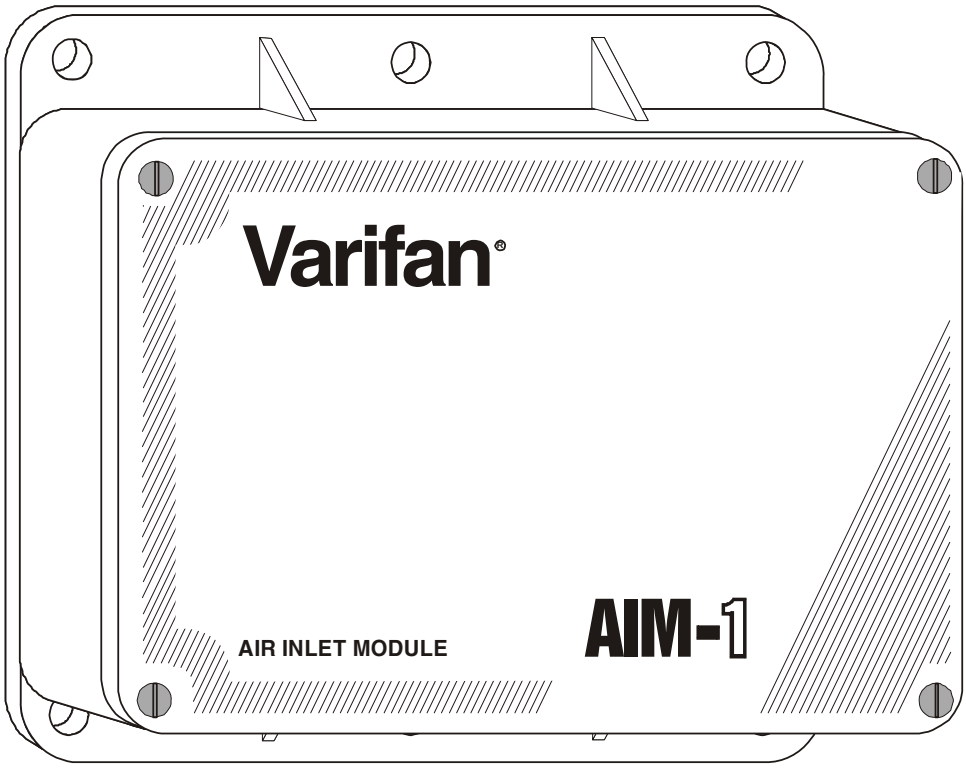
# Varifan®

## AIM-1




# Installation & User's Guide

Although the manufacturer has made every effort to ensure the accuracy of the information contained herein, this document is subject to change without notice due to ongoing product development.

## WARNING AND PRECAUTIONS

Equipment failure, blown fuses and/or tripped breakers may prove harmful to the contents of the building. It is therefore strongly recommended to install backup devices and alarm or warning devices. Spare equipment should also be available at the owner's site. Equipment produced by the manufacturer is protected against normal line voltage surges. High surges caused by thunderstorms or power supply equipment may damage this equipment. For added security against line voltage surges, it is recommended that surge and noise suppression devices be installed at the electrical distribution panel. These devices are available in most electrical supply distributor.

## RECOMMENDATIONS

The manufacturer recommends that all installation procedures described herein be performed by a qualified electrician or installation technician. The manufacturer also recommends verifying all functions and devices connected to the AIM-1 – including backup devices – after installation is completed, after any changes performed on the installation and every week thereafter.

Fuse verification and replacement, along with parameter programming are the product owner's responsibility.

# CHAPTER 1 - INTRODUCTION

## 1.1 GENERAL

This manual provides information necessary for proper use and installation of the AIM-1. This document is organized as follows:

- Introduction
- Installation
- Appendix
- Limited Warranty

## 1.2 DESCRIPTION

The AIM-1 is a positionner which controls motorized air inlets. Connected to a master control, the AIM-1 is able to position an air inlet according to the requested ventilation.

