PURITY LEVEL 5 99.999%

Pressure Differential Switchover Manifold for Liquid Cylinders, Brass, 350 PSIG (PDSM350B Series - Laboratory Applications)

SPECIFICATION

Pressure Differential Switchover Manifold

The BeaconMedæs Laboratory Pressure Differential Switchover Manifold (PDSM350B Series) accommodates multiple liquid cylinders (gas withdrawal) equally divided into two banks of either argon, carbon dioxide, oxygen and nitrogen. The cylinder banks provide an uninterrupted supply of gas for the specific gas application. The manifold is cleaned, tested and prepared for the indicated gas service and constructed following NFPA, ASME B31.3 and CGA guidelines.

Manifold Description

The PDSM350B Series manifold provides an uninterrupted supply of high purity gas by switching over to the reserve gas bank automatically. At a preset pressure, the system automatically changes from the supply bank to the reserve bank. A simple rotation of the primary bank selector knob resets the unit. Easy to read analog gauges show the delivery and individual bank pressure.

Operation and Design

The PDSM350B manifold box includes a delivery pressure gauge, two analog cylinder bank pressure gauges (left and right bank), a primary bank selector knob and a delivery pressure adjustment knob. The direction of the arrow on the primary bank selector knob determines which bank is in service. The manifold has intermediate and line pressure relief valves to protect components from over pressurization.

The manifold can include an alarm box option with color coded LED visual indicators. NOTE: The alarm option is only available at the time of order and must be installed in the factory (no retrofitting available). The green LED's are illuminated if their respective cylinder bank pressures are satisfactory. The red LED illuminates when either cylinder bank is depleted. The alarm box contains an audible horn that alarms when a bank is depleted. The silence button stops the horn but the red LED will remain illuminated until the cylinder bank is pressurized again. The alarm box includes dry contacts allowing for remote alarm connections for cylinder changeover. The alarm box comes with a 3-prong electrical cable which has to be connected to a 120 VAC receptacle.

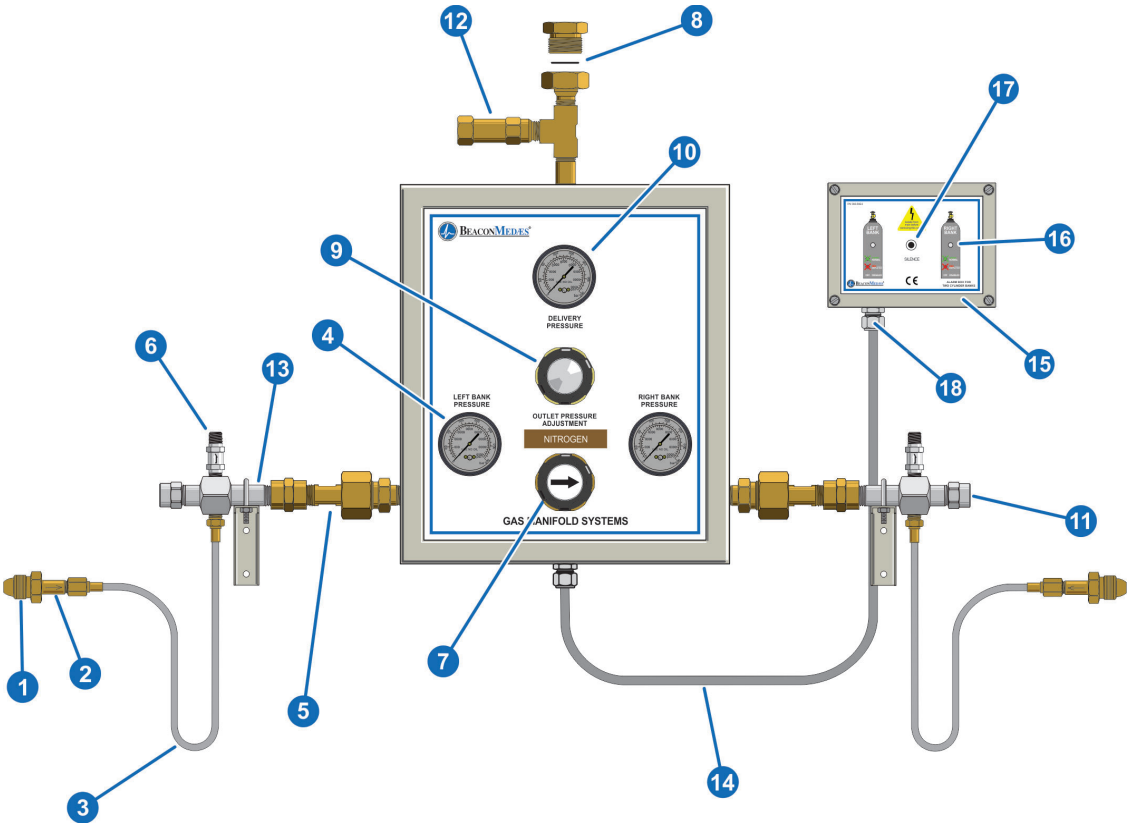
A bank regulator (one for each cylinder bank) is used to initially reduce the cylinder pressure to the line regulator which controls the pressure outlet to the pipeline distribution system. The manifold automatically changes from the depleted primary supply bank to the reserve supply bank. After replacement of the depleted cylinders the priority bank selector knob should be turned to the opposite cylinder bank.

