PURITY LEVEL 5 up to 99.999% Brass

PURITY LEVEL 5.5 up to 99.9995% Stainless steel

Digital Fully Automatic Switchover Manifolds - (DFAM Series)

Specification

Description

The BeaconMedaes DFAM Series is a family of fully automatic switchover manifolds providing uninterrupted gas supply from high pressure gas cylinders, liquid cylinders or a combination of the two.

Each manifold is composed of a controller module, a mechanical box (AKA manifold box), and two (2) header bars. Carbon dioxide gas service manifolds are mounted with an internal gas heater.

Touchscreen

The Human Machine Interface (HMI) is a touchscreen allowing the operator to select the priority bank and the type of gas cylinders (gas or liquid). Located on the controller module, the HMI also displays the status of the manifold in real time, providing information such as the:

- Status of each bank (in service, in stand-by or empty);
- Current delivery pressure;
- Pressure of each bank;
- Priority mode;
- Gas service;
- Switchover pressure.

Standard Communication Protocol: BACnet

The DFAM Series manifold is capable of communicating with building automation systems via BACnet MS/TP (Building Automation and Control Network). This feature allows the building automation system to gather information from the main screen of the DFAM Series controller.

Advanced Features

The DFAM Series manifold is programmed with the following features:

Opti-Use

The Opti-Use feature is enabled for manifolds connected to liquid cylinders. The software monitors bank pressures to optimize the use of the liquid in the cylinders. The manifold will not consider a bank fully depleted until the pressure remains below a specific setpoint for a preset period of time.

Electronic Economizer

The Electronic Economizer feature is only available when a liquid cylinder is in “ready/stand-by” mode. The manifold controller monitors the pressure of both “in-service” and “stand-by” cylinder banks. If the stand-by (reserve) bank pressure rises 50 psi above the in-service bank pressure, the manifold will tap into the reserve bank until the pressure differential drops below 50 psi.

