

Distributed By: Air & Vacuum Process, Inc.
Toll Free (866)660-0208
Fax (281)866-9717
sales@airvacuumprocess.com

Extractive Sample System for measurement of dewpoint in gases

Yep, you can build one, but it will probably cost you more.



No headaches, Ready to use, Sample Conditioning Systems.
Save on Installation and Maintenance Cost.

The Extractive Sample System (ESS) has a modular design, and can be configured to accommodate almost any measurement requirement. Manufactured from the highest quality materials, the ESS will meet the most exacting plant standards. Use the questionnaire below as a guide in building a configuration best suited for you; or provide us with the answers, and we will help you pick a cost effective solution for your application.

Question	Answer	Explanations
Is there a compelling reason to measure in-situ?		If Yes, then use our in-situ sample system (ISS). If there is no specific reason to measure in-situ, we recommend avoiding it because: <ol style="list-style-type: none"> 1. Under pressure liquid condensation is more likely, and thus over time the sensor may be damaged. 2. Variations of line pressure affect the reading because dewpoint varies with pressure.
What kind of Gas will be measured?		Some corrosive sample gasses or environments will require the use of a stainless steel sample system. Low dewpoint measurements, below -60°C, also require using a stainless steel sample system. Otherwise a substantially less expensive Aluminum & Brass sample system may be used.
What is the surrounding environment for this application? Any restrictions or requirements?		
What is the expected measurement range? specify units		
Is there an external shut-off valve?		If there is no external shut-off valve then must include one. In the part number specify "SV".
Is it possible to have particulate contaminants in the sample line?		If particulate contaminants can be present, then must include a filter. In the part number specify either "PF", or "CF" also see below.
Is it possible to have mists in the sample line?		If mists or liquid droplets can be present, then must include a filter. In the part number specify "CF". If it is expected to have large amounts of liquids, a drain valve may be of use, specify "CFD". <i>(Caution! Filters will slow down the system response time. Use them only if necessary)</i>
What is the sample inlet pressure? How much could it vary?		If the pressure is fairly constant and not too high, the pressure regulator may be eliminated, by adjusting the needle valve until the desired flow rate is achieved. Otherwise a regulator will be needed, in the part number specify "R". For very low pressures or vacuum, consult your representative for a system equipped with a pump.
Do you anticipate verifying the instrument accuracy by either: injecting a calibration gas, or extracting a sample to measure with another instrument e.g. a portable.		If yes, then in the part number specify "VP".
Is there a compelling reason to measure at line pressure, or could you measure at atmospheric? Note that the XDT can compute the dewpoint at another pressure.		It is preferable to measure at atmospheric pressure, because: <ol style="list-style-type: none"> 1. Readings will not be affected by variations in line pressure. 2. The risk of exposing the sensor to liquid water is significantly reduced.
Is there an external means of verifying the flow?		If there is no external means to verify the flow then a flow meter is recommended, specify "FM", or "HPFM" also see below
Will the exhaust be used/further measured, or will it bleed to atmosphere?		If the exhaust will be measured by another instrument or some how used; and therefore the dewpoint must remain unadulterated, and/or high pressure maintained. Then a more expensive borosilicate glass flow meter must be used, specify "HPFM"
Will the sample system and transmitter electronics be co-located or remotely located?		If the transmitter needs to be mounted on the sample system plate, specify "T".
Is a NEMA 4X enclosure required?		
Is a window on the NEMA enclosure required?		

ESS series Sample System, Part Number Configuration

	A= Aluminum and Brass wetted metal parts										
	S= Stainless Steel wetted metal parts										
	Basic System Includes:										
	Sample Cell, Bulkhead Inlet & Outlet ports, Interconnects, and Wall Mount Backplate.										
	OPTIONS:										
	X= No Shut-off Valve					(if there is no external shut-off, this valve is recommended to allow servicing the filter or sensor;					
	SV= Shut-off Needle Valve					can also be used to drop sample pressure for atmospheric measurements)					
	X= No Filter										
	CF= Coalescing Filter (5000psig in SS; 250psig in Aluminum)					Caution! Filters will slow down the system response time.					
	CFD=CF with Drain Valve (in most applications the drain valve is not necessary)					Use them only if necessary					
	PF= Particulate Filter (5000psig in SS; 250psig in Aluminum)										
	PFD=PF with Drain Valve (in most applications the drain valve is not necessary)										
	X= No Regulator										
	R= Regulator (max 3000psi inlet; 1-30psi adjustable outlet)										
	X= No Verification Port										
	VP= Verification Port with Valve										
	X= No Pressure Gauge (there is a 1/8" F-NPT port for user to add Pressure Gauge as required)										
	PG= Pressure Gauge: /1 for 0-15psig.; /2 for 0-200psig.										
	X= No Bleed Valve										
	B= Bleed Valve (use bleed valve to compensate for flow meter pressure rating)										
	X= No Flow Meter										
	FM= Flow Meter 1-10LPM w/Valve (polycarbonate tube, SS wetted metal parts, max 100psig.)										
	HPFM=High Pressure Flow Meter w/Valve (Glass tube, SS fittings, Viton O-Rings, max 250psig.)										
	X= No Transmitter mounting										
	T= Transmitter mounting (order the transmitter and sensor separately)										
	X= No Enclosure, Wall Mount Backplate only										
	N4= NEMA 4X Fiberglass Enclosure										
	N4W= N4 with window										
	For example the part number of a typical Sample System- with Stainless Steel wetted metal parts, Shut-off Valve, Pressure Gauge (0-200psi) and Flow Meter, in NEMA 4X enclosure with window, would be:										
ESS-	x-	xx-	xxx-	x-	xx-	xx-	xx-	xx-	x-	xxx-	ESS-S-SV-X-X-X-PG/2-X-FM-X-N4W.
ESS-	-	-	-	-	-	-	-	-	-	-	

