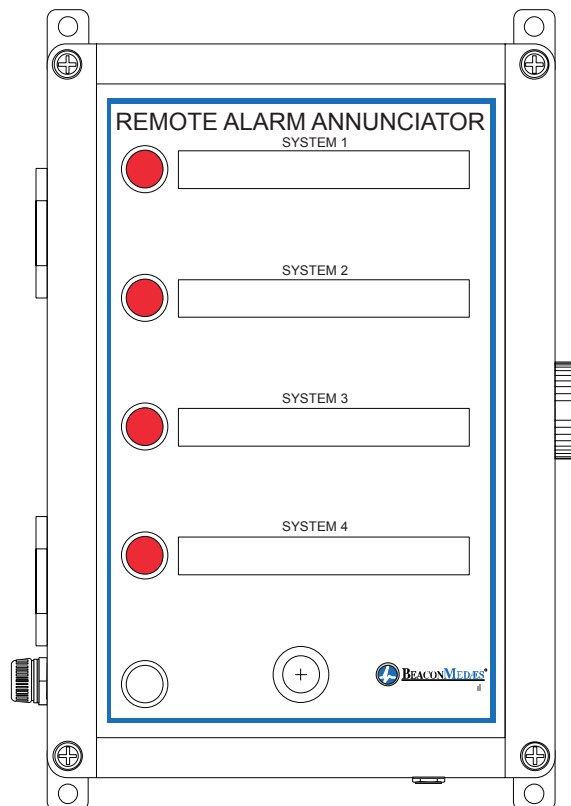


**RAA-4 SERIES**

THIS BOOKLET CONTAINS PROPRIETARY INFORMATION OF THE HARRIS PRODUCTS GROUP AND IS PROVIDED TO THE PURCHASER SOLELY FOR USE IN CONJUNCTION WITH THE AUDIO/VISUAL REMOTE ALARM ANNUNCIATOR FOR FOUR (4) INPUT SIGNALS (RAA-4 SERIES).

**Important**

These instructions are for experienced operators who know the general principles and safety precautions to be observed in handling compressed gases. If you are not certain you fully understand the safety precautions for handling gases, we urge you to obtain and read the Material Safety Data Sheet (MSDS) for each gas being used.

Do not permit untrained persons to install, operate, or maintain these manifolds. Do not attempt to install or operate these manifolds until you have read and fully understand these instructions. If you do not fully understand these instructions, contact BeaconMedæS.

Be sure this information reaches the operator. Your supplier has extra copies.

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## 1 - Safety Precautions

Protect yourself and others. Read and understand the following instructions before attempting to use this equipment. Failure to understand and follow these instructions could result in serious personal injury and/or damage to equipment. Because of the many potential hazards associated with gases, read the Material Safety Data Sheet for each gas you will be using.

- Know and understand the physical and chemical properties of the gas being detected.
- Observe general precautions for the use of gases.
- Observe safety precautions for the gas being used.
- Read and follow precautions on cylinder labels.
- Never use these manifolds with gases not compatible with the materials of construction. The use of gases not compatible with the materials of construction may cause damage to equipment or injury to personnel.
- If flammable gases are used with compressed gas equipment do not locate it near open flames or any other source of ignition.
- If toxic or flammable gases are used with compressed gas equipment, emergency equipment applicable to the gases in use should be available in operating area.
- Many gases can cause asphyxiation by displacing oxygen in the atmosphere. Make certain the area where compressed gas equipment is operated is well ventilated. Provide a device to warn personnel of oxygen depletion in the work area.
- Do not release toxic or flammable gases in the vicinity of personnel. Use this equipment only in well ventilated areas. Vent gases to the outside atmosphere, and in an area away from personnel. Be sure that venting and disposal methods are in accordance with Federal, State, Provincial and local requirements. Locate and construct vent lines to prevent condensation or gas accumulation. Be sure the vent outlet cannot be obstructed by rain, snow, ice, insects, birds, etc. Do not inter-connect vent lines; if more than one vent is needed, use separate lines.
- Relief devices should be installed and properly vented in all gas handling systems to protect against compressed gas equipment failure and over-pressurization.
- Never connect this equipment to a supply source having a pressure greater than the maximum rated pressure. Refer to the Product Specifications for maximum inlet pressures.
- Never permit oil, grease, or other combustible materials to come in contact with cylinders, compressed gas equipment, and connections. Oil and grease may react and ignite when in contact with some gases – particularly oxygen and nitrous oxide.
- Cylinder, header, and master valves should always be opened very s-l-o-w-l-y. Heat of recompression may ignite combustible materials.
- Flexible hoses should never be kinked, twisted, or bent into a radius smaller than 3 inches. Mistreatment may cause the flexible hoses to burst.
- Do not apply heat. Some materials may react and ignite while in contact with some gases – particularly oxygen and nitrous oxide.
- Cylinders should always be secured with racks, chains, or straps. Unrestrained cylinders may fall over and damage or break off the cylinder valve which may propel the cylinder with great force.
- Oxygen manifolds and cylinders should be grounded. Static discharges and lightning may ignite materials in an oxygen atmosphere, creating a fire or explosive force.
- Welding should not be performed near nitrous oxide piping. Excessive heat may cause the gas to dissociate, creating an explosive force.
- Do not use leak test solution that contains ammonia. Solutions containing ammonia may cause brass tubing to crack.
- Always use oxygen compatible leak test solution on oxygen or nitrous oxide service equipment.

## 2 - Abbreviations

<b>C</b>	Common	<b>OSHA</b>	Occupational Safety & Health Administration
<b>CGA</b>	Compressed Gas Association	<b>PSIG</b>	Pounds per Square Inch Gauge
<b>FT-LBS</b>	Foot-Pounds	<b>SCFH</b>	Standard Cubic Feet per Hour
<b>IN-LBS</b>	Inch-Pounds	<b>VAC</b>	Voltage, Alternating Current
<b>N/C</b>	Normally Closed	<b>VDC</b>	Voltage, Direct Current
<b>N/O</b>	Normally Open	<b>PCB</b>	Printed Circuit Board
<b>NPT</b>	National Pipe Taper		

## 3 - Disclaimer

BeaconMedæS shall not be liable for errors contained herein or incidental or consequential damages in connection with providing this manual or the use of material in this manual.