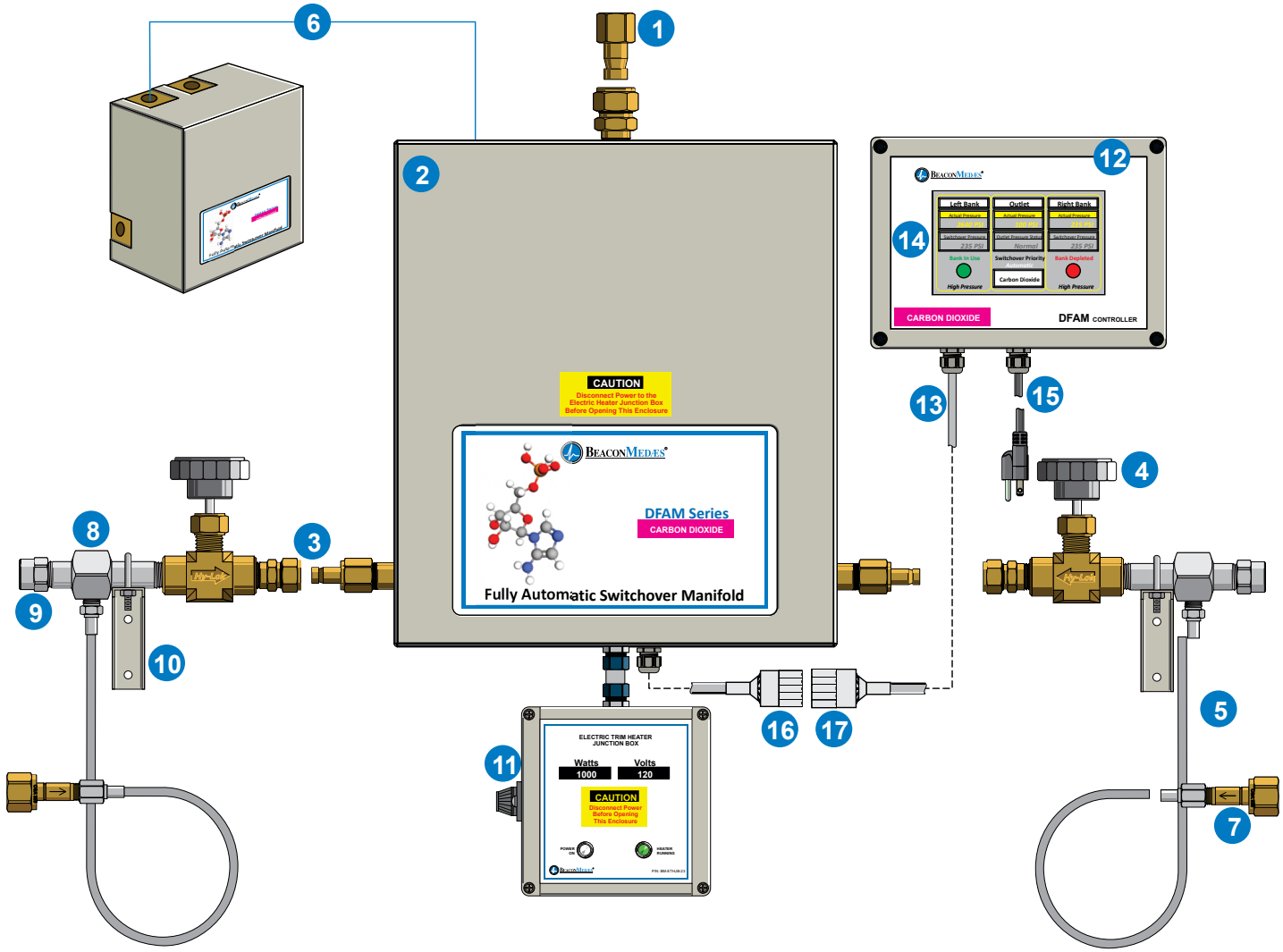
Automatic Leak Detection

The Automatic Leak Detection feature warns the operator when the stand-by bank (or “Ready” bank) pressure drops unexpectedly.

UL Listed

The DFAM Series Controller is UL listed to standard UL 61010-1 Safety Requirments for Electrical Equipment for Measuremnt, Control and Laboratory Use

Standard Configuration



Manifold Mechanical Box

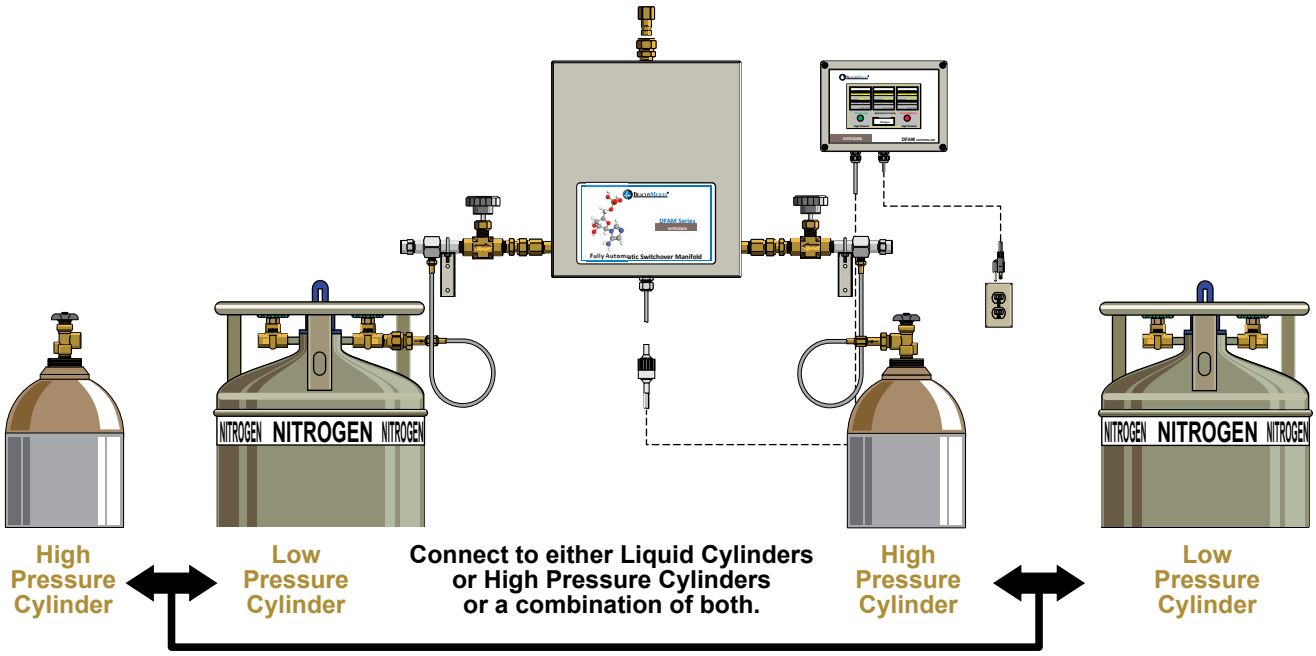
1. Gas Outlet (1/2" F.NPT)
2. Powder Coated Enclosure
3. Header Bar Connection
4. Header Isolation Valve
5. Flexible Hose*
6. Relief Valve Outlet (1/2" F.NPT)
7. CGA Nut & Nipple
8. Header Bar
9. Cap (for Future Use)
10. Header Wall Bracket
11. Heater Junction Box**