ESS component specifications

Mounting Plate & hardware: The mounting plate, all necessary brackets and hardware are 300 series Stainless Steel.

Bulkheads & Verification Port: External connection bulkheads and verification port are 1/4" Swagelok® tube fittings. When a stainless steel system is specified the fittings are 316 stainless steel; max pressure 6500psig. When an aluminum & brass system is specified the fittings are brass; max pressure 3200psig.

Valves: Integral Bonnet Needle Valves with regulating stem. When a stainless steel system is specified, all wetted parts are 316 stainless steel, with PFA packing; max pressure 5000psig. When an aluminum & brass system is specified, all wetted parts are Brass 377/B283, 316SS glands & stem, and PFA packing; max pressure 3000psig.

Filters: When a stainless steel system is specified, the head, internals & bowl are 316LSS, seals are Viton (PTFE optional); max pressure 5000psig. When an aluminum & brass system is specified, head & bowl are anodized Aluminum, internals are Nylon, seals are Buna-N, there are also other Brass parts; max pressure 250psig.

Filter Elements: The coalescing element is made of borosilicate glass microfiber and fluorocarbon binder, efficiency rating of 99.99% against 0.1 micron particles and aerosols. The particulate filter element is made of stainless steel mesh with 1 micron efficiency.

Regulator: Maximum inlet pressure 3000psi, outlet 1-30psi adjustable (higher optional), Tefzel® seat, Teflon® seal, 316LSS diaphragm. When a stainless steel system is specified, the body (a wetted part) is 316LSS. When an aluminum & brass system is specified, the body (a wetted part) is Brass.

Sample Cell: When a stainless steel system is specified, 316LSS is used. When an aluminum & brass system is specified, Aluminum #2024-T351 is used.

Pressure Gauge: 2.5" dial, 1% accuracy, 304LSS case & ring, Neoprene gasket, Acrylic lens. When a stainless steel system is specified, the bourdon tube & socket are 316SS; max pressure 20,000psi. When an aluminum & brass system is specified, the bourdon tube & socket are Bronze/Brass; max pressure 10,000psi.

Flow Meter: Note that the sample passes through the flow meter after the dewpoint has been measured. Therefore typically can use the less expensive flow meter "FM". Unless, the sample exhaust gas content or pressure are incompatible with the less expensive flow meter, or the sample exhaust will be measured and/or used and thus may be contaminated with ambient moisture through the less expensive flow meter. If you are confronted with any of the afore mentioned conditions specify the high pressure flow meter "HPFM".

When "FM" is specified: 1-10LPM, 2" scale. Polycarbonate tube, SS wetted metal parts, SS float, Neoprene & Buna-N "O" rings, SS metering valve. Max pressure 100psi. Incompatible with caustic solutions, ethylene glycol, aromatic solvents; check for others.

When "HPFM" is specified: 1-10.5LPM, 3" scale. Borosilicate glass tube, SS wetted metal parts, black glass float, Viton "O" rings, SS metering valve. Polycarbonate protection shield. Max pressure 250psig (higher optional). Check for sample gas compatibility, e.g. Viton "O" rings are incompatible with ammonia, note that other materials are optionally available.