Positionning is made using potentiometer. It can also be done without the use of a potentiometer if the master control is programmed for that kind of application.

# CHAPTER 2 - INSTALLATION

Chapter 2 describes the installation procedure of the AIM-1 module.

**The manufacturer recommends that the installation instructions must be followed, and all work be performed by a certified electrician. Failure to do so voids the warranty!**

## 2.1 UNPACKING

Unpack the AIM-1 and inspect contents for damage. Should the contents appear to be damaged, contact your local distributor to return the material.
The package should contain the following standard items:

- 1 AIM-1 module
- 1 Spare fuse

## 2.2 MOUNTING

### 2.2.1 Mounting hardware not shipped with the unit.

This is the list of the mounting hardware needed, which is not included with the product:

- Shielded three-wire cable, AWG #18 (to extend potentiometer)
- Shielded two-wire twisted pair low capacitance cable, AWG #18 to #22 (used for communication)
- 4 screws (to hang the unit on the wall)
- Screwdrivers
- Soldering iron kit or approved sealed connectors

## 2.3 GENERAL INSTALLATION GUIDELINES

### 2.3.1 AIM-1 Module

- It is recommended to install the unit in a hallway to limit the AIM-1 exposure to noxious gases.
- In order to avoid condensation problems inside the module, it is recommended to install the AIM-1 on an inside wall. If it is not possible, use spacers to have an air gap between the wall and the AIM-1.