Manifold Controller

12. Enclosure w/ Touchscreen
13. Reset Key
14. Illuminated Buzzer
15. Power Cord
16. Controller Cable (Male End)
17. Controller Cable (Female End)

**The Flexible Hoses come in the standard length of 36" for High Pressure Cylinders and 72" for Liquid Cylinders. Custom lengths are also available.*
***The Heater Junction Box is for Carbon Dioxide unit only.*

Standard Configuration



Configured for Multiple Gas Services

Inert Gas + Oxygen Service Manifolds

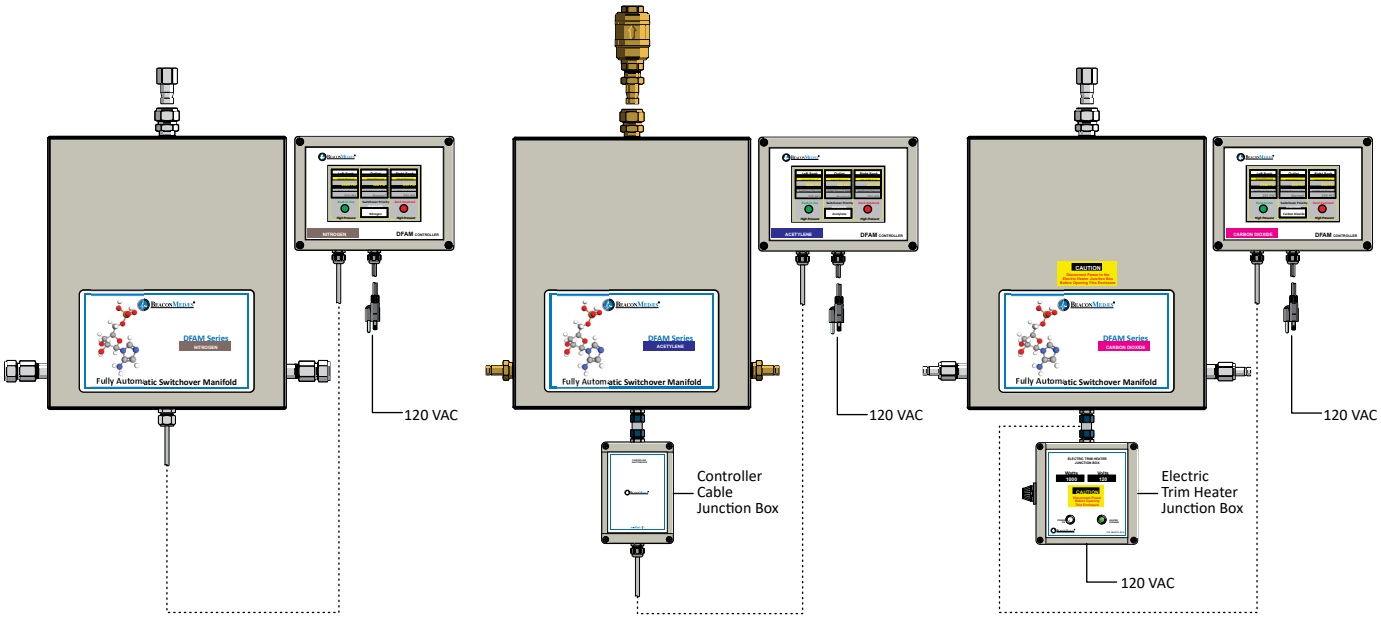
Inert gas and oxygen service manifolds can be used for both high pressure cylinders and cryogenic liquid cylinders in gas service (field selectable). The maximum flow for high pressure gas service is 1200 scfh equivalent air whereas the maximum flow for liquid cylinders is limited to 350 scfh, which is the capacity of the liquid cylinder internal vaporizer.

