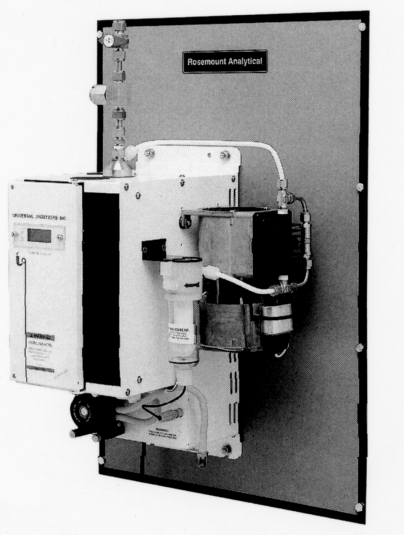
Product Data Sheet
PDS 103-6500.A01
January, 2004

Multi-Purpose Sample Gas Conditioning System

- Most innovative and flexible sample conditioning system available
- Choice of moisture removal devices – thermoelectric cooler or phase separator
- Built-in particulate filter and coalescing filter
- Choice of diaphragm pumps for shortest sample lag time
- Corrosion-resistant wetted parts for harsh sample conditions
- Flexibility in design provides most cost effective sample system solution available



FEATURES

The Model 6500 Multi-Purpose Sample Gas Conditioning System is designed to deliver representative, clean and dry sample to the analyzer in the most cost effective method. Normally, 80% of the analyzer system problems are attributed to inadequate sample system components and design. Today, most companies are operating with limited resources for design and maintenance of the sample system. The 6500 incorporates the highest quality components and flexibility in design which allows for reliable and trouble-free operation.

Most gas analyzers require the sample stream to be free of solids and suspended liquids. The solid particulate and suspended liquid can block the sample passage to the analyzer. The suspended liquid can react with the sample stream resulting in an erroneous reading from the analytical instrument. The 6500 removes solid particulate and the suspended liquid ensuring the highest mean time between failure.

The 6500 system consists of:

- Sample pump module
- Sample gas conditioning module

Each of these modules can be used independently or they can be combined to provide a complete system. These modules can also be used in combination with other Emerson sample system modules. (See figure 3).

SAMPLE PUMP MODULE

The pump module consists of a diaphragm pump with stainless steel pump heads. The compact pump design uses non-contaminating Teflon diaphragms and leak-free check valves. Single and dual-head pumps are available depending upon the sample travel distance and the sample flow rate required. The pump is designed as a combination vacuum and pressure pump so the gas stream can be either pushed or pulled through the pump. It is available for 115 VAC or 230 VAC operation. Figure 1 shows the performance curves for each pump design which helps in selecting the most appropriate pump for a given application. A 60 micron particulate filter and a relief valve assembly is included with the pump to provide clean sample and to prevent over-pressurization or damage to the analyzer(s). An optional sample shut-off valve can be provided to isolate the system for maintenance purposes. Two mounting configurations are available when the sample pump module is purchased
by itself.

Horizontal plate – the pump can be mounted on a horizontal plate with mounting holes. The plate can be bolted on the floor or a shelf of a cabinet

Wall-mount bracket – the pump can be mounted on a bracket with mounting holes. The bracket is suitable for wall-mounting

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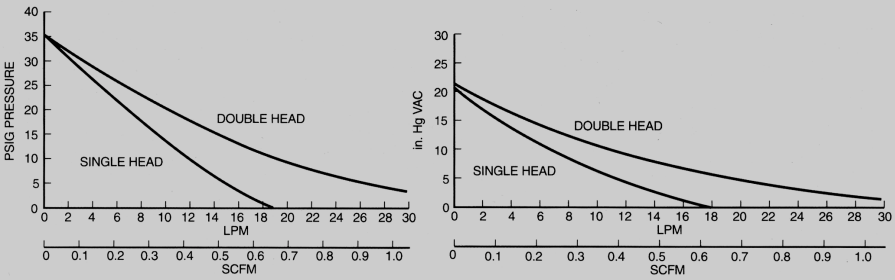

FIGURE 1. PERFORMANCE CURVE FOR PUMP

SAMPLE GAS CONDITIONING MODULE

Our rugged and dependable sample gas conditioning module is unique in the industry because it provides the most economical method for removing particulate and moisture from the sample stream. A 60 micron particulate filter is included with various moisture removing devices. For sample containing less that 2% moisture, a phase separator can effectively dry the sample. In the event moisture concentration is higher, a thermoelectric water condenser is recommended. This unique peltier cooler based heat exchanger does not use freon or a compressor, and it effectively dries the sample up to a dew point of 40°F (5°C). An optional moisture sensor is available to detect any excess moisture carry-over. A peristaltic pump is provided for continuous removal of the condensed moisture. For precautionary purposes, a 1 micron coalescing filter can also be included to remove any additional moisture droplets created by the compression of the sample gas in the diaphragm pump. In the event of moisture carry-over, alarm relays can be used to shut off the sample pump, preventing damage to the analyzer. An optional sample shut-off valve is available to isolate the sample system, which facilitates maintenance work on the analytical system, which facilitates maintenance work on the analytical system.