Economizer Circuit

The PDSM350B comes standard with two built-in economizer circuits. The economizer's purpose is to minimize product loss on the reserve bank. When the liquid cylinder on the reserve bank reaches 200 PSI, the economizer opens and the gas bypasses the primary regulators and feeds directly the line regulator until the pressure drops below 200 PSI. End users sometimes notice that both banks are depleting at the same time thinking the manifold is not operating correctly. That's because the economizer uses the "reserve" bank as much as the "in use" bank. This is a clear indication that your gas consumption is too low to be fed by liquid cylinders.

NOTE: Both economizers are set to open at 200 PSI. When the economizer throttles around 200 PSI, the economizer may make some noise. This is a normal but temporary situation. The noise will stop as soon as the pressure of the reserve liquid cylinder drops under 200 PSI.

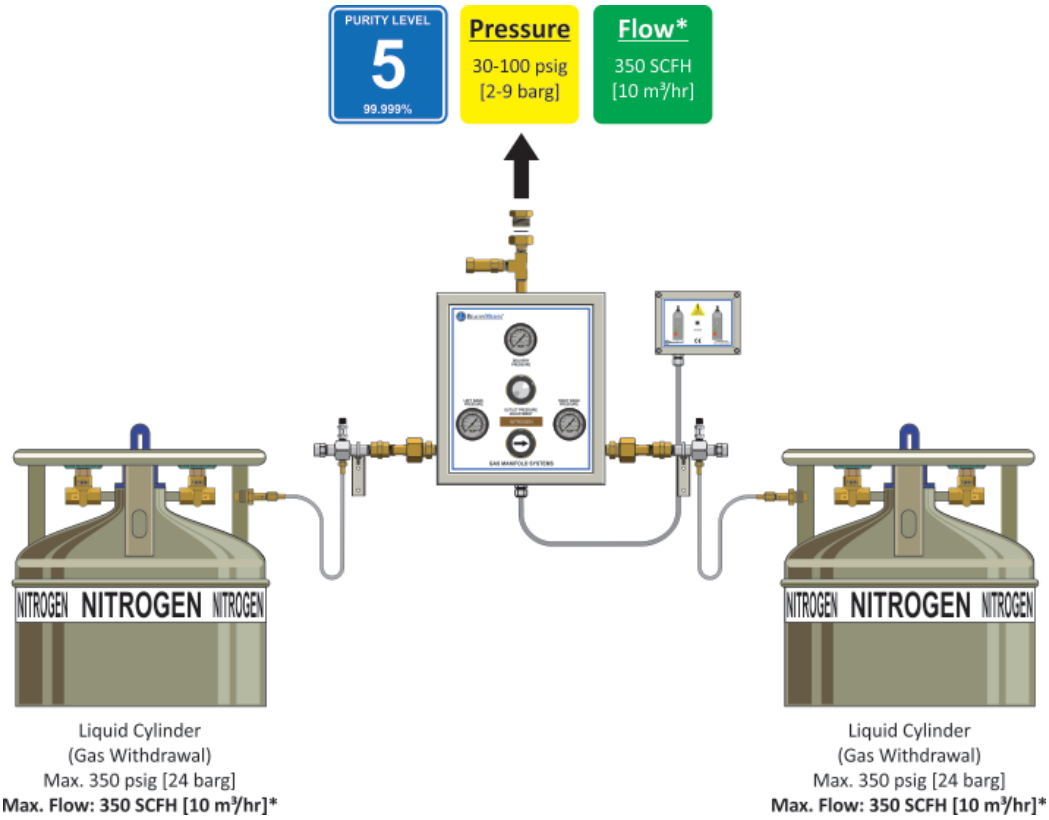
Standard Configuration - Brass Construction