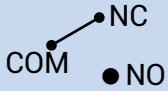
FLAmmable gas Service Manifolds

Flammable gas service manifolds are mounted with explosion-proof solenoid valves and pressure transmitters. The junction box is sealed from the mechanical box mounted above it. No field electrical connec on is required. This manifold is not rated for explosion-proof environment or explosion-proof rated rooms.

CO_2 + N_2O Service Manifolds

Carbon dioxide and nitrous oxide manifolds are mounted with a double-pass inboard brass heating block. This heater block is capable of delivering 500 scfh of carbon dioxide gas. The junction box underneath the mechanical box requires 120 VAC to power the internal electric trim heater. Carbon dioxide liquid cylinders are limited to 100 scfh.



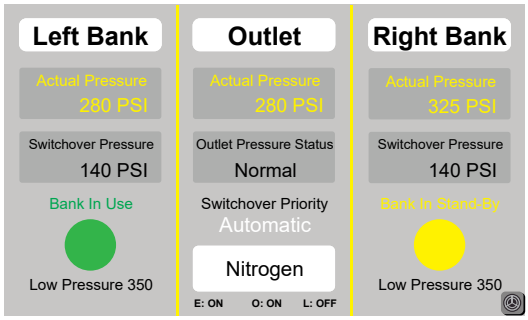
Technical Specifications			
Fluid	Refer to Part Number Matrix		
Maximum Inlet Pressure	Refer to Pressure Settings & Flow Performances Table		
Operating Temperature	40°F to 104°F [5°C to 40°C]		
Inlet Connections	Refer to Part Number Matrix		
Relief Valve Outlet Connection	1/2" F.NPT - Refer to Instruction Manual for Set Points		
Header	1/2" Nominal Pipe Size (NPS)		
Delivery Pressure Range	Acetylene	1 - 15 psi	The delivery pressure can be field adjusted by turning the regulator knob inside the manifold.
	Liquified Petroleum Gases	5 - 50 psi	
	All Other Gases	30 - 125 psi	
Solenoid Valves	Normally Open *Manifold supplies gas when not energized but loses switchover capabilities*		
Power Requirements	120 - 240 VAC, Single Phase, 4.17 Amp. (Manifold Controller) 120 or 240 VAC, Single Phase, 7 Amp (Electric Gas/Trim Heater)		
Audible Alarm	80 dBa at 4 inches [10 cm]		
Flow	Refer to Pressure Settings & Flow Performance Table		
Human Machine Interface (HMI)	7 inch, 800 x 480 Pixels		
Cleaning	Cleaned for Oxygen Service as per CGA-4.1		
Available Output (External) Alarm Signal	Dry Contact (Volt Free): NO, NC, COM - C-Shape 		
Communication	BACnet TP/MS		

Controller Screens

Status Screen

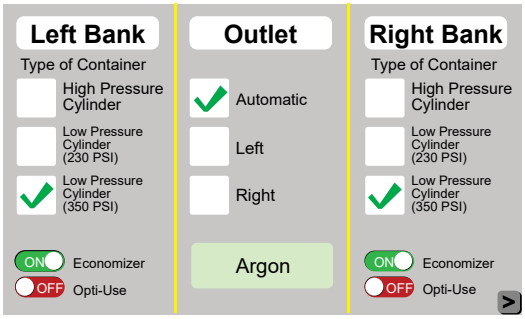
The status screen is the default screen. It displays important information about the status of the manifold, such as bank pressures, actual delivery pressure, switchover pressure, switchover priority, and the bank status ("Bank in Use", "Bank Depleted", or "Bank In Stand-By").

This screen also provides alarm status such as high or low delivery pressure, reserve bank depleted and economizer mode.



