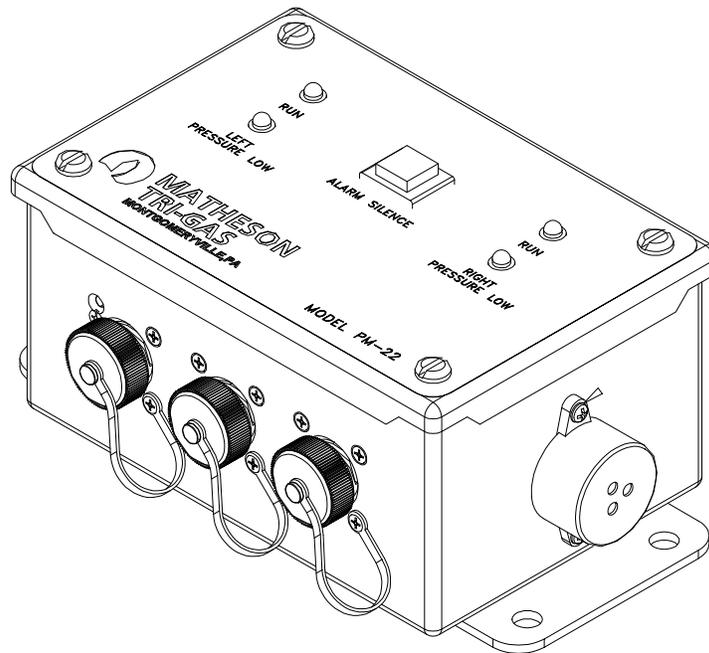




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Model PM-24 PRESSURE MONITOR Instruction Manual





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LIMITED WARRANTY

This equipment is sold by Matheson Tri-Gas (Matheson) under the warranties set forth in the following paragraphs. Such warranties are extended only with respect to the purchase of this equipment directly from Matheson or Matheson's Authorized Agent as new merchandise and are extended to the first Buyer thereof other than for the purpose of resale.

For a period of one year from date of original delivery (ninety days in corrosive service) to Buyer or to Buyer's order, this equipment is warranted to be free from functional defects in materials and workmanship and to conform to the description of this equipment contained in this manual and any accompanying labels and/or inserts, provided that this equipment is properly operated under the conditions of normal use and that regular and periodic maintenance and service is performed or replacements are made in accordance with the instructions provided. Expendable parts of this equipment are similarly warranted to be free from functional defects in materials and workmanship and to conform to the description of this equipment contained in this manual and any accompanying labels and/or inserts. The foregoing warranties shall not apply if the equipment has been repaired other than by Matheson or a service facility designated by Matheson, or if this equipment has not been operated and maintained in accordance with written instructions provided by Matheson, or has been altered by anyone other than Matheson, or if the equipment has been subject to abuse, misuse, negligence or accident.

Matheson's sole and exclusive obligation and the Buyer's sole and exclusive remedy under the above warranties is limited to repairing or replacing, free of charge, at Matheson's sole discretion, the equipment or part which is telephonically reported to be a problem to the Matheson Regional Customer Service Center, and which if so advised, is returned with a written statement of the observed deficiency, not later than seven days after the expiration of the applicable warranty, to the Matheson Gas Equipment Technology Center in Montgomeryville, Pa. during normal business hours, transportation charges prepaid, and which, upon examination, is found to comply with the above warranties. Return trip transportation charges for the equipment or part shall be paid by the Buyer.

MATHESON SHALL NOT BE OTHERWISE LIABLE FOR ANY DAMAGES INCLUDING BUT NOT LIMITED TO INCIDENTAL DAMAGES, CONSEQUENTIAL DAMAGES, OR SPECIAL DAMAGES, WHETHER SUCH DAMAGES RESULT FROM NEGLIGENCE, BREACH OF WARRANTY OR OTHERWISE.

THERE ARE NO EXPRESS OR IMPLIED WARRANTIES WHICH EXTEND BEYOND THE WARRANTIES SET FORTH HEREIN. MATHESON MAKES NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE EQUIPMENT OR PARTS THEREOF.

