



Brass



Stainless Steel

DIGITAL FULLY AUTOMATIC SWITCHOVER MANIFOLDS - DFAM SERIES

SPECIFICATION

Description

The BeaconMedaes DFAM Series is a PLC-driven automatic switchover manifold providing uninterrupted gas supply from either high pressure gas cylinders, liquid cylinders or a combination of the two.

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

Adaptability & Flexibility

The DFAM Series manifolds allow you to connect high pressure cylinders, liquid cylinders or a combination of the two. This feature is available on argon, carbon dioxide, nitrogen or oxygen service manifolds.

Advanced Features

The DFAM Series manifold is programmed with the following features:

OPTI-USE

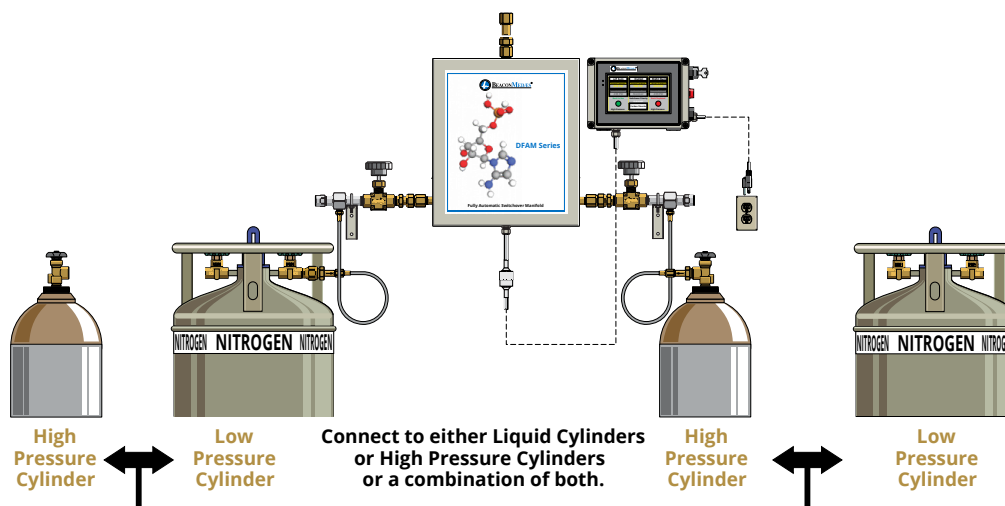
The Opti-Use feature is enabled for manifolds connected to liquid cylinders. The manifold PLC monitors bank pressures to optimize the use of the liquid in the cylinders. The manifold will not consider a bank fully depleted until the pressure remains below a specific setpoint.