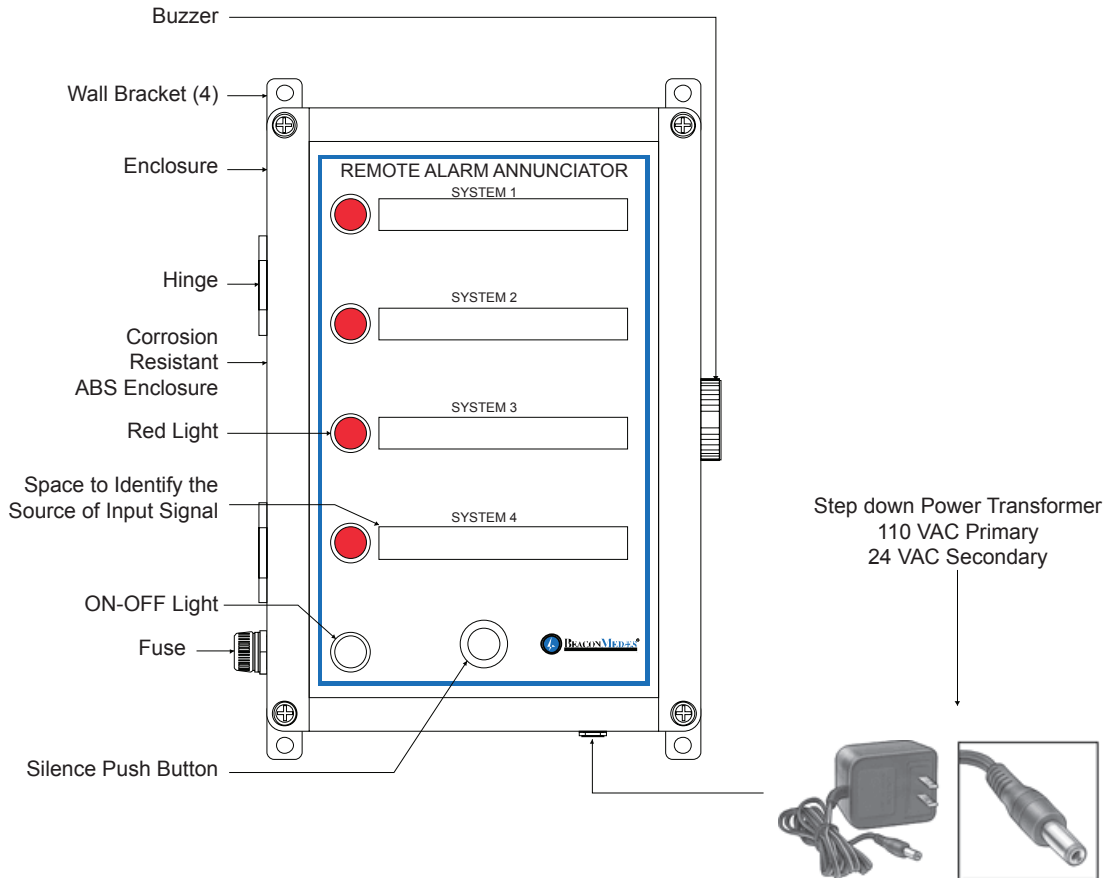
## 4 - Manufacturer Statement

The information contained in this instruction booklet has been compiled by BeaconMedæS, from what it believes are authoritative sources, and is offered solely as a convenience to its customers. While BeaconMedæS believes that this information is accurate and factual as of the date printed, the information, including design specifications, is subject to change without prior notice.

## 5 - Description

The BeaconMedæS RAA-4 Remote Alarm Annunciator is designed to operate with a 24 VAC power source. Each alarm function is initiated on a closed circuit (dry contact). The annunciator box contains one red alarm light per input signal (total of four) as well as one buzzer and one silence button per annunciator box. When any cylinder bank is depleted on a SG920 manifold, its alarm box triggers a dry contact. This dry contact is energized by the RAA-4 Alarm Annunciator. The corresponding red light is illuminated on the front of the RAA-4 Remote Annunciator and the buzzer is activated. The buzzer can be silenced by pressing the silence pushbutton, but the red light will remain illuminated until the depleted bank has been replaced. The RAA-4 Audio/Visual Remote Alarm Annunciator comes standard with a 24 VAC plug-in power transformer. As an option, for hard wired installation, the 24 VAC power transformer can be installed into a junction.

The RAA-4 Series Audio/Visual Remote Alarm Annunciator has one alarm signal for remote annunciation: one normally open dry contact.