The complete sample gas conditioning module is mounted on a 19” backplate which is suitable for rack-mounting. It can also be provided with brackets for wall-mounting configuration. When the sample pump is purchased in conjunction with the sample gas conditioning system, all the components, including the pump, are mounted on a back plate suitable for mounting on a 19” rack. Brackets can be provided for wall-mount configuration. It is available for 115 VAC or 230 VAC operation.

APPLICATION

- Combustion gas analysis from fossil fuel fired processes
- Leak analysis in a vent system
- Exhaust from waste incinerators
- Light and heavy duty gasoline fired engine emissions
- Stack or flare gas analysis

FLEXIBLE DESIGN

The sample pump module and sample gas conditioning module can be used with various other Rosemount Analytical sample system modules. A block diagram for various common configurations is provided in Figure 3.

TYPE OF SAMPLE PUMP	MAXIMUM SAMPLE FLOWRATE	ESTIMATED SAMPLE TRAVEL TIME FOR 200’, 3/8” O.P. SAMPLE LINE AT MAXIMUM FLOWRATE	RECOMMENDED MAXIMUM SAMPLE OUTPUT PRESSURE
SINGLE HEAD	3 SLPM	64 SECONDS	15 PSIG
DUAL HEAD	7 SLPM	28 SECONDS	15 PSIG

Figure 2. Sample Travel Time Calculations

SPECIFICATIONS

Inlet pressure: up to 10: Hg vacuum

Inlet temperature;

Sample pump module: 0 to 210°F (-18 to 99°C)

Sample gas conditioning module: 0 to 375°F (-18 to 191°C)

Sample flowrate: Recommended up to 3 lpm (single-headed pump)
Recommended up to 7 lpm (dual-headed pump)

Particulate loading: Designed for generally clean samples (we recommend pre-filtration for very dirty samples)

Sample phase: single phase gas samples only

Electrical area classification: general purpose, non-hazardous area only

Location: indoors

Ambient temperature: 32 to 90°F (0 to 32°C)

Wetted parts: 316 SS, Teflon*, Viton*, Norprene**

Sample line: Maximum 200 feet (3/8” O.D.) with single- or dual-head pump

Sample Inlet connection:

Sample pump module: 3/8” tube connection

Sample gas conditioning module: choice of 1/4” or 3/8” tube connection

Dimension: sample gas conditioning module with sample pump: 28”(H) x 19” (W) x 10” (D); weight: approximately 30 lbs.

* Teflon and Viton are registered trademarks of E.I. duPont de Nemours and Co. Inc.

* Performance specifications and system layout are subject to change without notice