ELECTRONIC ECONOMIZER

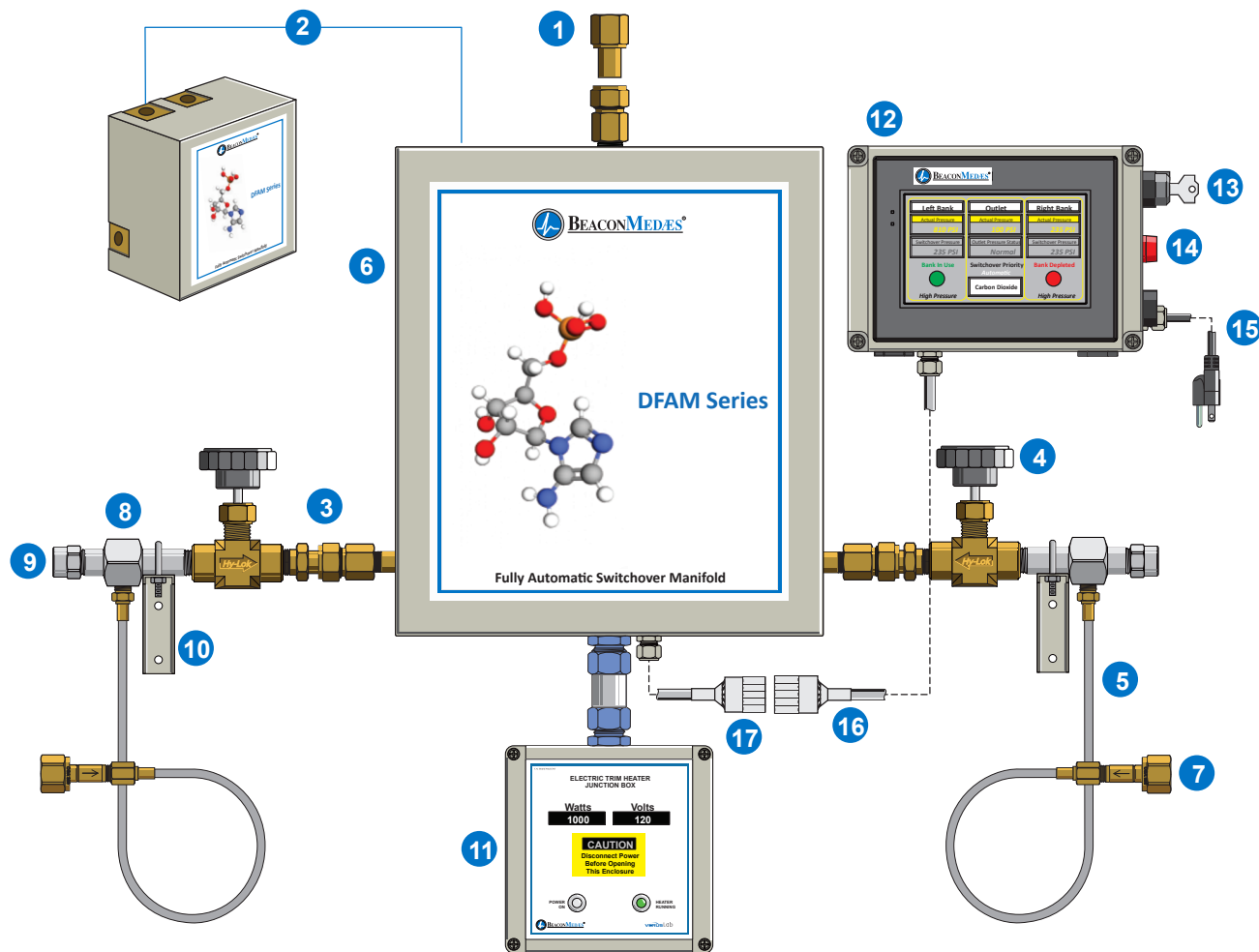
The Electronic Economizer feature is only available when a liquid cylinder is in "ready/stand-by" mode. The PLC monitors the pressure of both "in-service" and "stand-by" cylinder banks. If the stand-by (reserve) bank pressure rises 50 psi above the in-service bank pressure, the PLC will tap into the 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 by actuating the buzzer and displaying the problem on the screen. This feature works for all gas services and cylinder types.



Standard Configuration



Manifold Mechanical Box

- 1 Gas Outlet (1/2" F.NPT)
- 2 Relief Valve Outlet (1/2" F.NPT)
- 3 Header Bar Connection
- 4 Header Isolation Valve
- 5 Flexible Hose*
- 6 Powder Coated Enclosure
- 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.

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 - 45 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		

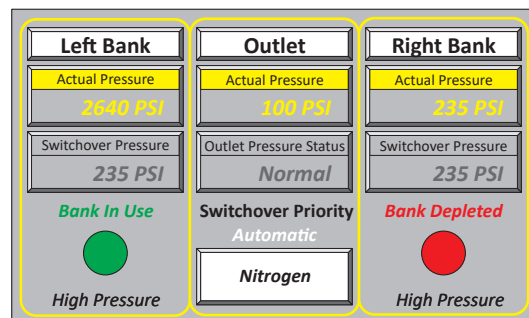


Controller Screens

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 Ready").

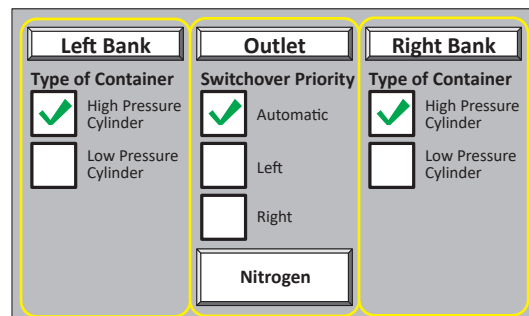
This screen also provides alarm status such as high or low delivery pressure, reserve bank depleted and economizer mode.



The Status Screen HMI displays three main sections: Left Bank, Outlet, and Right Bank. Each section shows Actual Pressure, Switchover Pressure, and a status indicator. The Left Bank is 'Bank In Use' (green circle), the Outlet is 'Normal' (green circle), and the Right Bank is 'Bank Depleted' (red circle). A 'High Pressure' alarm is indicated at the bottom of each bank section. The Outlet section also shows 'Switchover Priority Automatic' and 'Nitrogen'.