- It is required to install the AIM-1 right side up with the cable entry holes facing down.
- The enclosure is watertight, but do not spray water or submerge the AIM-1 in water. Cover it carefully with plastic when cleaning the room.
- The AIM-1 should be installed in an easy-access location but away from damaging elements (heat, cold, water, direct sunlight, …).
- Do not drill the face, the side, the top or the underside of the module.
- Do not install the AIM-1 module near high-voltage equipment, power supply or transformer.

### 2.3.2 Electrical Cables

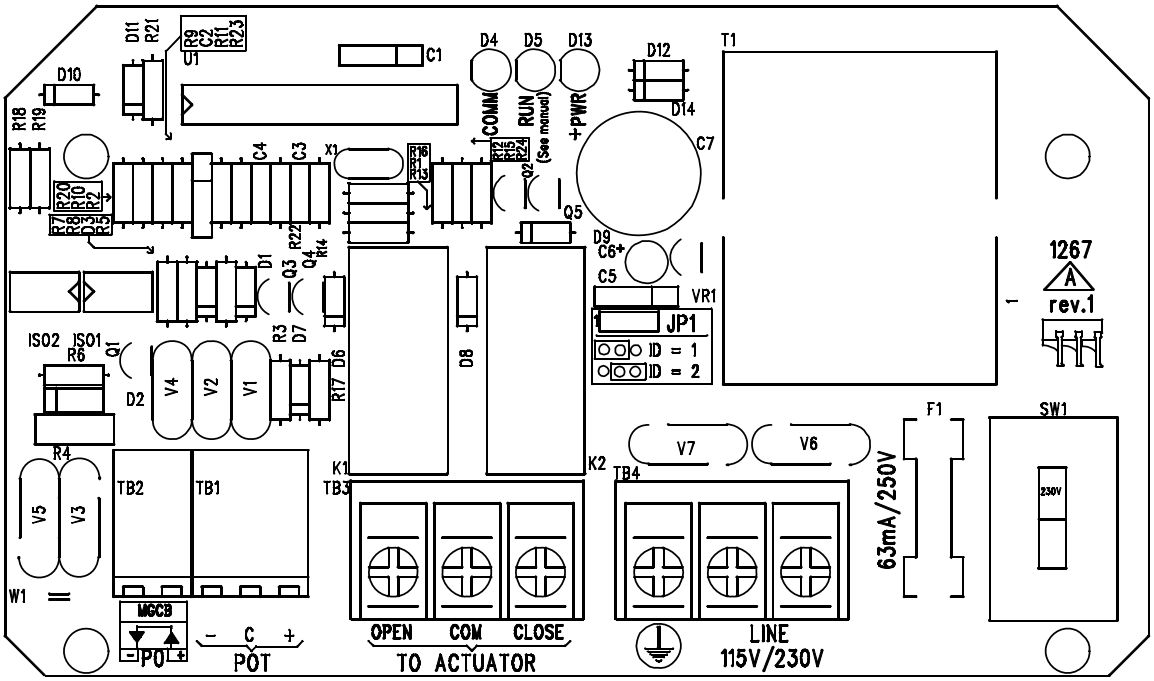
- All electrical cables must be installed according to local wiring codes.
- All potentiometer cable shields must be connected to the AIM-1 power ground only. The shield is needed to protect the modules against any electromagnetic interference generated by lightning or nearby operating machinery.
- All communication cable shield must be connected to the master control only.
- Never use the shield as a conductor.
- Connect only one end of the shield to the ground of the AIM-1.
- Use separate conduits for the low voltage cables (communication) and the high voltage cables. There must be at least 1 foot (30 cm) between low-voltage and high-voltage conduits.
- If a low voltage cable has to cross over a high voltage cable, make this crossing at 90°.
- All cable connections must be soldered or done with approved sealed connectors.
- Communication cables must be 820’ (250m) or less.
- It is prohibited to use overhead cables outside the building.