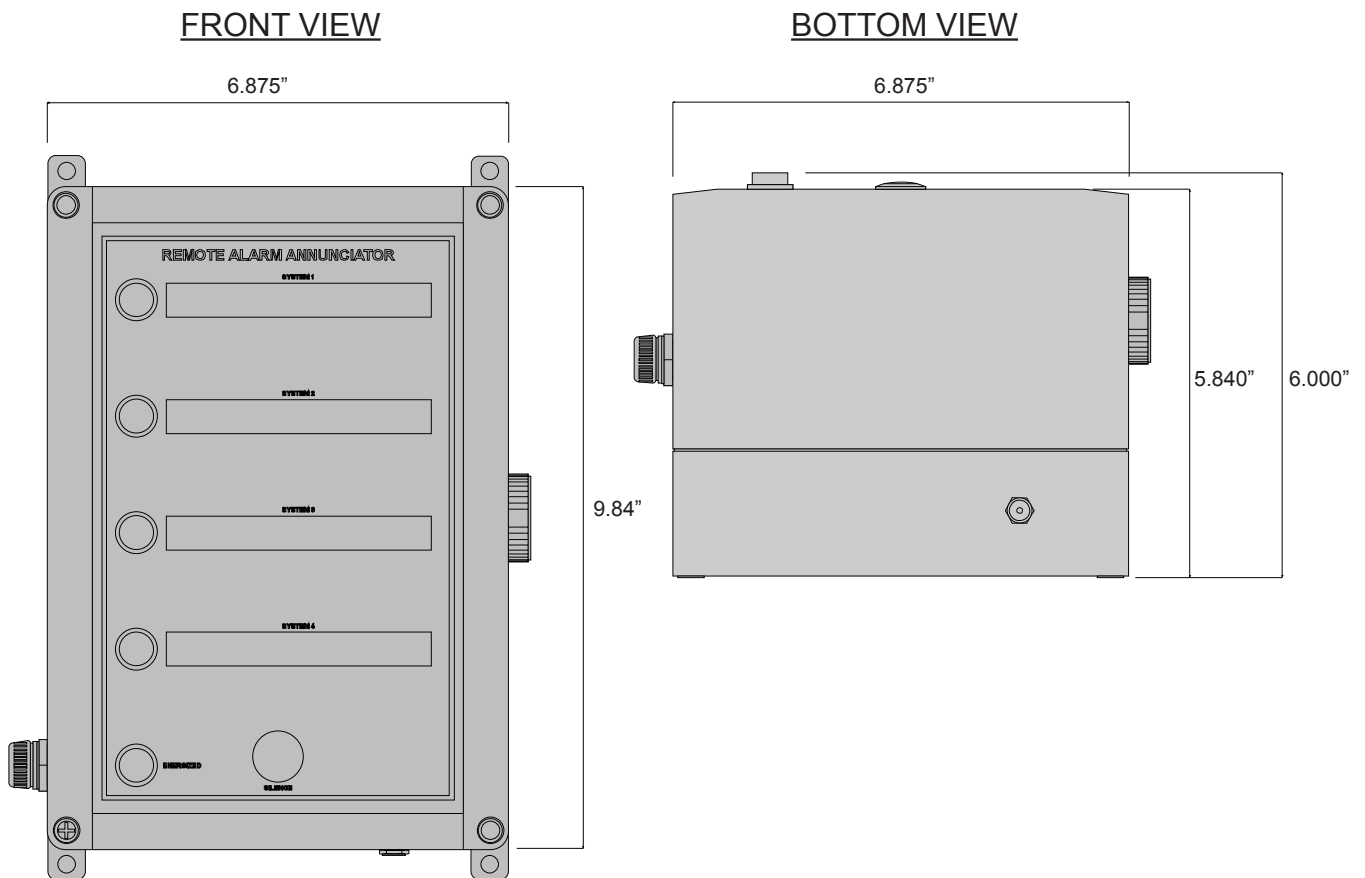


## 6 - Ordering Information

**RAA-4**

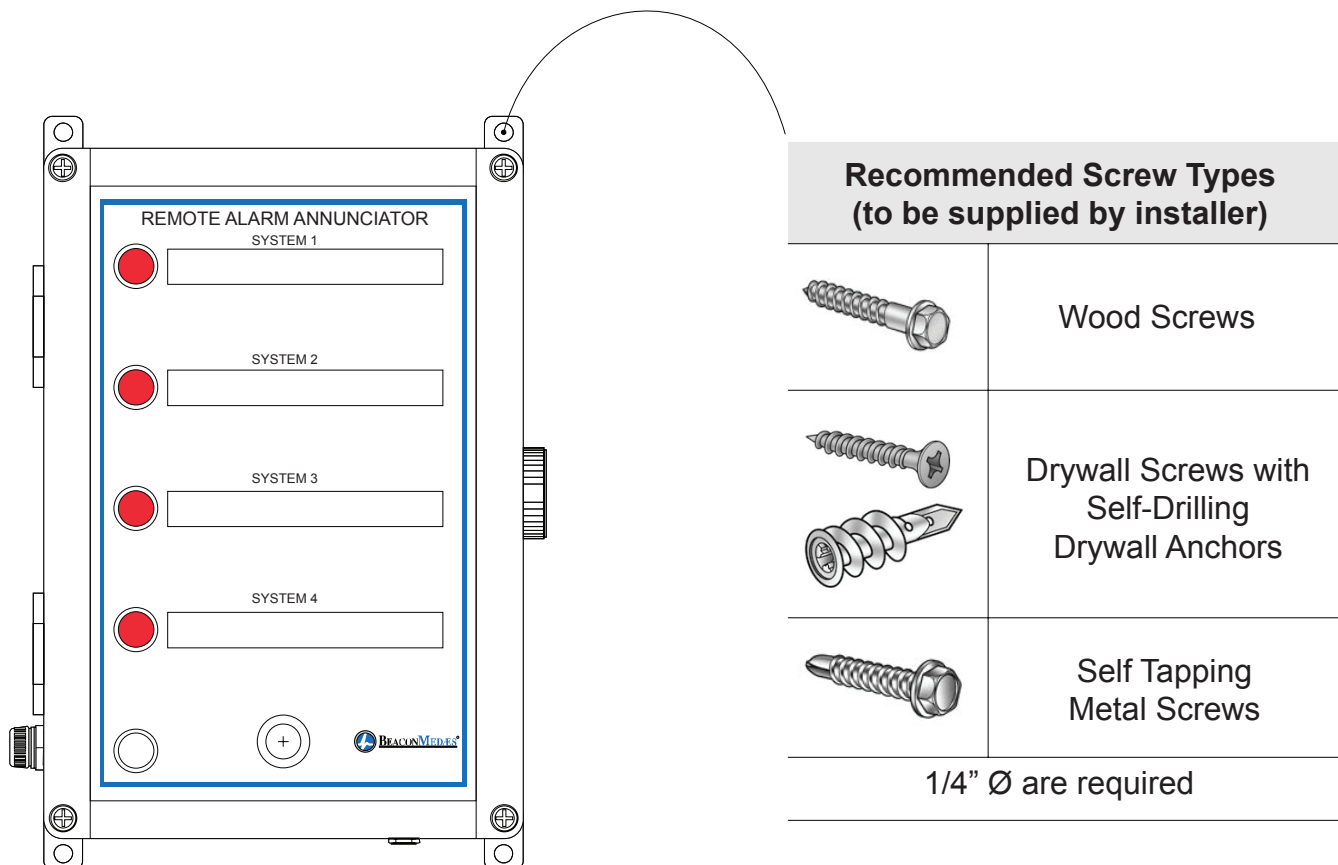
**7 - Specifications**

<b>Enclosure</b>	ABS - Light Gray - NEMA 1
<b>Power Requirement</b>	24 VAC - 1590 mA (38.2 VA Max.)
<b>Dry Contact</b>	Normally Open or Normally Closed (3 Amp., @ 277 Volts, 50/60 Hz)
<b>Silence Push Button</b>	Momentary Push Button
<b>Buzzer</b>	Continuous Tone - 80 dB(A) at 2 Feet
<b>Power Transformer</b>	Input: 120 VAC, 60 Hz - Output: 24 VAC, 1800 mA (43.2 VA)
<b>Fuse</b>	2 Amp., 1/4" x 1-1/4"