USER RESPONSIBILITY

This equipment will perform in conformity with the description thereof contained in this manual and accompanying labels and/or inserts when installed, operated, maintained and repaired in accordance with the instructions provided. This equipment must be checked periodically, with the frequency of such inspections depending upon the scope of use. Damaged, worn or contaminated equipment should not be used. Parts that are broken, missing, plainly worn, distorted or contaminated should be replaced immediately. Should such repair or replacement become necessary, Matheson recommends that a verbal or written request for service advice be made to our Engineering Technical Services Group in Montgomeryville, Pennsylvania. This equipment or any of its parts should not be altered without their prior written approval. The User of this equipment shall have the sole responsibility for any malfunction which results from improper use, faulty maintenance, damage, improper repair or alteration by anyone other than Matheson or a service facility designated by Matheson. Further, the User of the equipment is responsible for the training and safe operation of the equipment by personnel in his/her employ.



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SAFETY PRECAUTIONS

1. Many specialty gases are hazardous in nature. It is important that the User of the equipment carefully review the hazards associated with the gas to be used with the associated equipment. **NOTE: REFER TO THE MSDS THAT WAS SHIPPED WITH THE GAS, AS TO THE SPECIFIC HAZARDS ASSOCIATED WITH THAT GAS. ALSO, REFER TO ALL APPLICABLE INSERTS CONTAINED WITH THE EQUIPMENT FOR ADDITIONAL PRECAUTIONS AND OPERATING INSTRUCTIONS.**
2. Before using any equipment on toxic, corrosive, pyrophoric, flammable or other Hazardous gas, test the leak integrity of the equipment using an inert gas. Make Certain that the equipment purchased are suitable for the application intended.
4. Make certain that the equipment delivered to the User conforms to the specifications of the User. The User is responsible for selecting equipment compatible with gases that are to be used, physical parameters of operation and performance, and normal material compatibilities. Selection information can be found in Matheson Catalogs, Matheson Tech Briefs and in the Matheson Gas Data Book. In addition, any Matheson representative would be pleased to aid in the selection of specific equipment.
5. Before installation of the equipment onto the cylinder of compressed or liquefied gas, carefully inspect the equipment for visible signs of damage or contamination. Close attention should be given to all exposed and connecting threads, where there should be no visible signs of wear or abuse. Also examine the equipment for any loose parts outside of those that must swivel for connection to the gas cylinder or

Outlet lines. Examine the inlet and outlet of the equipment for signs of contamination with dirt, grease or any other foreign material. If any foreign materials are present and cannot be removed from the equipment easily with a cloth, or if the threads on any components of the equipment appear to be abused as indicated above, or any of the components appear to be loose, return the equipment immediately to Matheson's Montgomeryville, Pa. facility for service.

6. Before installation of the equipment onto a compressed or liquefied gas cylinder, move the cylinder(s) to the point of use and secure the cylinder before removing the cylinder's outer cap. Check the cylinder valve as in step 5 for possible contamination and defective or loose parts. If for any reason the cylinder appears to be faulty as noted here, return the outer cap to the top of the cylinder, and remove the cylinder from the work area. Call the supplier of the cylinder for immediate pick-up.
7. When using any hazardous gas, the cylinder should be placed under an exhaust Hood or in a suitable safety enclosure. Before connection of the gas equipment to The gas cylinder, make certain that the CGA connection on the cylinder matches the CGA connection on the equipment. CGA connections are fitted to the equipment to prevent its use with any incompatible gases.

WARNING: ANY ALTERATIONS TO THE EQUIPMENT, TO ALLOW ITS USE WITH GASES OTHER THAN THE GAS TYPE FOR WHICH IT WAS ORDERED, CAN BE EXTREMELY DANGEROUS AND SHOULD NOT BE ATTEMPTED. CONSULT MATHESON'S ENGINEERING TECHNICAL SERVICES GROUP BEFORE ATTEMPTING ANY ALTERATIONS TO GAS EQUIPMENT.



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PRODUCT DESCRIPTION

The Matheson Tri-Gas Pressure Monitor, Model PM-24, was designed as a method of ensuring uninterrupted gas supplies, when used in conjunction with Matheson Tri-Gas switchover manifold systems.

The unit consists of two components:

1. An two-channel annunciator with audio/visual alarm
2. The 120 VAC, 60HZ power adapter with 15VDC output

Amphenol back shells, contact pins and connectors are also supplied to connect dry contact switch wires to the Left and Right input connectors.

Each unit comes complete with green (RUN) indicator lights for each channel to indicate a pressure level above the IPS set point, red (PRESSURE LOW) indicator lights for each channel to indicate low pressure or empty status, a common horn for audible alarm, and an ALARM SILENCE/ RESET button.