### 2.3.3 Electrical Power

- Protection from electrical surges should be included in the planning of each installation.
- Every module should have a separate breaker to avoid possible problem.

## 2.4 LAYOUT BOARD

**Figure 1 Layout Board View**




### 2.4.1 Main Board LED Description

Here's a description of the LED on the main board.

**Power**: Indicates the module is powered.

**Run**: Indicates the module status. The LED will blinks every ¼ of seconds if the communication is correct. It will quickly blink 2 times per seconds if the communication is erratic. In this case, the actuator will go to a backup position or stay at its current position as programmed in the master control.

**Comm**: This LED will light up if the connection is correct.

## 2.5 CONNECTION PROCEDURE (Detailed Wiring Diagrams)

### 2.5.1 Typical Actuator Wiring

The AIM-1 module allows the user to control opening or closing of the inlet. The inlet has to be calibrated, otherwise the actuator positioning will be erratic. (See master control manual to calibrate the inlet)

**Figure 2 Wiring Diagram To Connection 115V / 230V**

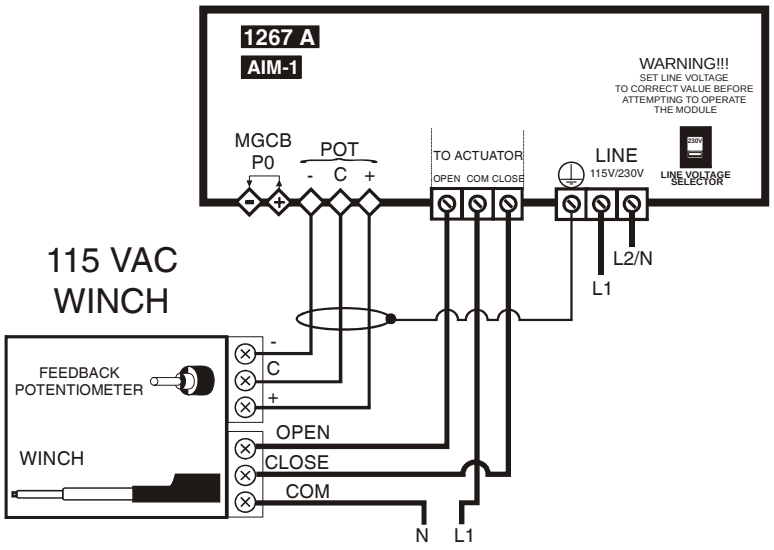
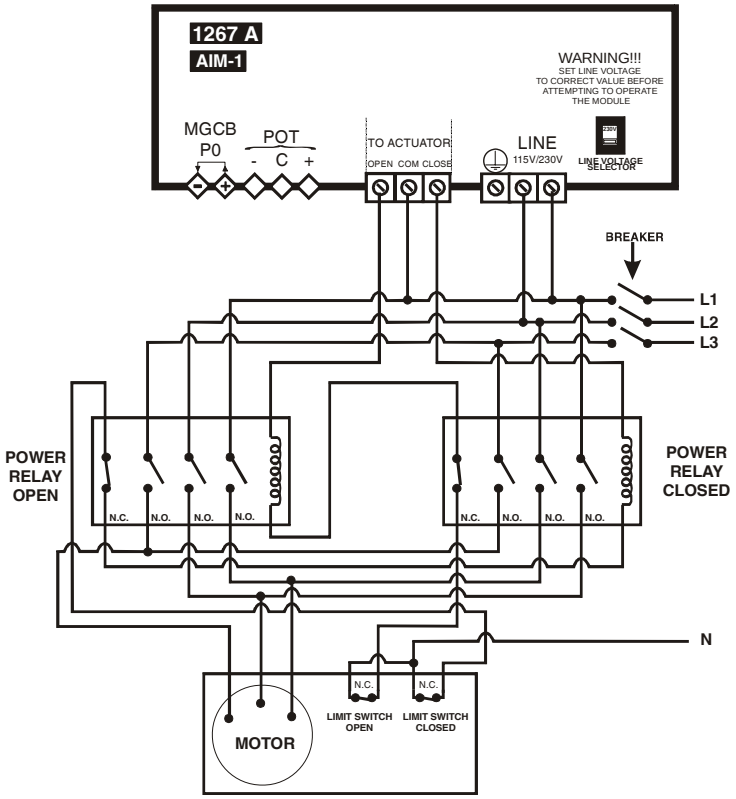



**Figure 3 Connection Of Actuator Motor With A 3 Phase Motor**



## 2.5.2 Communication Port Connection

Always connect the AIM-1 positive communication port terminal block with the module positive communication port terminal block. Do the same with the negative communication port.