**8 - Dimensions**


## 9 - Wall Installation & Locations

The RAA-4 remote alarm box comes with four (4) factory installed wall mounting brackets. Using the proper screws for the type of wall, attach the remote alarm box to the wall. This unit should be installed within five feet of a 120 VAC power outlet.

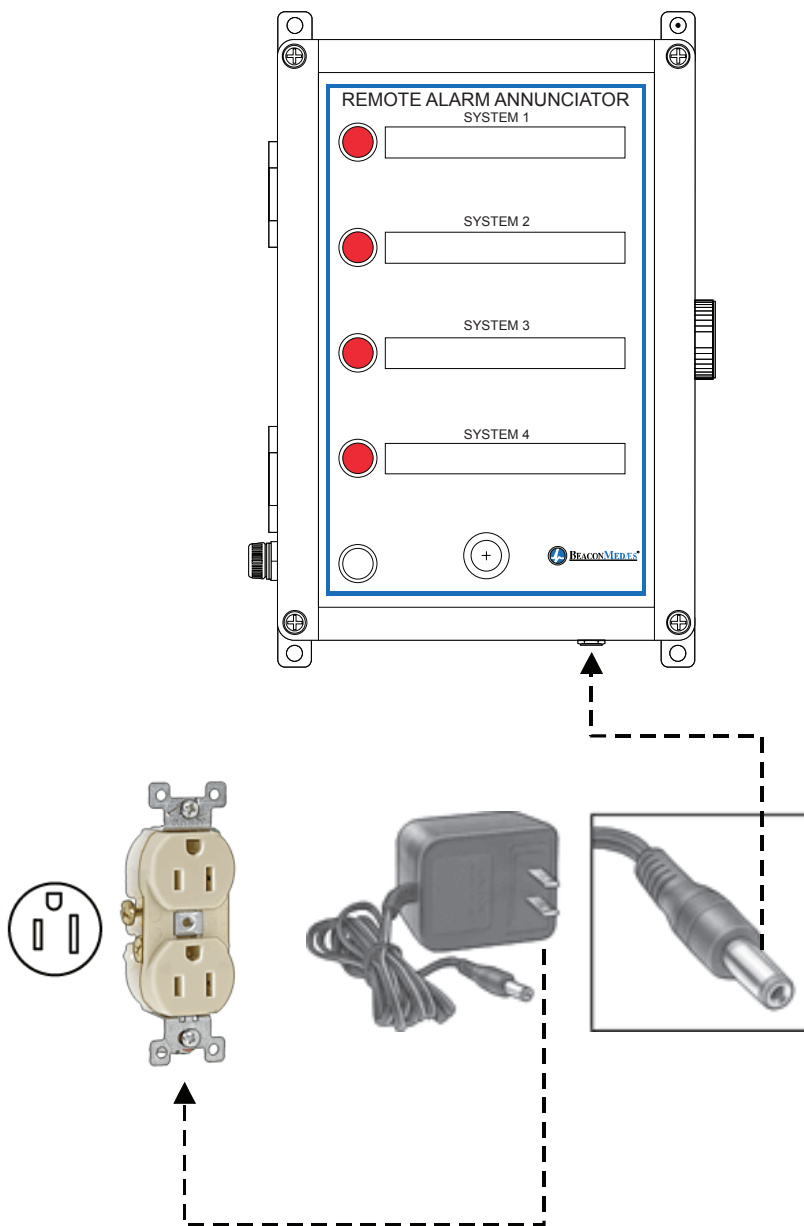


### WARNING

This enclosure is not rated, and should not be used in a hazardous area where flammable gases or vapors may be present. This unit is for indoor use only.