An amphenol connector, back shell and 4 contact pins are supplied for the output connection on the bottom of the case. The output can be wired for individual left and right remote outputs, or as a common output. See **FIGURE-2** for details.

The enclosure is 16 14 gauge steel, painted, and dustproof. The front is supplied with a 10-mil Lexan label, which may be wiped down with warm soapy water. The enclosure has attached brackets for wall mounting. See **FIGURE-2** for details.

INSTALLATION

1. Mount the enclosure firmly to the wall or unistrut. It is the installer's responsibility to select the correct mounting hardware, depending on the mounting surface.

WARNING: This enclosure is not rated, and should not be used in a hazardous area where flammable gases or vapors may be present.

NOTE: This enclosure should be mounted within five feet of a 120 VAC outlet.

2. Crimp the wires from the Indicating Pressure Switches (IPS) from each side of the switchover manifold, using pins supplied with the unit. Insert the wire through the back shell, and then insert the pins into the housing connector (also supplied with the unit). Connect the left IPS to the left side connector on the PM-24, marked INP-L and the right side IPS to the connector marked INP-R on the bottom of the unit. Refer to **FIGURE-1**.
3. The connector marked OUTPUT on the unit is for monitoring the output from a remote location. It is a Form C, dry contact, N.O. Pins 1 & 2 are for output - Left, and 3 & 4 are for output-Right. When using as a common output, simply jump pins 2 & 3, and pins 1 & 4. These jumpers need verified will provide a common output. Refer to **FIGURE-2**. We can change this as we have it programmed into the controller. We can put a jumper in the board itself to do this function.



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OPERATION

1. Push the power adapter plug into the jack on the left side of the unit.
2. Plug the power supply into a suitable 120 VAC receptacle.
3. All the LED's will blink momentarily and the alarm will beep. The operator can verify all the LED's and the alarm are working properly.
4. With the unit powered up, the front panel should display one of the following states:
 - a. If both sides of the switchover manifold system are below the IPS set point for ten, (10) seconds, the red lights on both sides will be lit, and the audible alarm should sound. Pressing the ALARM SILENCE button on the front of the unit will silence the audible alarm, but will not reset the lights to green.
 - b. If both sides of the switchover manifold system are above the IPS set point, the green lights on both sides will be lit, and the audible alarm will not sound.
 - c. If one side of the switchover manifold system is below the IPS set point for ten, (10) , Sseconds, the red light on that low side will be lit, and the audible alarm will sound. The other side above the set point will display the green light. Pressing the ALARM SILENCE button on the front of the unit will silence the audible alarm, but will not reset the light to green.
5. The PM-24 lights will reset from red to green only when the pressure is above the set point of the IPS and the red pushbutton, (Hold To Reset), is held in for three, (3) seconds. That is, the reset function will be triggered automatically when the IPS is pressurized above the set point.
6. Note that the audible alarm will not sound for another low pressure red light after the first ALARM SILENCE button is pressed and it's red light remains on. The depleted cylinder should be changed when the first alarm sounds to prevent the switchover system from running out of gas completely.



