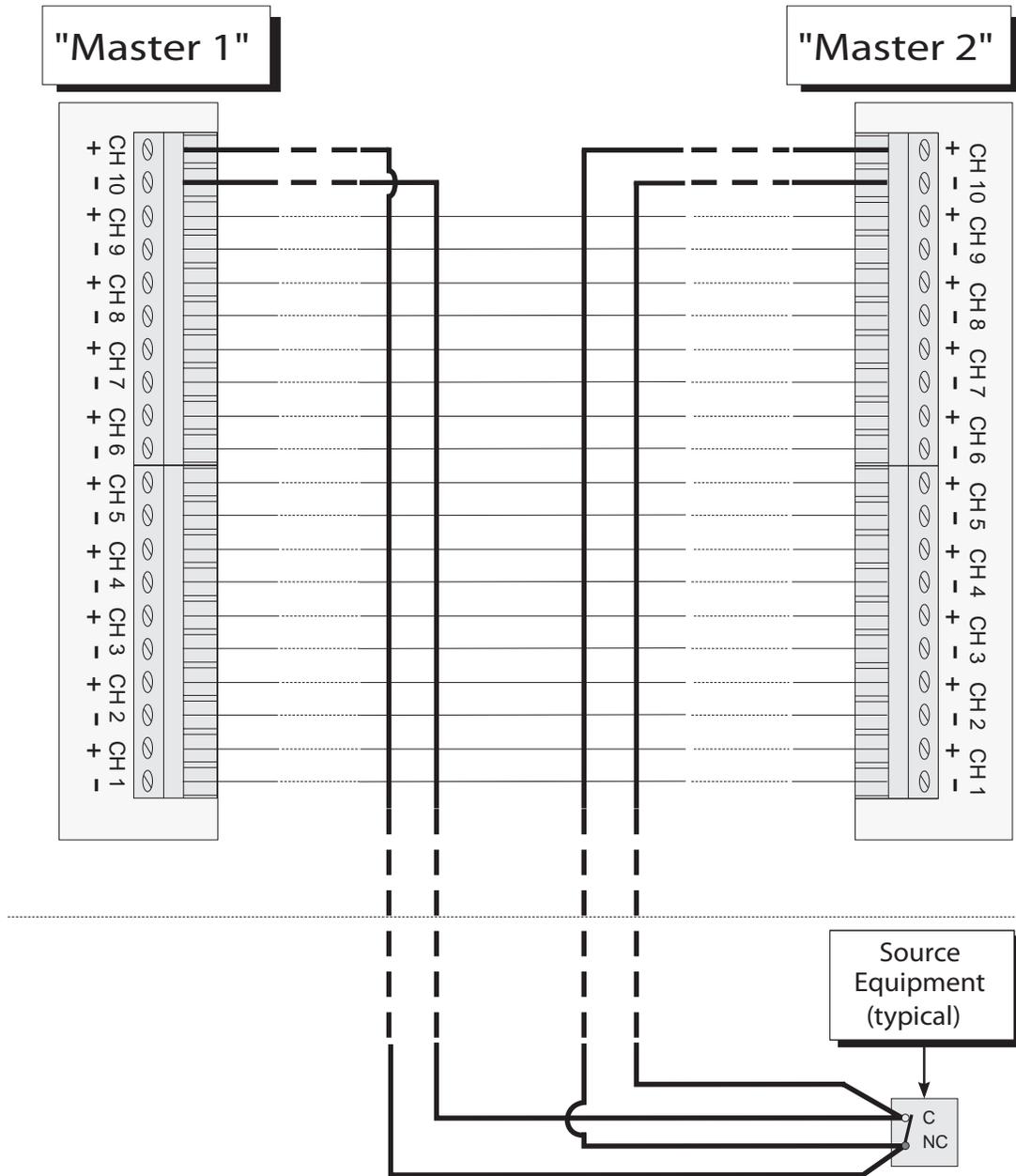**Wiring Diagram** Master to Slave Module

NOTE:

Version 3: Jumper any unused points on the Master module

Version 4: Jumper any unused points on the Master module. Turn OFF dip-switches for any unused points (Location SW-2)

Appendix P

Technical Specification

Supply Voltage: 115 to 220 VAC - 50 to 60 Hz

Current Draw: 1 Amp.Max.

Fuse (1/4 * 1-1/4):   Fast Blow 1 Amp.

Cable requirement:

    Area Display Module to Remote Sensor:

        Distance: Maximum 2,500 feet [750 m]

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

        Signal:

30 VDC	-	1.0 Amps.
60 VDC	-	0.3 Amps.
125 VAC	-	0.5 Amps.

    Master Module to Source equipment:

        Distance: Maximum 10,000 feet [3,000 m]

        Cable: Minimum #22 gauge wire (does not have to be shielded, twisted pair).

        Signal: 5 VDC, < 5 µA.

    Computer Interface Board:

        Output: Dry Contacts NC, open on Alarm.

        Rating:

30 VDC	-	1.0 Amps.
60 VDC	-	0.3 Amps.
125 VAC	-	0.5 Amps.

Notes

Notes

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