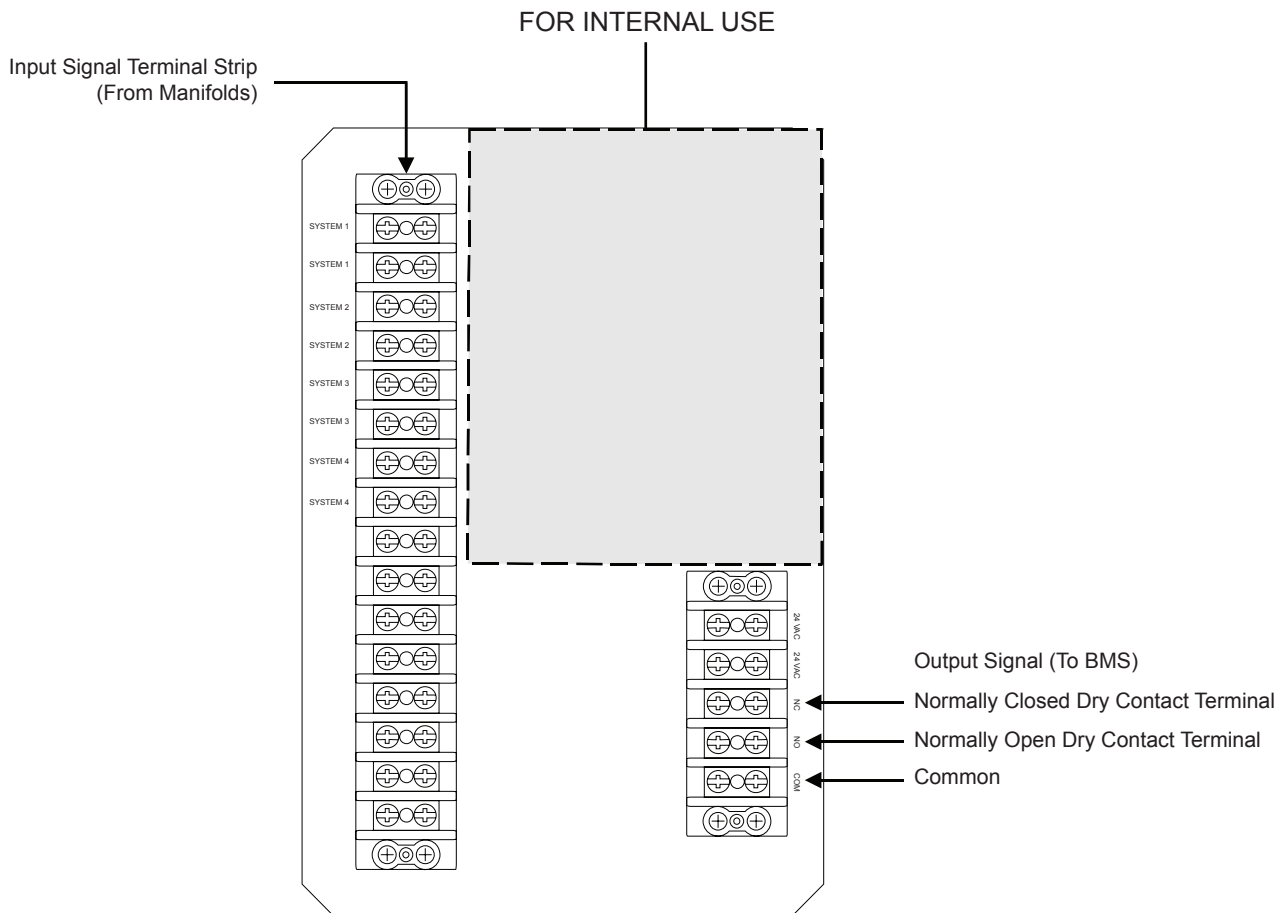
## 10- Power Transformer Installation

The RAA-4 remote alarm box comes with a wall plug-in step-down power transformer. The installation should be done as per the diagram shown below.



### 11 - Inside the RAA-4 Enclosure

Take a minute to locate the two different terminal strips. As shown below, the terminal strip to the left is dedicated to connect the manifold (or any other type equipment) dry contacts. The terminal strip to the right is where the external signal needs to be connected.





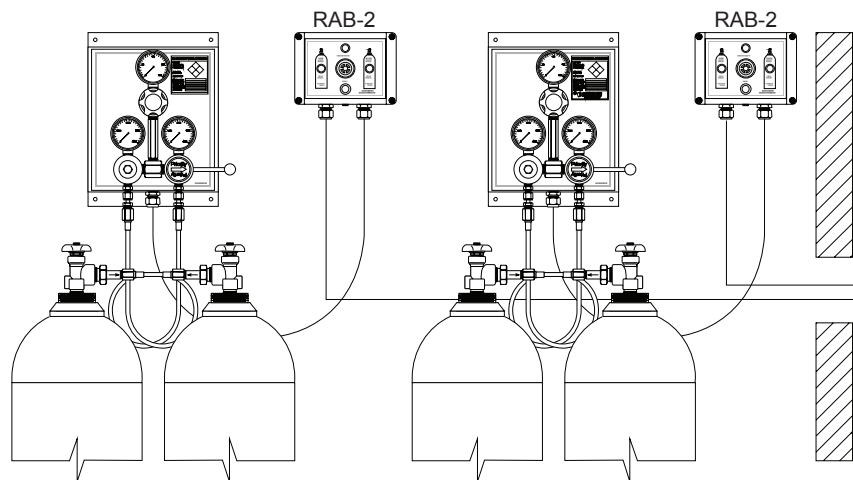
## 12 - How the RAA-4 Works

### The Power of Dry Contacts

The RAA-4 Alarm Annunciator uses dry contacts as sources to trigger alarms. That means this annunciator panel can be used with pretty much any type of alarm devices (input and output). This makes our alarm annunciator surprisingly versatile. It is extremely simple to install and it requires only one pair of wire per alarm signal input.

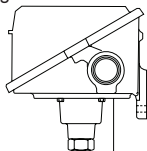
#### Input to the RAA-4:

Use The RAB-2 With An Annunciator Box (Any Type of Manifold Alarm Box)



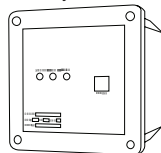
#### Input to the RAA-4:

**Pipeline Pressure Switches**  
Hi/Low pipeline pressure switches can trigger an alarm on the RAA-4



#### Input to the RAA-4:

**Gas Monitors**  
Any brand will work as long as it has a dry contact



#### Output from the RAA-4

One Output Signal

Automatic Voice Dialer

Beacon/Horn



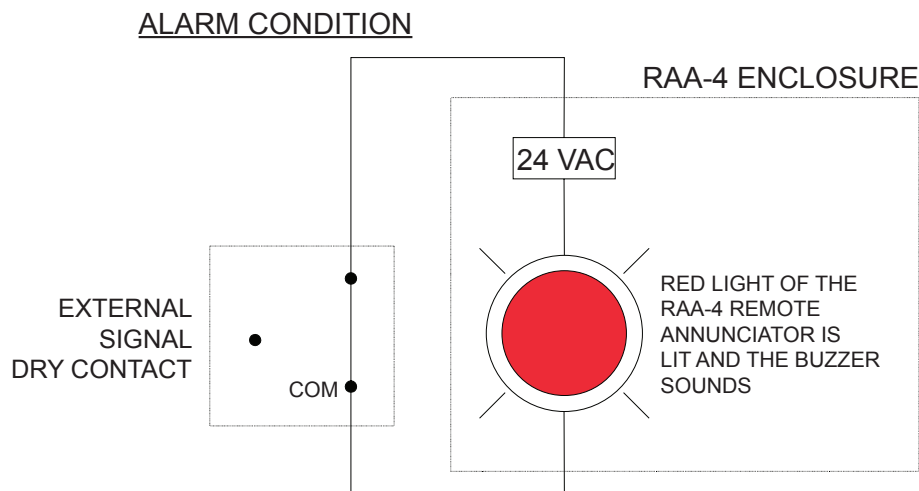
OR

Alarm Signal Cables Provided By Installer. The dry contacts are energized by the RAA-4.