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TROUBLE SHOOTING

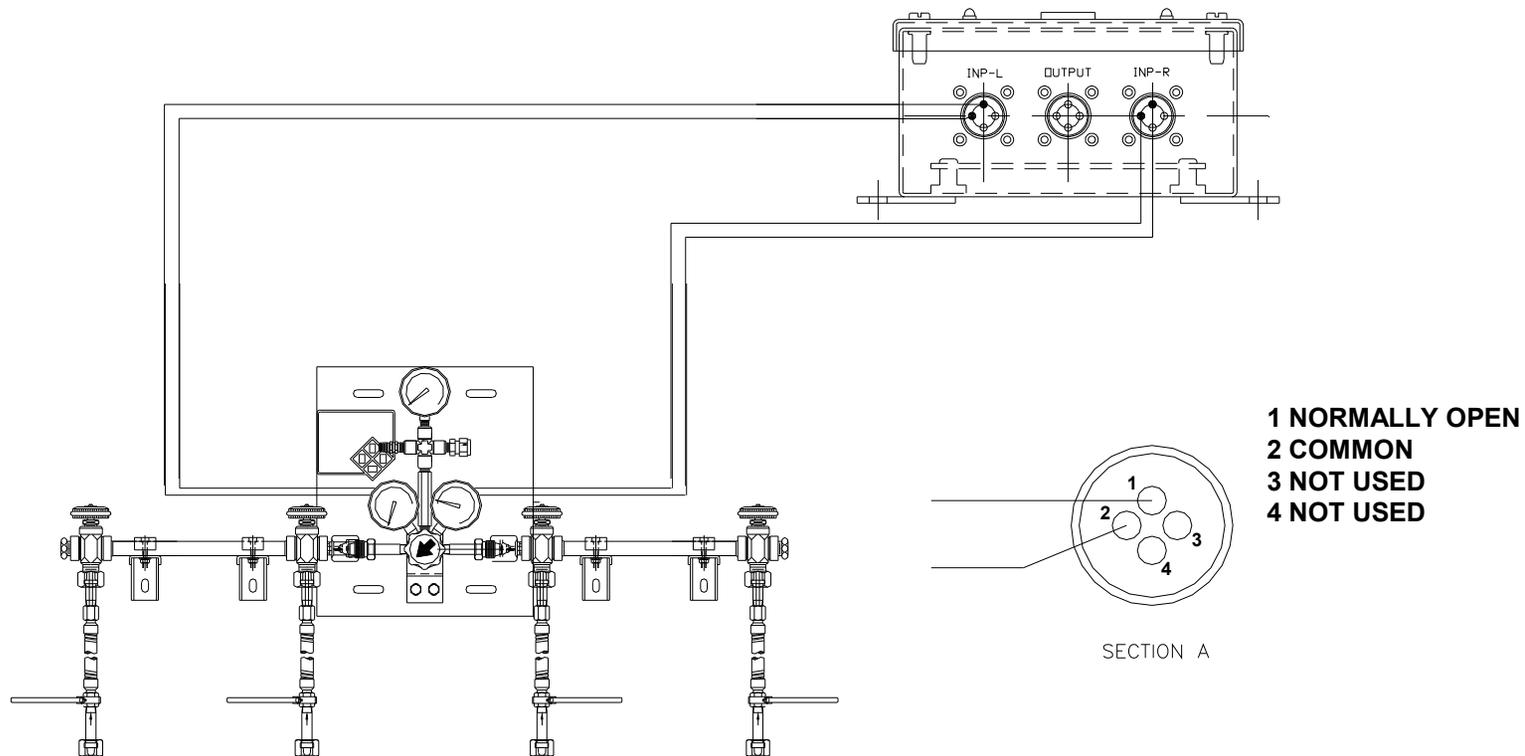
Symptom	Probable Cause	Solution
No lights or audible alarm.	Power supply may not be engaged into unit or wall receptacle. Internal Damage. Defective power supply. Internal damage.	Check power connection Remove and replace power. All the LED's should blink and the alarm should beep. If any of the LED's don't blink or the alarm doesn't beep return to Matheson Tri-Gas for repair. If none of the LED's and the alarm doesn't beep after cycling power check power supply and replace if necessary. Replace power supply. Return to Matheson Tri-Gas for repair.
Unit lights up, but there is no audible alarm with red lights.	Defective circuit or alarm buzzer.	Return to Matheson Tri-Gas for repair.
Cylinder is above set point, but red light stays on, and there is an audible alarm.	Needs reset Wiring incorrect. Incorrect set point on IPS. Defective IPS. Defective circuit.	Press and hold reset button for at least three, (3) seconds. Check for crimping and pins positioning (see FIGURE 1). Set IPS alarm point. Check and replace IPS, if defective. Return to Matheson Tri-Gas for repair.
Cylinder is below set point, but the green light stays on, and there is no audible alarm.	Defective IPS. Defective circuit.	Check and replace IPS, if defective. Return to Matheson Tri-Gas for repair.
Lights change from green to red when cylinder is empty, but will not reset when cylinder is replaced.	Needs reset Partial cylinder - replacement cylinder pressure is not high enough to surpass the dead band of the IPS.	Press and hold reset button for at least three, (3) seconds. Replace with higher pressure cylinder (full cylinder).