Selection screen

The selection screen allows the operator to select the type of container for each bank and the switchover priority. This is done by making the selection directly on the touchscreen. The manifold will trigger a visual and audible alarmto signal that the selection made by the operator and the actual cylinder connected to the manifold does not correspond. The manifold will automatically fall back to the proper settings but keep the warning signal active until the selection corresponds to the actual cylinder pressure. As an example, if "Low Pressure Cylinder" has been selected but the inlet pressure corresponds to a "High Pressure Cylinder", the manifold will display "High Pressure" even if the operator selected a low pressure cylinder.



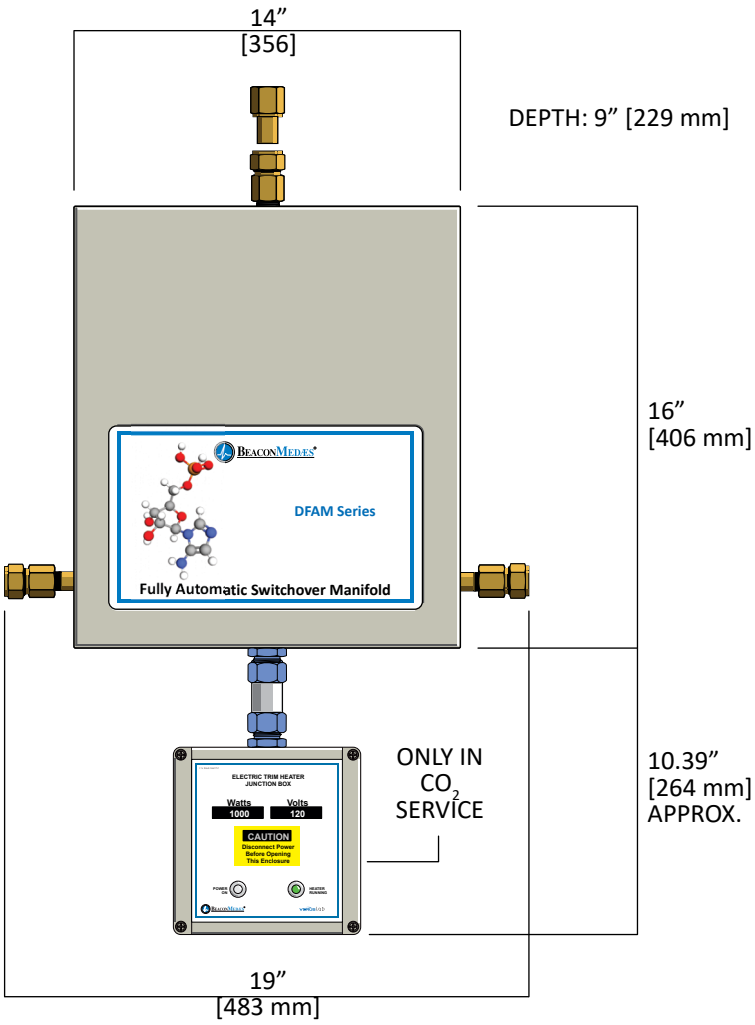
Materials		
Enclosures	**Brass Units**	**Stainless Steel Units**
Manifold Mechanical box	Powder Coated Steel	
Controller	ABS	
Heater Junction Box	ABS	
Wetted Components Inside the Manifold Mechanical Box		
Fittings	Brass	Type 316 Stainless Steel
Regulators	Body: Brass Diaphragm: Type 302 Stainless Steel Seats and Seals: PTFE (Teflon)	Body: Type 316 Stainless Steel Diaphragm: Type 302 Stainless Steel Seats and Seals: PTFE (Teflon)
Solenoid Valves	Body: Brass Seals: Viton & Teflon	Body: Type 316 Stainless Steel Seals: Viton & Teflon
Pressure Transmitters	Body: Type 316 Stainless Steel Diaphragm: Type 316 & 17-4 Stainless Steel	Body: Type 316 Stainless Steel Diaphragm: Type 316 & 17-4 Stainless Steel
Flexible Hoses	Type 316 & 304 Stainless Steel	Type 316 & 304 Stainless Steel
Relief Valves	Body: Brass Spring: Stainless Steel Seat: Teflon (PTFE)	Body: Type 316 Stainless Steel Spring: Stainless Steel Seat: Teflon (PTFE)
Headers		
Header Bars	Chrome-Plated Brass	Type 316 Stainless Steel
Isolation Needle Valve	Body: Brass Stem: Type 316 Stainless Steel Soft Tip: PCTFE	Body: Type 316 Stainless Steel Stem: Type 316 Stainless Steel Soft Tip: PCTFE
Flexible Hoses	Core: Type 316 Stainless Steel End Fittings: Type 316 Stainless Steel	Core: Type 316 Stainless Steel End Fittings: Type 316 Stainless Steel
Nuts & Nipples	Nut: Brass or Chrome-Plated Brass Nipple: Brass or Chrome-Plated Brass	Nut Type 316 Stainless Steel Nipple Type 316 Stainless Steel
Pipe Cap	Brass	Type 316 Stainless Steel