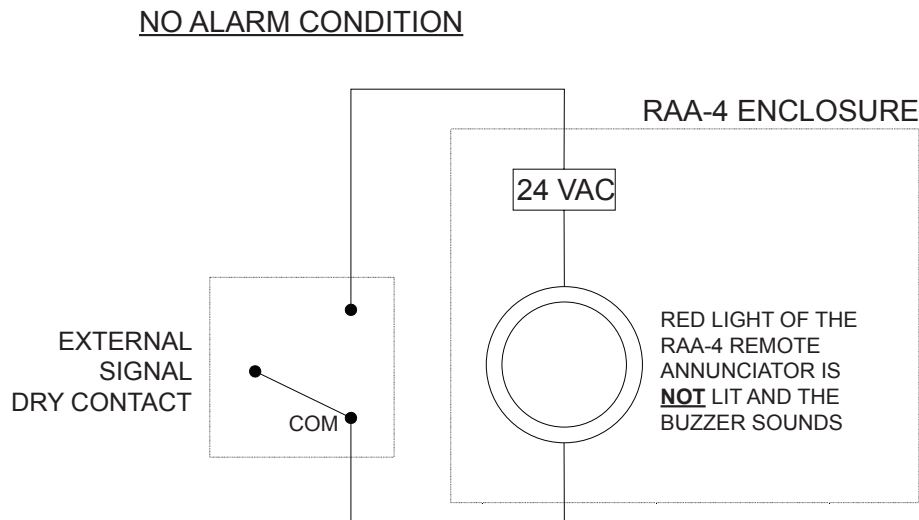
INSTALL ALL INCOMING WIRES INTO A JUNCTION BOX BEFORE ENTERING THE RAA-4 ENCLOSURE (refer to wire installation section for details)

### 13 - Wiring the Input Signals to the RAA-4

The RAA-4 Remote Alarm Box can accept four (4) input signals. As shown in the previous page, the input signals can be manifold alarm boxes (such as BeaconMedæS' RAB-2 alarm box), fixed gas monitors or pipe-line pressure switches. As long as the input signal is a dry contact that closes on alarm mode, the RAA-4 can handle it. Dry contact means that the power to energize that dry contact is coming from the RAA-4 (DO NOT POWER THE CIRCUIT). The wires entering the RAA-4 enclosure should be no bigger than 16 gauge. Below is a typical wiring diagram for one input signal. If you have for example, 3 manifolds connected to the RAA-4, you have to repeat that circuitry three times.



Each red light of the RAA-4 is energized when a dry contact goes from a Normally Closed position to a Normally Open state. The circuit is closed and the red light will lit.