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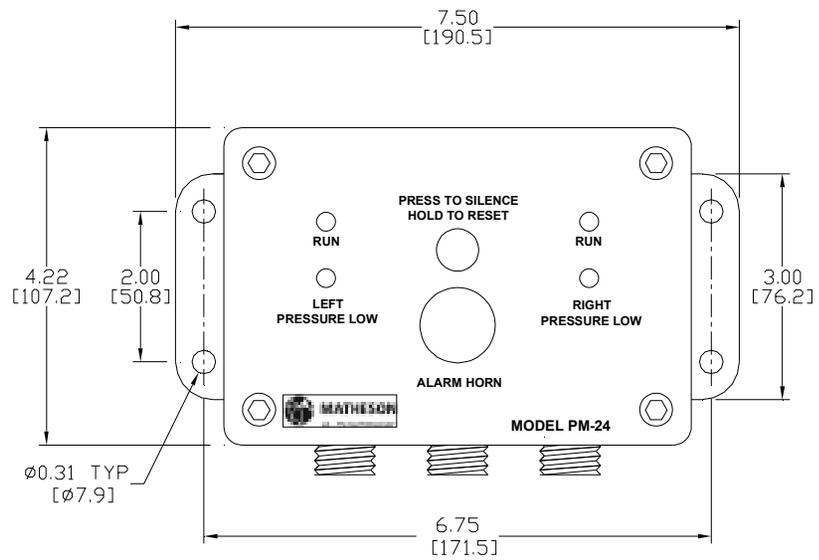
SEE SECTION A



NOTES:

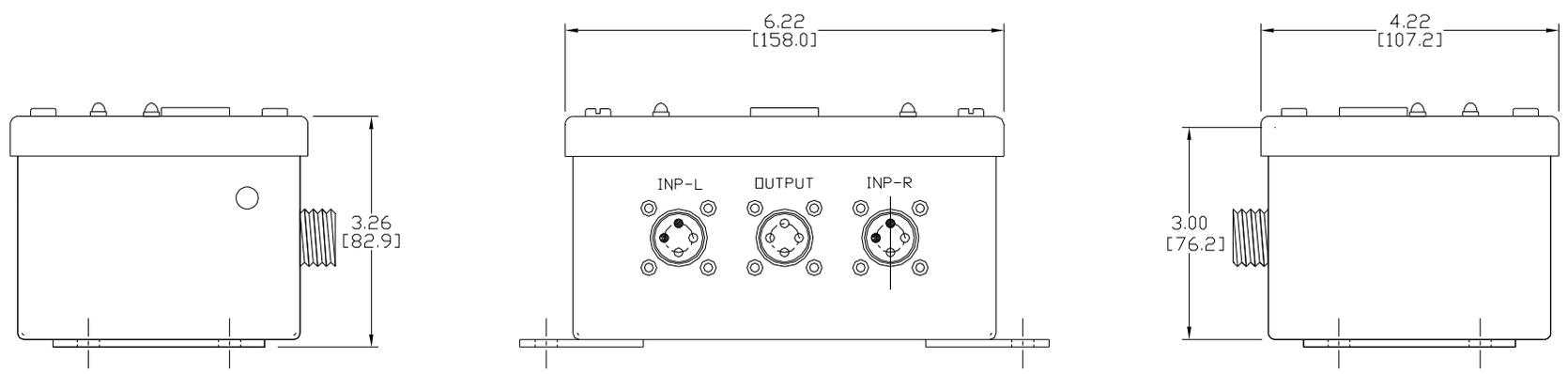
1. WIRING BY OTHERS
2. NOTE LEFT AND RIGHT NOTATIONS

**FIGURE 1
SCHEMATIC – TYPICAL
IPS WIRING**



PIN ASSIGNMENTS

INPUT - L	1	N.O.
INPUT - L	2	C
INPUT - L	3	NOT USED
INPUT - L	4	NOT USED
INPUT - R	1	N.O.
INPUT - R	2	C
INPUT - R	3	NOT USED
INPUT - R	4	NOT USED
OUTPUT - L	1	N.O.
OUTPUT - L	2	C
OUTPUT - R	3	N.O.
OUTPUT - R	4	C



- NOTES**
1. POWER SUPPLIED BY 110 VAC ADAPTER (SUPPLIED)
 2. POWER & INPUT/OUTPUT MATING CONNECTORS SUPPLIED WITH BOX.
 3. INPUTS TO BE DRY CONTACT, CLOSED ON NORMAL OPERATING CONDITION (OPEN TO ALARM).

**FIGURE 2
COMPONENT OUTLINE**