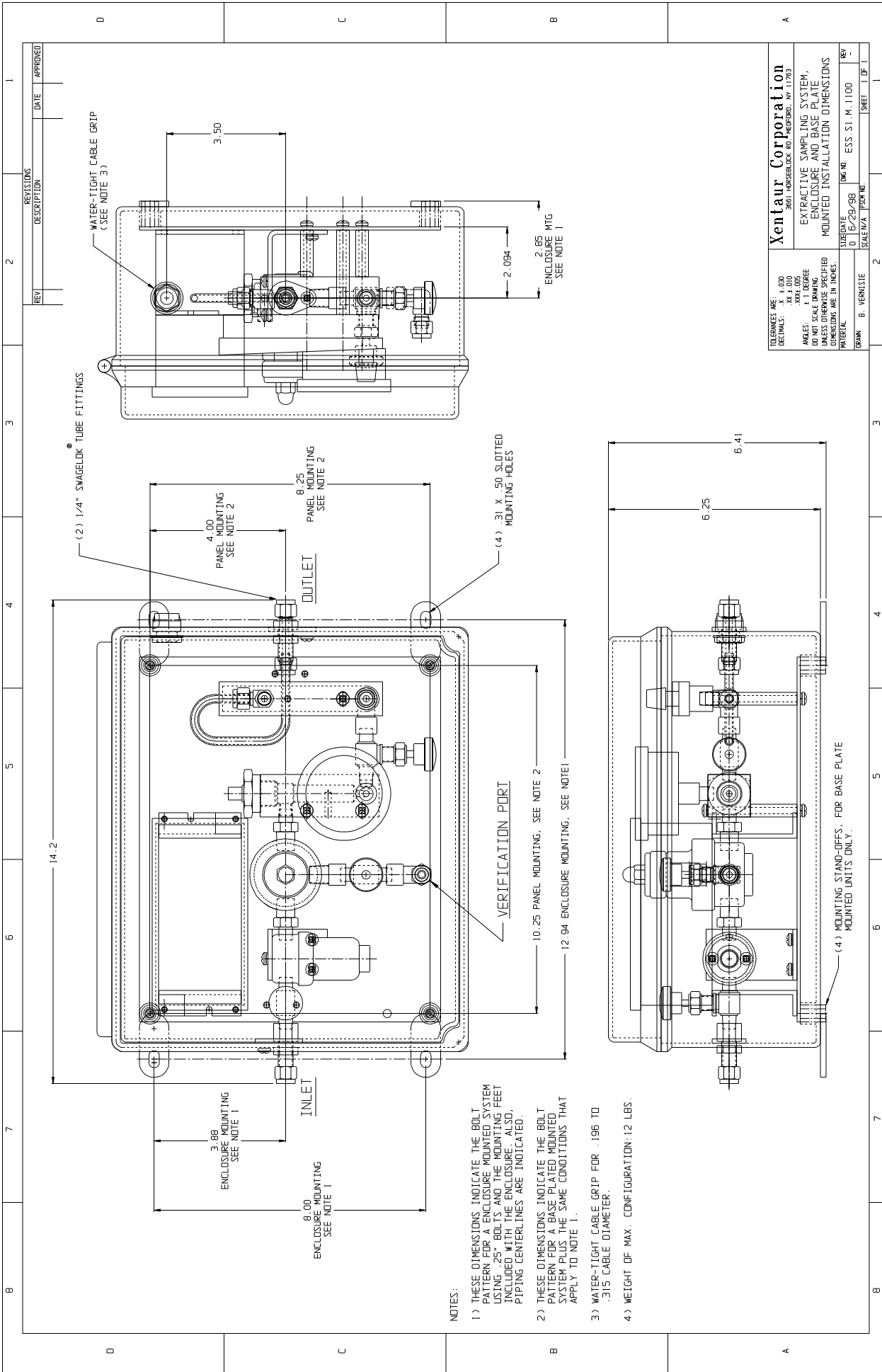
Enclosure: Molded Fiberglass Enclosure with hinged cover and corrosion-resistant polyester quick-release latches; seamless foam-in-place gasket for water-tight and dust-tight seal. Optional GE Lexan Margard® window permanently bonded to cover. Polyester mounting feet and SS attachment screws. Bulkhead fittings (with backup retainers) and Water-tight Cable Grips (for 0.196" to 0.315" diameter cables) are gasketed. UL508 Type 4, Type 4X, Type 12, Type 13. NEMA/EEMAC Type 4, Type 4X, Type 12, Type 13. CSA Type 4, Type 4X, Type 12, Type 13. IEC 529, IP66. Enclosure flammability rating UL94-V0, Window flammability rating UL94V-0. Light Gray Color, see drawing for dimensions.

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Xentaur Corporation 3661 HORSEBLOCK RD MEDFORD, NY 11763	
TOLERANCES ARE: DECIMALS: XX ± .000 FRACTIONS: XX ± .000	EXTRACTIVE SAMPLING SYSTEM, ENCLOSURE AND BASE PLATE, MOUNTED INSTALLATION DIMENSIONS
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES. MATERIAL:	DRAWN: B. VERNISTE DATE: 01/25/08 TIME: 08:55:31 REV: 1 OF 1

Represented by:

Xentaur Corporation 3661 Horseblock Road, Medford NY 11763 (516) 345-3434 fax: (516)345-5349 e-mail: xentaur@xentaur.com