**Figure 4 Connections Of 1 AIM-1 Per Communication Port**

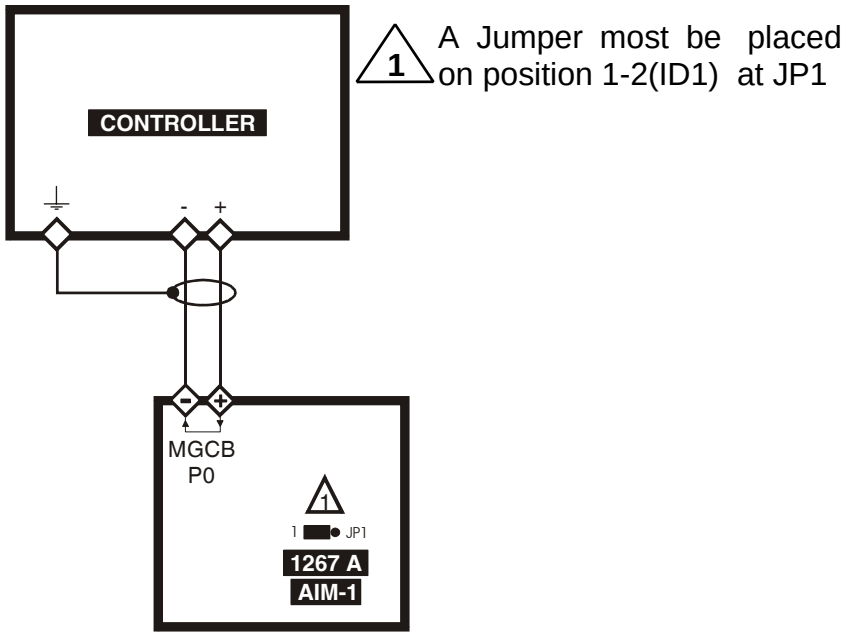
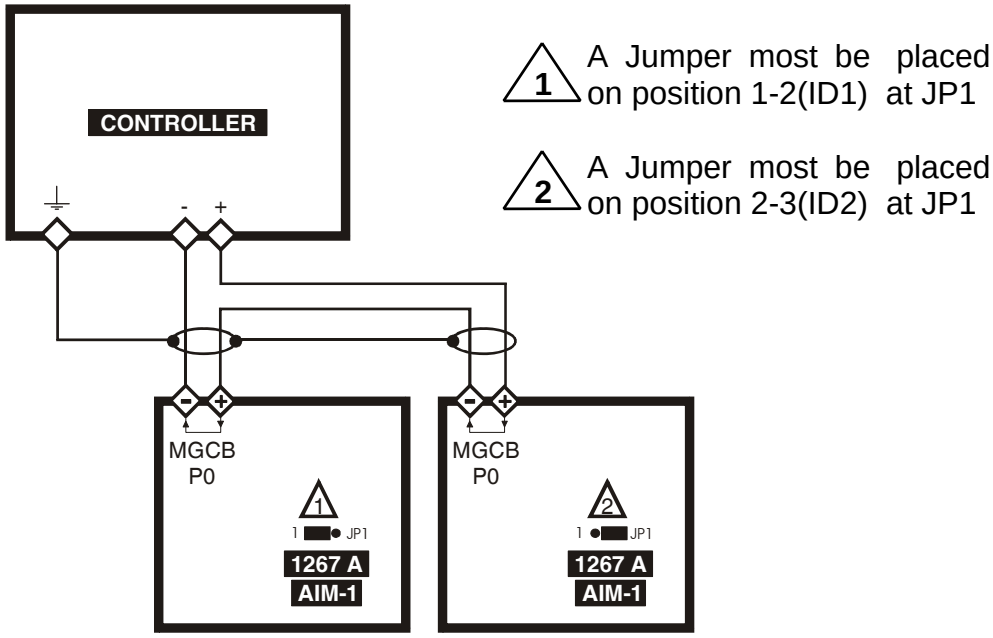



**Figure 5 Connections Of 2 AIM-1 Per Communication Port**



## 2.6 POWERING UP PROCEDURE

Once the AIM-1 is properly mounted on the wall with the actuator connected, perform the following steps:

### 2.6.1 Adjust the Line Voltage Selection Switch

This switch is located on the bottom electronic board (see figure 1) and adapts the AIM-1 to 115 VAC or 230 VAC line voltage.

| |
|---|
| Set the line voltage switch (115VAC/230VAC) inside the AIM-1 to the correct value before powering up the Module. |