SELECTION SCREEN

The selection screen allows the operator to select the type of cylinder for each bank and the switchover priority. This is done by making the selection directly on the touchscreen. It is important to know that the manifold will display an error message and beep the buzzer to signal that the selection made by the operator and the actual cylinder connected to the manifold don't 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.



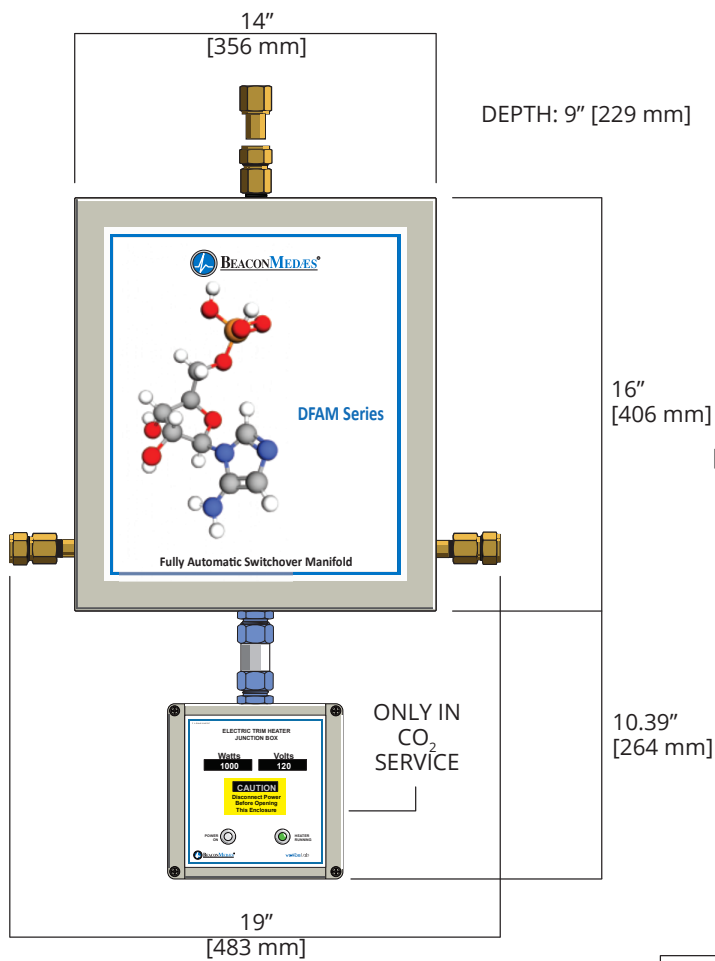
The Selection Screen HMI displays three main sections: Left Bank, Outlet, and Right Bank. Each section shows 'Type of Container' (High Pressure Cylinder or Low Pressure Cylinder) and 'Switchover Priority' (Automatic, Left, or Right). The Left Bank and Right Bank sections show a 'High Pressure' alarm. The Outlet section shows 'Switchover Priority Automatic' and 'Nitrogen'.

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

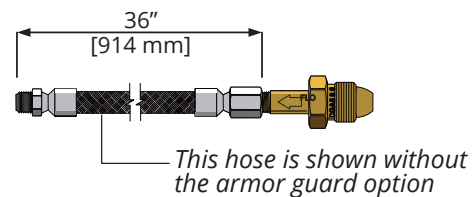
Pressure Settings & Flow Performance				
Gas Service	Delivery (psi)	Maximum Inlet (psi)	Switchover (psi)	Maximum Flow at Full Cylinder Pressure
Acetylene	1-15	400	30	1/7 of cylinder content
Air	30-125	3000	235	1200 scfh
Argon	30-125	3000	235/140	1020 scfh or vaporizer capacity for liquid cylinder
Carbon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