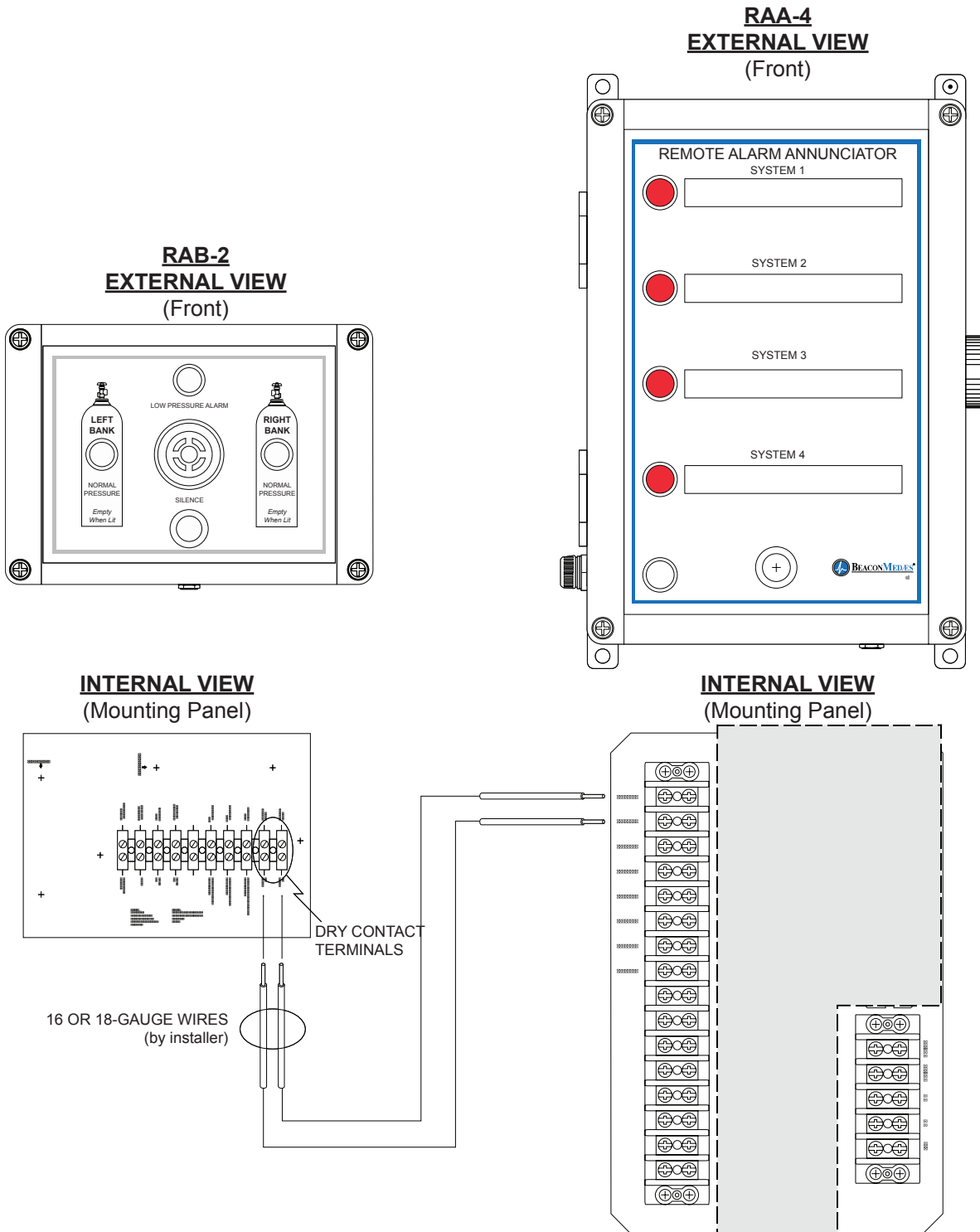


In this situation, the circuit is open and the red light will remain off.

## RAA-4 SERIES

### CONNECTING BEACONMEDÆS' RAB-2 TO THE RAA-4

The schematic below shows you how to connect a BeaconMedaes RAB-2 manifold alarm box to the RAA-4 Remote Alarm Annunciator. Once again, it has to be repeated as many times as you have manifold alarm boxes (one per light up to four).



**IMPORTANT**

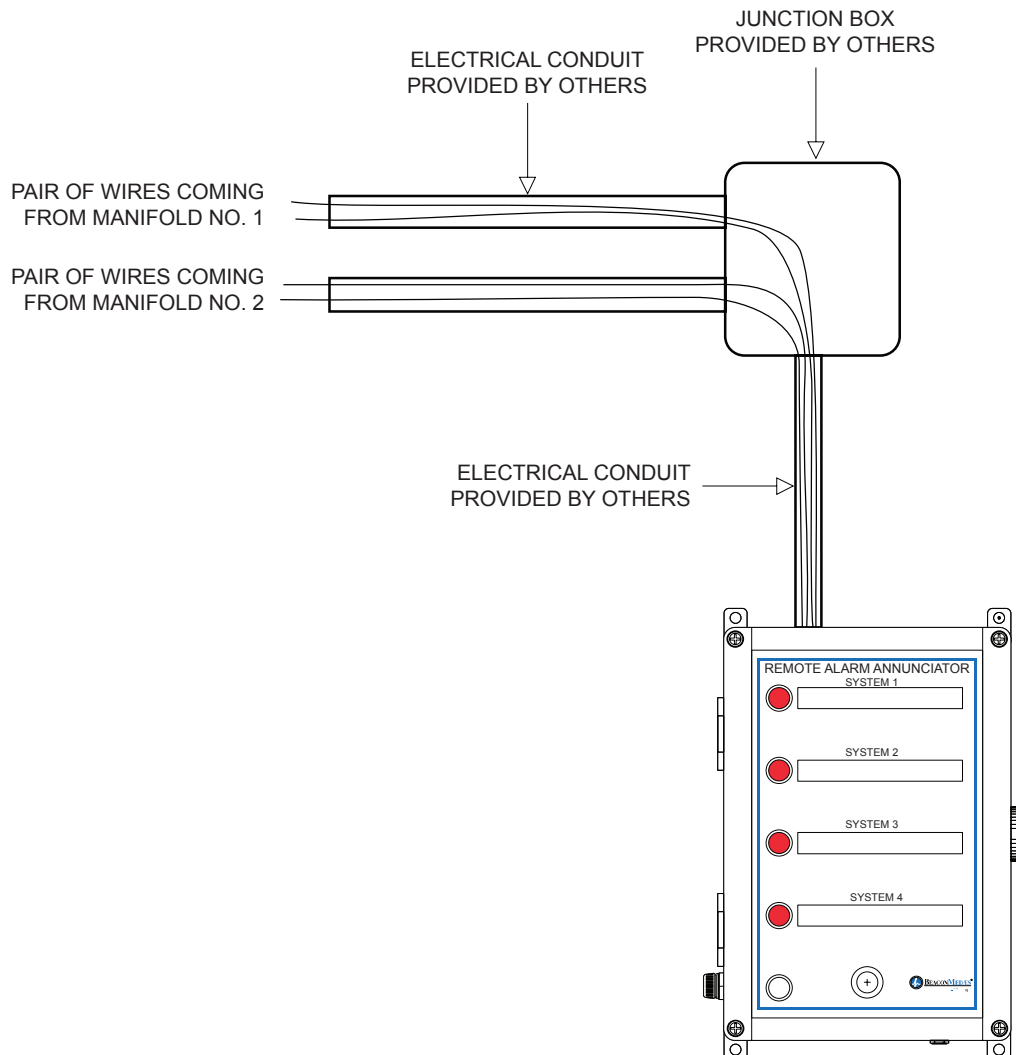
The installer is responsible for all electrical conduits, wiring hook-up of electrical services. All hardware (wires, conduits, junction boxes) shall be supplied and installed by installer. After installation is complete, the end user/installer shall test equipment functions, as well as electrical receptacles and ground, in accordance with the National Electrical Code.