### 2.6.2 Verify all Connections

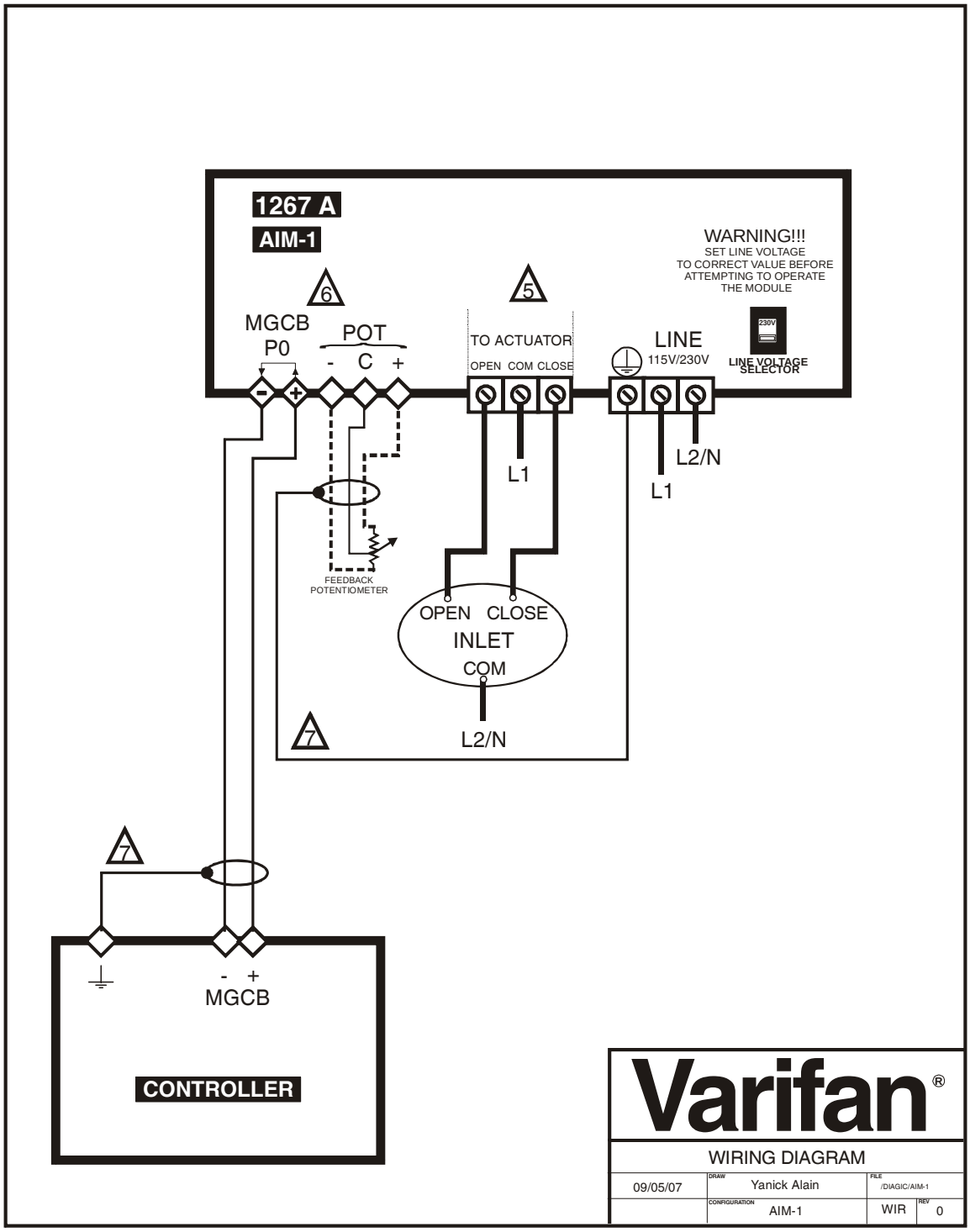
Ensure the flat cable between the bottom electronic board and the faceplate electronic board is properly connected.
Seal all cable entry holes.

### 2.6.3 Hermetically Close the AIM-1

Close the front panel and the lower access cover and secure them with the screws previously removed.

## 2.7 INLET WIRING DIAGRAM

**Figure 6 Inlet Wiring diagram AIM-1**



## 2.8 ELECTRICIAN'S NOTES

**1** ---------- (PROBE WIRING) SHIELDED WIRE AWG #18 WITH 16/30 STRANDING, 500FT/150M MAXIMUM LENGTH. (Ex.: DECA 73-310)
For other probe, refer to specific probe manual for appropriate maximum length and wire size or use AWG #18, 500FT/150M MAXIMUM LENGTH.