Dimensions

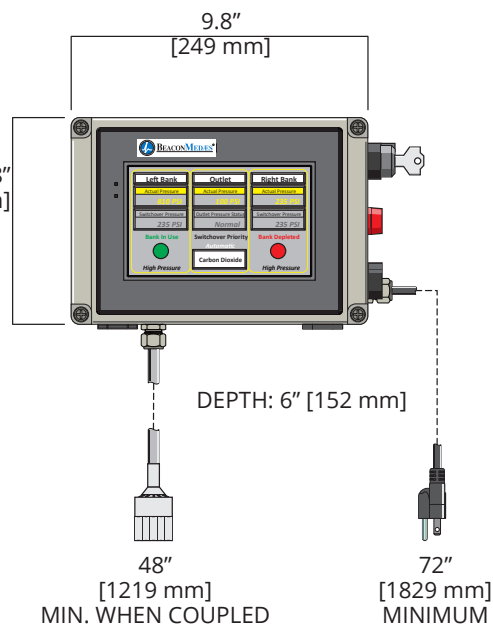
MANIFOLD MECHANICAL BOX



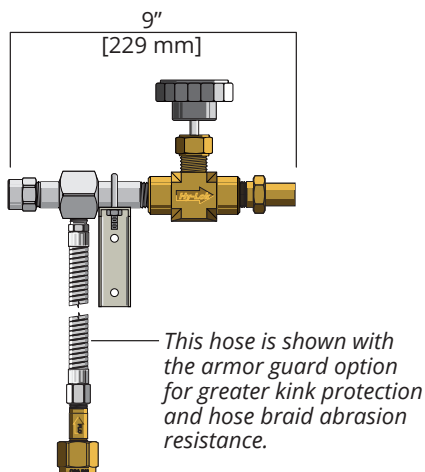
FLEXIBLE HOSE



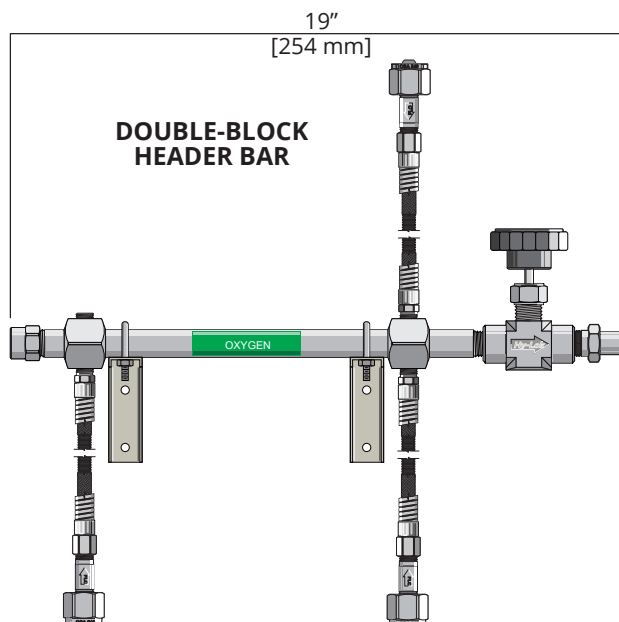
CONTROLLER



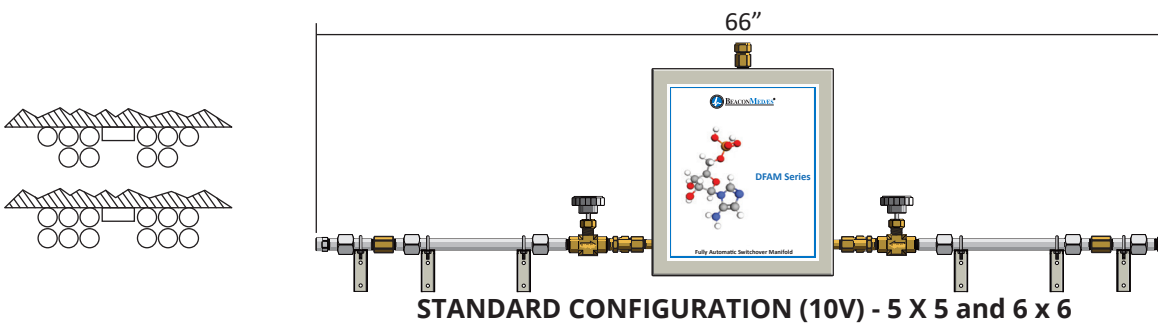
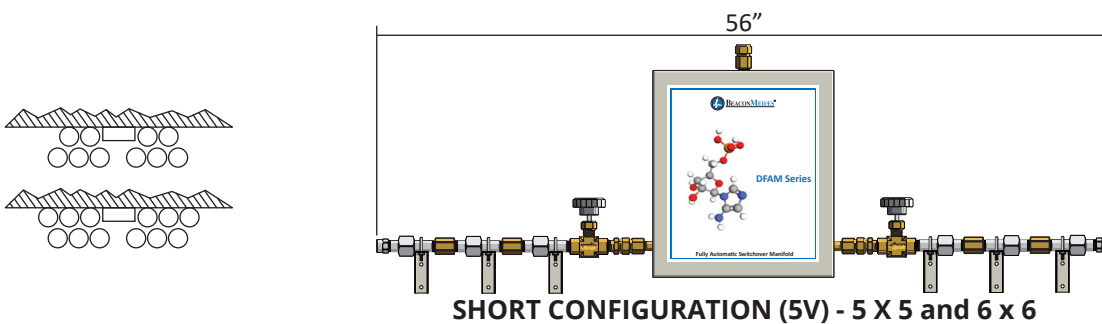