1. *Gas Specific Cylinder Nut*
2. *Gas Specific Cylinder Nipple with Check Valve*
3. *Cylinder Lead*
4. *Inlet Pressure Gauge (0-400 psi)*
5. *Header Bar Union*
6. *Pressure Relief Valve (1/4" M.NPT-350 psi)*
7. *Priority Bank Selector Knob*
8. *Outlet Union (1/2" F.NPT)*
9. *Delivery Regulator Adjustment Knob*
10. *Outlet Pressure Gauge (0-200 psi)*
11. *Capped for Future Expansion*
12. *Outlet Pressure Relief Valve (1/2" F.NPT-150 psi)*
13. *Header Bar*
14. *Alarm Box Cable (5-ft long)*
15. *Alarm Enclosure*
16. *Visual Red/Green LED Status Indicator*
17. *Silence Push-button*
18. *Alarm Cable Cord Grip*

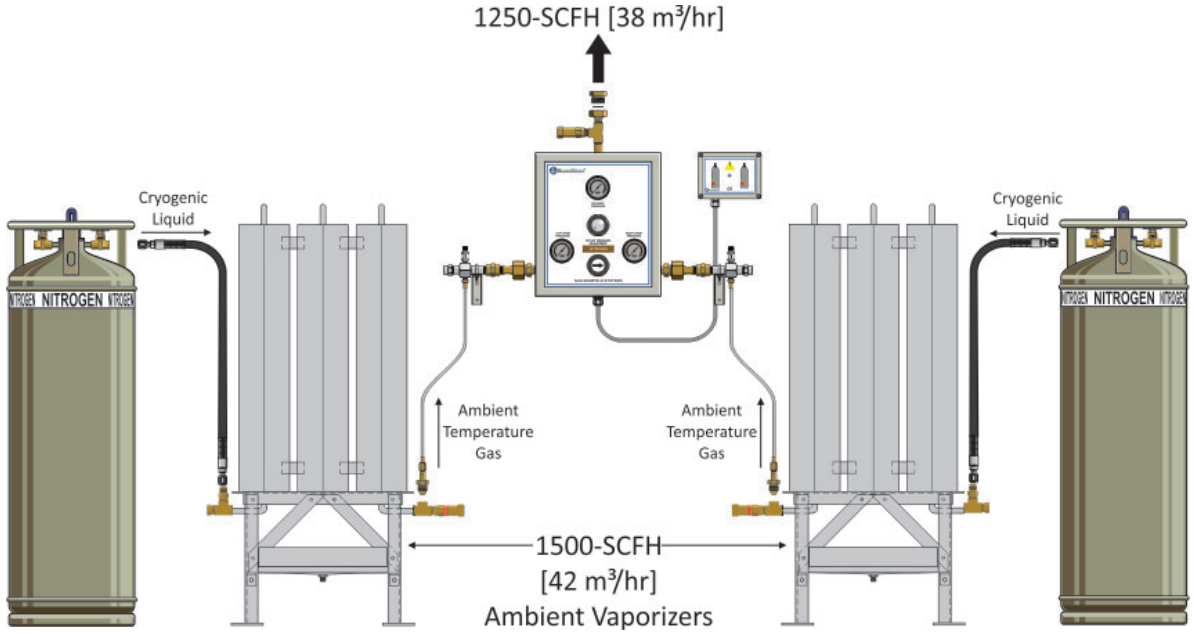
Materials	**Enclosure**	Steel, Powder Coated, Light Grey
	Header Bars	Brass Bar Stock, Nickel Plated
	Tubing	Copper, ASTM B75
	Fittings	Brass
	Flexible Hoses	SSH: Stainless Steel Core, Fittings and Braiding
	Relief Valves	Brass Body, Teflon Seat, Stainless Steel Spring
	Pressure Reducing Regulators	Brass Body, Stainless Steel Diaphragm, Teflon Seat
	Pressure Switches	Brass Connection, Stainless Steel Piston, Viton Seals

Use & Performance



***Flow Rate & Liquid Cylinders**

The liquid cylinder's built-in ambient vaporizer is capable of providing 350 scfh of gas (only 100 scfh with Carbon Dioxide gas). If greater flow is needed from the liquid cylinders, connect each liquid cylinder to an external ambient vaporizer (sold separately). The flow will greatly increase.