**2** ———— (COMMUNICATION WIRING) SHIELDED LOW CAPACITANCE WIRE, (Capacitance between conductors @ 1Khz = 24PF/FT), TWISTED PAIR (8 twist/FT), AWG #18 TO 22, 750 FT/250 M MAX LENGTH. (Ex.: BELDEN 8761)

**3** ▬▬▬ HIGH VOLTAGE WIRE INSTALLED ACCORDING TO LOCAL WIRING CODE.

**4** INSTALL LOW VOLTAGE WIRES (PROBES, COMPUTER LINK OR POTENTIOMETER WIRES) AT LEAST 12 INCHES (30cm) AWAY FROM HIGH VOLTAGE WIRES (120/230VAC, 24VDC). ALWAYS CROSS HIGH AND LOW VOLTAGE WIRES AT A 90-DEGREE ANGLE.

**5** THE CURRENT SHALL NOT EXCEED 10A AT EACH OUTPUT (ACTUATOR).

**6** 1 WIRE ONLY PER GREEN TERMINAL. USE WIRE CONNECTOR IF YOU WANT TO CONNECT MORE THAN 1 WIRE, NO BIGGER THAN AWG #12, NO SMALLER THAN AWG #28.

**7** USE SHIELD FOR SHIELDING PURPOSE ONLY. CONNECT THE POTENTIOMETER SHIEILD TO THE AIM-1 MODULE ONLY AND THE COMMUNICATION SHIELD TO THE MASTER CONTROL ONLY. NEVER LEAVE THE SHIELD UNCONNECTED. NEVER CONNECT BOTH END OF A SHIELD. THE USE OF A SHIELD IS MANDATORY.

# CHAPTER 3 - APPENDIX

## 3.1 TECHNICAL SPECIFICATIONS

| DESCRIPTION | VALUE |
|---|---|
| **Weight** | 2.2 lbs. (1Kg) |
| Size | 12 1/4" x 11" x 4 3/4" (32 cm x 28.8 cm x 11.5 cm) |
| Input Power (SW1 on 115V) | 92 to 125 VAC, 12 watts maximum |
| Input Power (SW1 on 230V) | 184 to 250 VAC, 12 watts maximum |
| **OUTPUT RELAY** | |
| Maximum Current | 10A, 120/208/240 VAC |
| Maximum Load | 1/2HP @ 250 VAC, 1/4HP @ 125 VAC |
| **POTENTIOMETER INLET** | |
| Potentiometer inlet | 0-10K ohm |
| Maximum wire length | 500 feet (150 m) |
| Recommended wire | 3 strands, shielded, AWG #18 |

Important Notice.

- Low-voltage and high-voltage wire must be passed through different conducts at least 1 foot (30 cm) apart. If low-voltage and high-voltage conduits must be crossed, the crossing must be at a 90-degree angle.
- All wiring must be made by a certified electrician and conform to local electrical regulations.

# CHAPTER 4 - LIMITED WARRANTY

All assembled equipment and individual components are submitted to rigorous inspection to assure optimum quality of product and reliability. However, the possibility of equipment failure and/or malfunction may still exist.

For service, contact your local retail outlet or distributor. The warranty period shall be two years from the date of manufacture. Proof of payment is required for warranty validation.

In all cases, the warranty shall apply only to defects in workmanship and specifically exclude any damage caused by overvoltage, short circuit, misuse, acts of vandalism, fortuitous events, acts of God, flood, fire, hail or natural disasters. This warranty becomes invalid should the goods have been resold or transferred to a third party, or should the installation have been made contrary to the instructions in this manual.

The manufacturer assumes only those obligations set forth herein, excluding all other warranties or obligations. This warranty stipulates that, in all cases, the manufacturer shall be liable only for the supply of replacement parts or goods and shall not be liable for any personal injury, damages, loss of profits, halted operations, fine contravention of law or damages to the production of the PURCHASER, and the PURCHASER shall take up the defense and hold the manufacturer faultless regarding any legal or extralegal proceedings, notice or claim by the customer or by a third party, and regarding any legal and extralegal expenses and fees brought on by such damages.

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