Pressure Settings & Flow Performance				
Gas Service	**Delivery (psi)**	**Maximum Inlet (psi)**	**Switchover (psi)**	**Maximum Flow at Full Cylinder Pressure**
Acetylene	1-15	400	30	1/7 of cylinder content
Air	30-125	3000	235	1200 scfh
Argon	30-125*	3000	235/140	1020 scfh (of CO_2) or vaporizer capacity for liquid cylinder
Carbon Dioxide	30-125*	2000	235/140	500 scfh (of Argon) or vaporizer capacity for liquid cylinder
Helium	30-125	3000	235	3200 scfh (of Helium)
Hydrogen	30-125	3000	235	4535 scfh (of Hydrogen)
Liq. Petroleum Gas	5-45	200	55	Limited by LPG cylinder
Methane	30-125	3000	235	1610 scfh (of Methane)
Mixture - Inert Gases	30-125	3000	235	1200 scfh equivalent air
Mixture - Flammable	30-125	3000	235	1200 scfh equivalent air
Nitrogen	30-125*	3000	235/140	1240 scfh (of Nitrogen) or vaporizer capacity for liquid cylinder
Nitrous Oxide	30-125	2000	235	500 scfh
Oxygen	30-125*	3000	235/140	1085 scfh (of Oxygen) or vaporizer capacity for liquid cylinder
P-10	30-125	3000	235	1200 scfh equivalent air

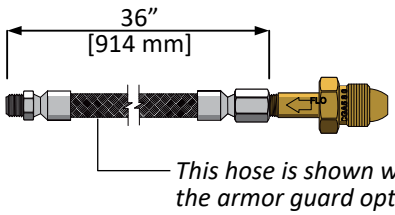
* Delivery Pressure range will be 30-100 psi when using liquid cylinders.