Ordering Information

PDSM350B - ___ - ___ - ___ - ___ - WM - ___
A B C D E F G H

BeaconMedæs PDSM350 Manifold Model Number Chart			
Variable	**Definition**	**Allowable Value**	**Description**
A	**Inlet Pressure**	350	350 PSIG [24 BARG]
B	**Material**	B	Brass
C	**Gas**	320 580A 580N 540	Carbon Dioxide Argon Nitrogen Oxygen
D	**No. of Cylinders**	2 4 6	1x1 2x2* 3x3*
E	**Alarm**	AB (leave blank)	Alarm Box No Alarm Box
E	**Hose**	SSH SSHAG	Stainless Steel Hose Stainless Steel Hose with Armour Guard
F	**Configuration**	10S	Standard 10" Center
G	**Mounting**	WM	Wall Mount
H	**Option(s)**	VV 3R** RI	Vent Valve Outside Installation Reserve Inlet
(H)	**Cylinder Connection**	CGA (leave blank) BS DIN NEN	CGA-United States BS341-Great Britain DIN 477-Germany NEN 3268-The Netherlands

Example: MANIFOLD PDSM, 350 PSIG INLET, BRASS, NITROGEN, 1X1 LIQUID CYLINDERS, ALARM, STAINLESS STEEL HOSES, USA
Example Model Number: PDSM350B-580N-2-AB-SSH-10S-WM

***For configurations of 2x2 and 3x3**, it is recommended to use a **VENT KIT** (sold separately) for the most effective operation of the liquid cylinders. The Vent Kit equalizes the vapor head space of each liquid cylinder and allows each cylinder to withdraw gas equally and operates at maximum flow capacity.

****3R Option--Outside Installation**
PDSM Series Manifolds are designed for indoor installations. If outdoor installation is required, by selecting the "3R" option, all electrical devices (within the manifold and alarm) will be mounted with NEMA 4X enclosures. Please be aware that even with the 3R option selected, the PDSM enclosure, which is not NEMA 4X, will rust over time due to outdoor exposure as it is made out of steel.

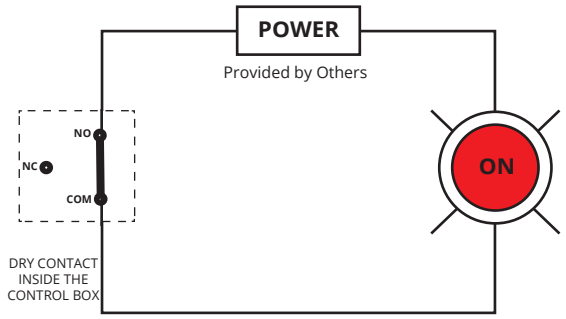
Technical Specifications	
Gas Service	Refer to Part Number Matrix
Maximum Inlet Pressure	350 psig [24 barg]
Delivery Pressure Range	30-100 psig [2-7 barg]
Maximum Flow*	1250 scfh* [38 m^3/hr, 1/2" F.NPT]
Flow Coefficient	Cv = 0.4
Operating Temperature	-40°F to 100°F [-40°C to 38°C]
Pipeline (Outlet) Relief Valve	150 psig [10 barg]
Inlet Connections	Refer to Part Number Matrix
Manifold Outlet Connection	1/2" F.NPT
Power Requirement	120 VAC Power Receptacle
Electrical Components	All Electrical Components are UL and CSA Listed
Dry Signal Contact	Normally Open (3 Amp. @ 28 VDC/277 VAC when contact is in Close Position)
Economizer Set Point	200 psig [14 barg]
Cleaning	Cleaned for Oxygen Service as per CGA 4.1

** Note: Maximum flow can only be achieved with the use of external vaporizers (sold separately); otherwise flow is limited by the internal vaporizers on the liquid cylinders.*

Remote Alarm Signal Circuitry

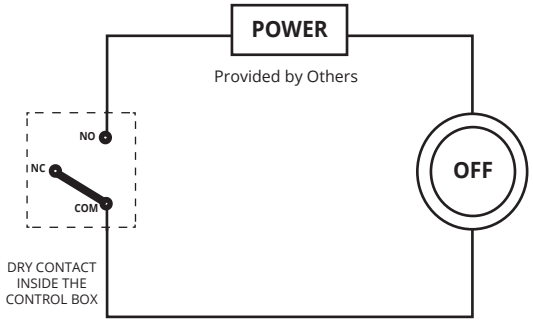
The Alarm/Control Box of the PDSM350B Series Manifold has a dry contact available for remote alarm actuation. It is triggered each time any of the two cylinder banks are empty.