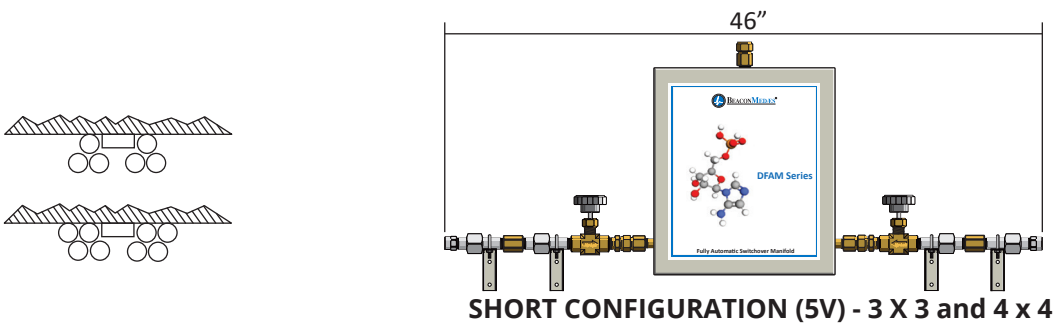
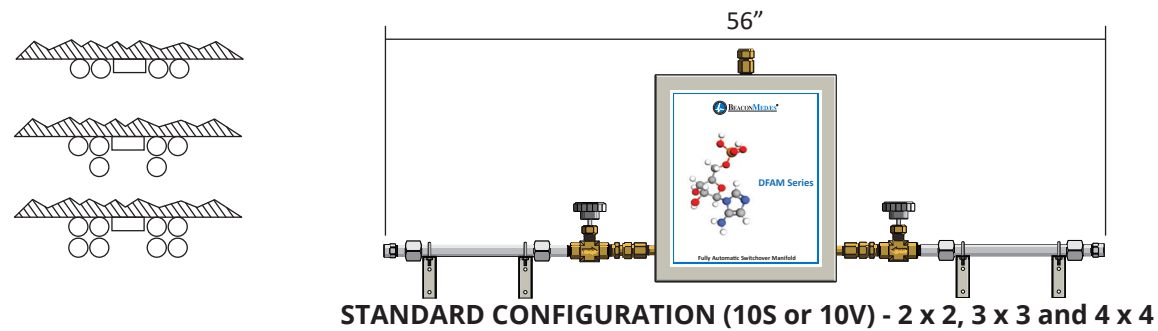
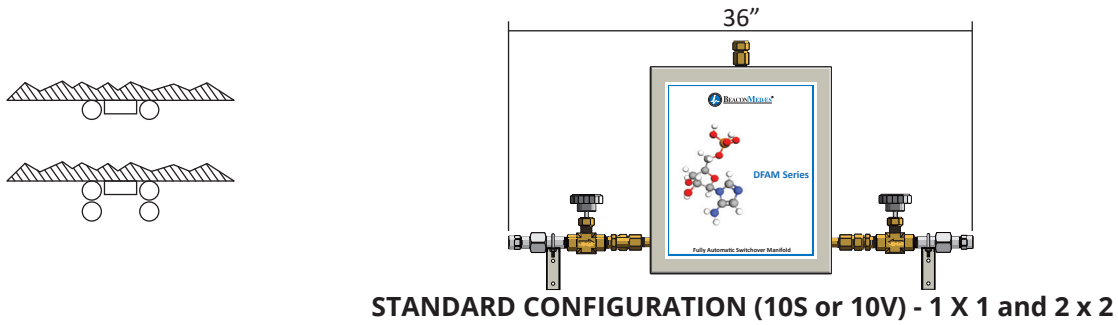
SINGLE-BLOCK HEADER BAR



DOUBLE-BLOCK HEADER BAR



Manifold Lengths



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