** Norprene is a registered trademark of TM Norton Co.

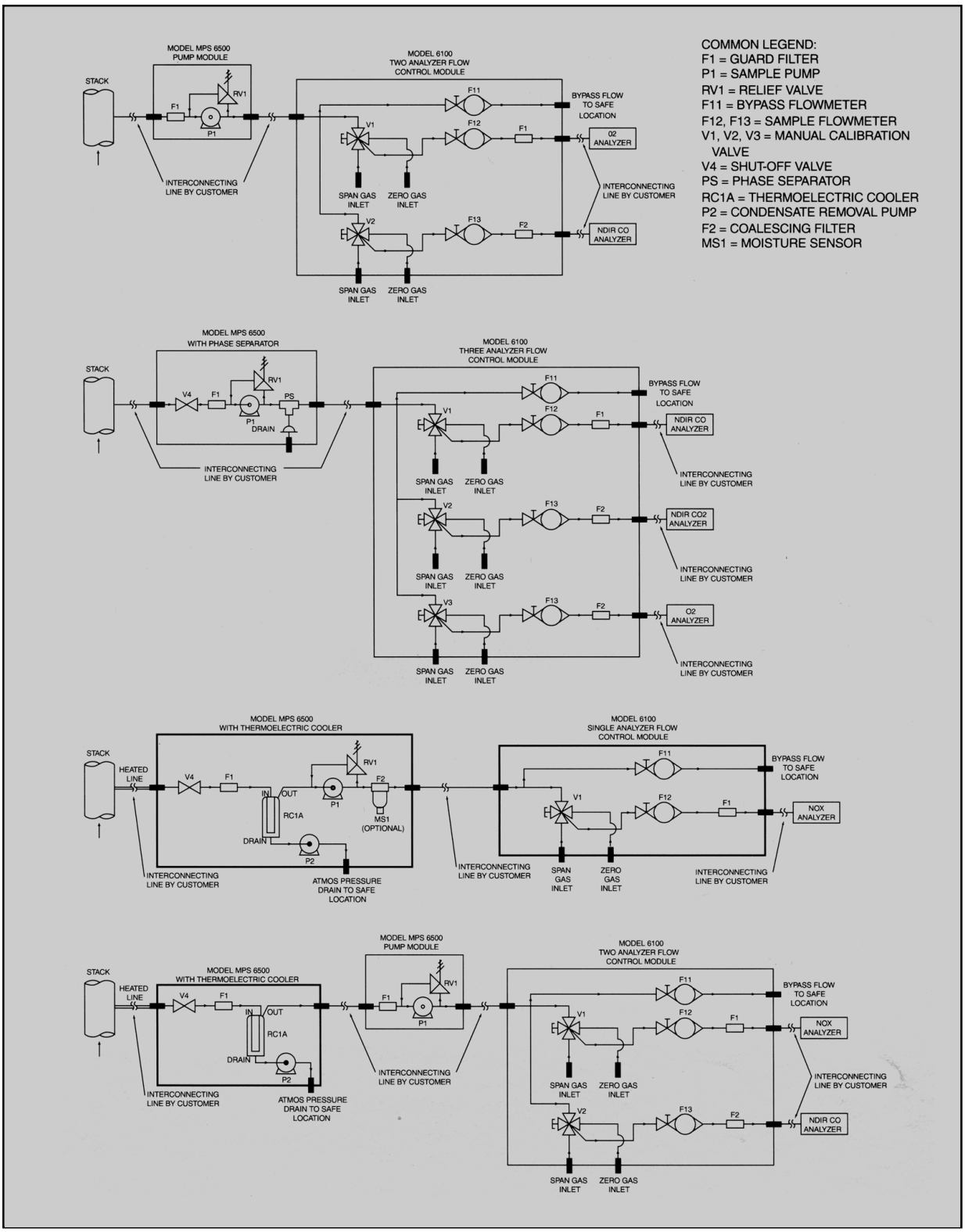

Figure 3. Common Configuration For Various Sample System Modules

ORDERING INFORMATION

Model	Description
6500	Sample Gas Conditioning System – Multi-Purpose (6500)

Level 1	Sample Pump Requirements
0	None required
1	Single-head diaphragm pump; horizontal plate mounting
2	Single-head diaphragm pump; wall bracket mounting
3	Single-head diaphragm pump; mounted on the plate with sample gas conditioning module
4	Dual-head diaphragm pump; horizontal plate mounting
5	Dual-head diaphragm pump; wall bracket mounting
6	Dual-head diaphragm pump; mounted on the plate with sample gas conditioning module
9	Special (consult factory)

Level 2	Sample Conditioning Module
0	None required
1	Phase separator (for occasional moisture content below 2%)
2	Thermoelectric water condenser (sample flow rate 3 l/min.)
3	Thermoelectric water condenser (sample flow rate 7 l/min.)
4	Thermoelectric water condenser, with moisture sensor (sample flow rate 3 l/min.)
5	Thermoelectric water condenser, with moisture sensor (sample flow rate 7 l/min.)
9	Special (consult factory)

Level 3	Sample Filter Requirements
0	None required
1	60 micron particulate filter - F1
2	1 micron coalescing filter - F2
3	Both filter “F1” and “F2”
9	Special (consult factory)

Level 4	Sample Shut-Off Valve
0	None required
1	Required

Level 5	Inlet Connection
1	3/8” tube connection (required when using sample pump module)
2	1/4” tube connection
9	Special (consult factory)

Level 6	Mounting Sample Gas Conditioning System
0	None required
1	19” backplate (with labor and assembly)
2	19” backplate with wall mount bracket kit (with labor and assembly)
9	Special (consult factory)

Level 7	Power Requirements
0	115 VAC, 60 Hz
1	230 VAC, 50 Hz
9	Special (consult factory)

Level 8	No Selection
00	No selection

Option Notes	
Level 1:	Option: 1, 2, 3, 4, 5, 6, 9 All pump assemblies are suitable for general purpose area. When pump is mounted near the analyzer, we recommend 3/8” sample lines between the pump module and sample take-off point. Single-head pump = maximum 3 l/min; Dual-head pump maximum 7 l/min. All pump assemblies provided with relief valve and guard filter.
Level 2:	Option: 0, 1, 2, 3, 4, 5, 9 Heated sample lines recommended when using thermoelectric water condensers. All thermoelectric condensers remove up to 20% moisture at ambient temperatures below 90°F.
Level 6:	Option: 1, 2 This MUST be ordered when ordering the phase separator or thermoelectric cooler and/or filter(s).

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