Dimensions

MANIFOLD MECHANICAL BOX

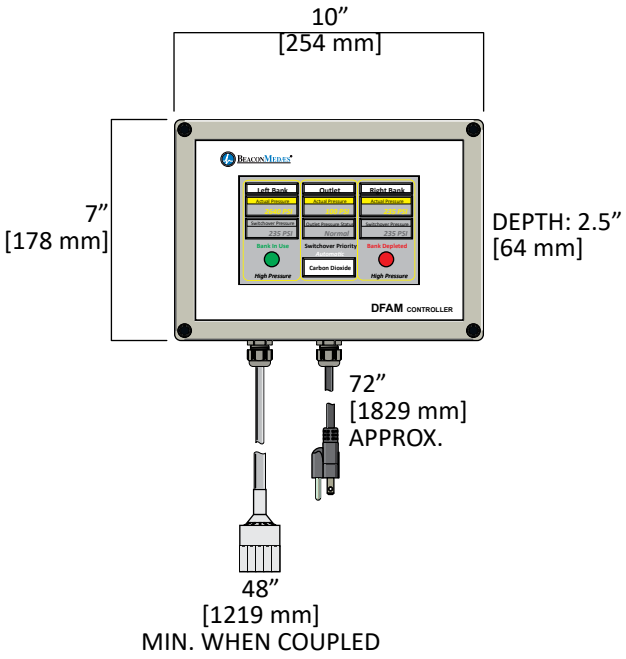


FLEXIBLE HOSE

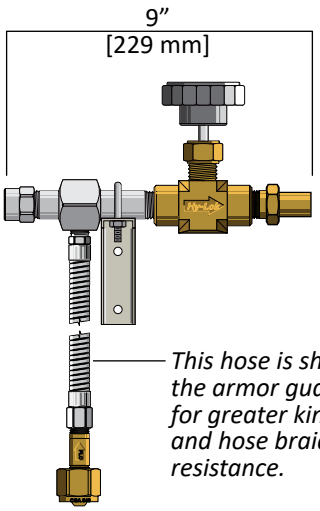


This hose is shown without the armor guard option

CONTROLLER

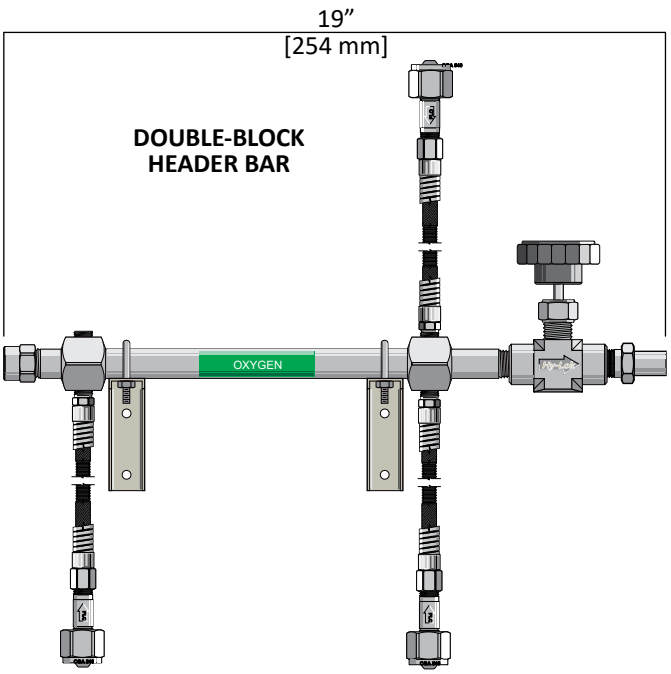


SINGLE-BLOCK HEADER BAR

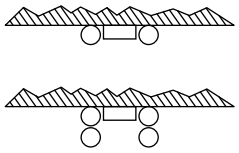


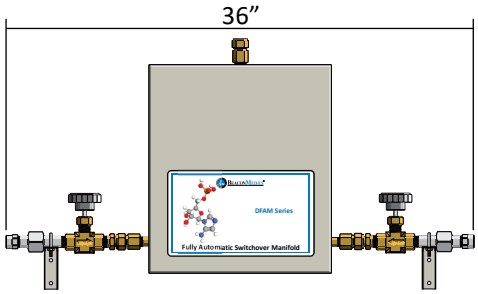
This hose is shown with the armor guard option for greater kink protection and hose braid abrasion resistance.

DOUBLE-BLOCK HEADER BAR

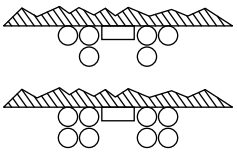


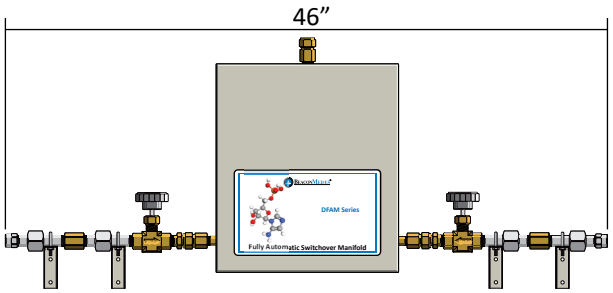
Manifold Lengths



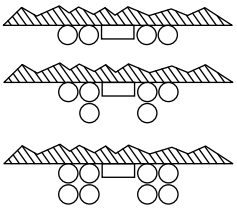


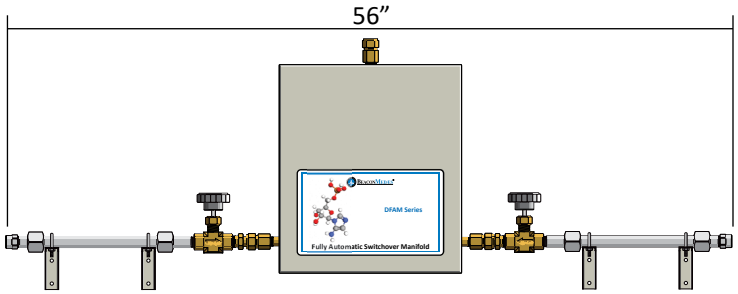
STANDARD / VERTICAL CONFIGURATION - 1 X 1 (10S) and 2 x 2 (10V)