**CONNECTING THE OUTPUT SIGNALS**

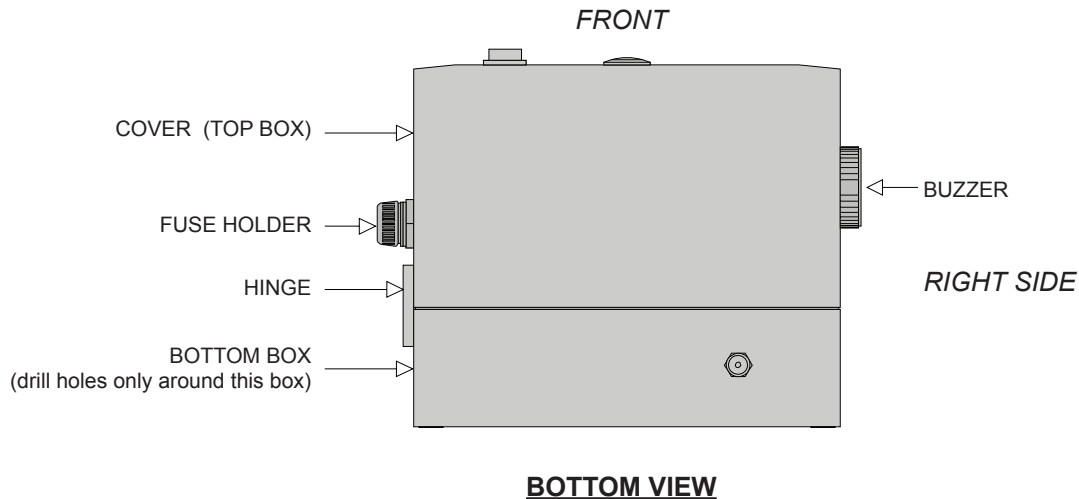
The RAA-4 Remote Annunciator is equipped with a SPDT relay. This relay is triggered when any of the four alarms is triggered. The relay will remain “active” until all alarm conditions are gone. The relay is equipped with a Normally Open (NO), a Common (C) and a Normally Closed (NC) contacts. The connections to these terminals can be made on the lower right side terminal block located inside the RAA-4 enclosure. Because it is a dry contact, you have to energize the circuit.

**PENETRATION TO THE RAA-4 ENCLOSURE**

The RAA-4 enclosure has been designed to be installed on a wall. There is space on all sides of the bottom part of the enclosure to drill one hole. Should you have several inputs (such as manifold alarm boxes), **all incoming wires must first arrive into a junction box** (provided by others). Then one conduit with all wires in it must be connected to RAA-4 enclosure (see diagram below).



The RAA-4 enclosure has a cover (top box), a bottom box and two hinges (installed to the left) between the two. The conduit must be connected to the bottom box. Some units will arrive with holes pre-drilled on each side of the bottom box (each hole is capped) Should you require to drill a hole into the bottom box, **EXTREME CAUTION MUST BE TAKEN WHILE DRILLING THE HOLE** to avoid any damages to the internal components of the RAA-4 remote alarm annunciator.



## 14 - Operation

### ON-OFF Light (Clear Lights)

The clear light at the bottom left side of the RAA-4 indicates if the unit is energized or not. Each light (including the red lights) have a life expectancy of 50,000 hours (a little over 5 and a half years). If the clear light is not lit, it's either the light bulb is defective, un-plugged, burnt out or the RAA-4 is not energized.

### Visual Signals (Red Lights)

There are four red lights. Each red light is energized (lit) when its corresponding alarm condition is triggered. When the alarm condition is gone, the red light will extinguish.

### **WARNING – THIS IS NOT A MEDICAL ALARM BOX**

Do not use this remote annunciator to monitor source equipment (medical air compressors or vacuum pumps) or medical gas manifolds in hospitals, clinics, dentists or any other healthcare facilities. As such, if there is nothing connected to any of the eight alarm input connections, there will be no red lights and no buzzers. The output signal relay will not be triggered either.

The purpose of this unit is:

- To indicate which and when an alarm condition is active;
- Conveniently group several signals coming from different sources into one compact box;
- Primarily dedicated to warn supervising personnel that there is one or more empty gas cylinder manifolds.

### Audible Signal (Buzzer and Silence Push Button)

The audible alarm will be actuated each time a red light comes on. The silence button will kill the buzzer but the visual (red) light will remain illuminated. Each time a dry contact closes the circuitry, its respective red light will illuminate and the buzzer will sound. You can kill the buzzer by pushing on the silence push button located on the front on the RAA-4 **The buzzer will not sound again if a second (or more) alarm condition occurs while the first alarm condition has not cleared.** Said otherwise, the buzzer will not sound again if a second circuit closes while the first circuit is still closed. **THE BUZZER WILL SOUND AGAIN ONLY WHEN ALL ALARM CONDITIONS HAVE CLEARED.**

## 15 - Identifications

The fascia (sticker) of the RAA-4 Remote Alarm Annunciator is made out of Lexan (which is a polycarbonate laminate). There is a place for you to identify the source of alarm to the right of each red light. Most pens and markers **should not** permanently mark the fascia. Should you use labels (such as Dymo labels), please clean the surface of the sticker so that your label does not peel off over time.

## 18 - Design Changes

In line with our commitment to continuous improvement, BeaconMedæS reserves the right to make design modifications or discontinue manufacture of any equipment without prior notice.

## 19 - Warranty

The Seller expressly warrants that the products manufactured by it will be free from defects in material, workmanship and title at the date of shipment. This warranty is exclusive and is IN LIEU OF ALL IMPLIED OR STATUTORY WARRANTIES (INCLUDING WITHOUT LIMITATION, WARRANTIES AS TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ARISING FROM COURSE OF DEALING OF USAGE OR TRADE) or any other express or implied warranties or representations. All claims under this warranty must be made in writing and delivered to the seller prior to the expiration of 1 year from the date of shipment from the factory, or be barred. Upon receipt of a timely claim, the seller shall inspect the item or items claimed to be defective, and seller shall, at its option, modify, repair, or replace free of charge, any item or items which the seller determines to have been defective at the time of shipment from the factory, excluding normal wear and tear. Inspection must be performed at the seller's plant and in such event, freight for returning items to the plant shall be paid by Buyer. Seller shall have no responsibility if such item has been improperly stored, installed, operated, maintained, modified and/or repaired by an organization other than the seller. Adjustment for products not manufactured by Seller shall be made to the extent of any warranty of the manufacturer or supplier thereof. The foregoing shall be the Seller's sole and exclusive liability and buyer's sole and exclusive remedy for any breach of warranty or for any other claim based on any defect in, or non-performance of, the products whether based on breach of contract or in tort, including negligence or strict liability.

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