Alarm Condition



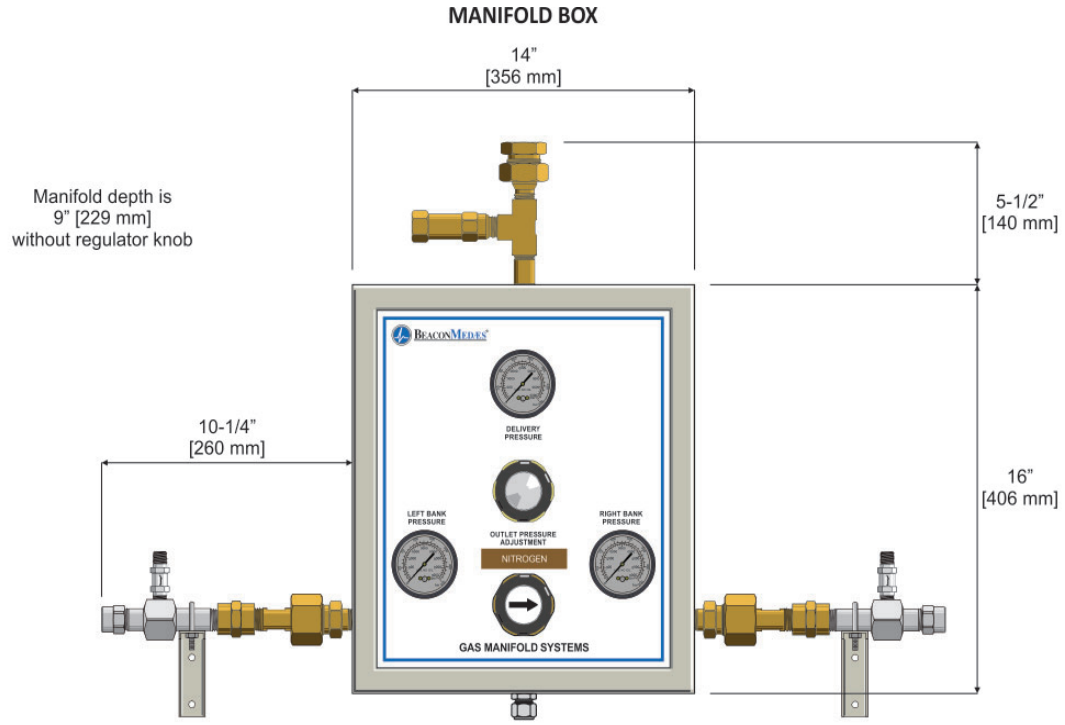
The content inside one of the gas cylinder banks is depleted (low pressure). The dry contact switches from the Normally Closed (NC) position to Normally Open (NO) position. The electrical circuit is closed and the alarm device is actuated.

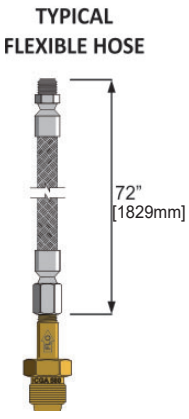
No Alarm Condition

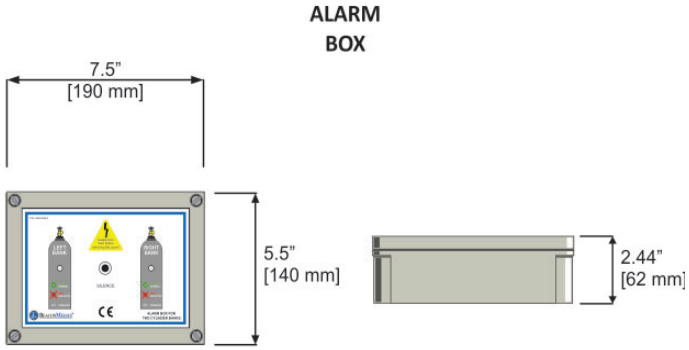


In this situation, both gas cylinder bank pressures are satisfactory (i.e. not empty). The dry contact inside the remote alarm box is in the Normally Closed position. The electrical circuit is open and the alarm device is NOT actuated.

Standard Configuration (1x1) in inches
Numbers between [ ] are in millimeters







BeaconMedæs PDSM350 Header Bar Length			
Cylinder Configuration	**1x1**	**2x2**	**3x3**
Inches	34.50"	54.50"	76.25"
Millimeters	876.3 mm	1384.3 mm	1936.75 mm

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