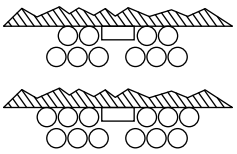


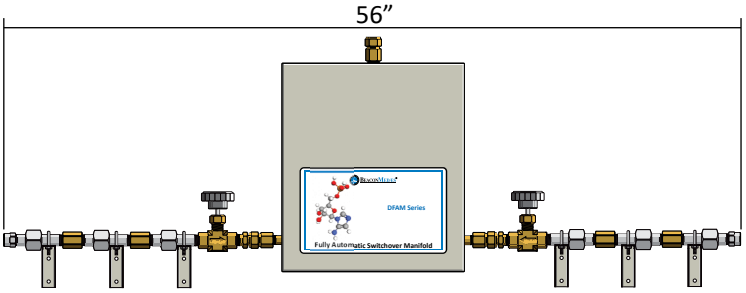
SHORT CONFIGURATION (5V) - 3 X 3 and 4 x 4



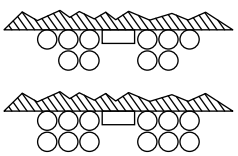


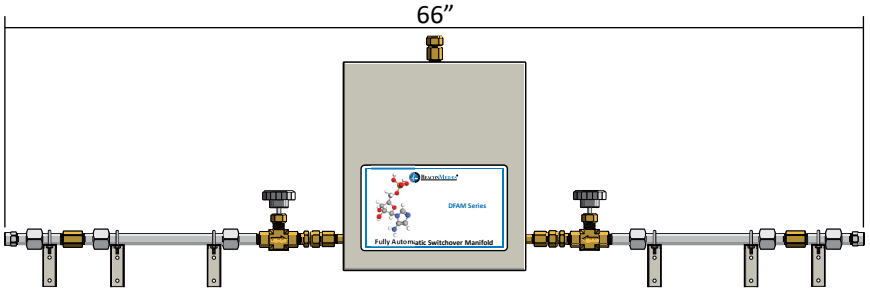
STANDARD / VERTICAL CONFIGURATION - 2x2 (10S) 3 X 3 (10V) and 4 x 4 (10V)





SHORT CONFIGURATION (5V) - 5 X 5 and 6 x 6





VERTICAL CONFIGURATION (10V) - 5 X 5 and 6 x 6

Ordering Information

DFAM -_____A -_____B -_____C -_____D -_____E -_____F -_____G

BeaconMedaes DFAM Series Model Number Chart			
Variable	**Definition**	**Allowable Value**	**Description**
A	Material	B S	Brass Stainless Steel
B	Gas	510A 346 580A 320 580H 350H 510 350M 580X 350X 580N 326 540 350P Please Specify	Acetylene Air Argon Carbon Dioxide Helium Hydrogen Liquified Petroleum Gas Methane Mixture - Inert Gases Mixture - Flammable Nitrogen Nitrous Oxide Oxygen P-10 Other
C	Number of Cylinders	2 4 6 8 10 12	1 x 1 2 x 2 3 x 3 4 x 4 5 x 5 6 X 6
D	Hoses	SSH SSHAG	Stainless Steel Hose Stainless Steel Hose w/ Armor Guard
E	Header Configuration	10S 10V 5V	Standard - 10" Center Vertical Crossover - 10" Center Vertical Crossover - 5" Center
F	Option	VV SSDV	Vent valve Stainless Steel Diaphragm Valve as Header Isolation
G	Gas Outlet Type	Leave Blank BS DIN NEN	CGA - North America BS341 - Great Britain DIN 477 - Germany NEN 3268 - The Netherlands

Example: MANIFOLD DFAM, BRASS CONSTRUCTION, NITROGEN SERVICE, 2 X 2 CYLINDERS, STAINLESS STEEL HOSES, 10" VERTICAL CROSSOVER, NORTH AMERICA
Example Model Number: DFAM-B-580N-4-SSH-10V-WM

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