

SAMPLE CONDITIONING PACKAGE

PRODUCT DATA SHEET—201

Model 31—Intrinsically safe aspirator-driven sampler with vapor condenser
For solvent-based processing

Introduction

The Neutronics Sample Conditioning Package is designed to ensure that the oxygen sensor always has a clean, dry sample gas for accurate measurement. Process conditions that include solvents, corrosive chemicals, and temperature extremes present significant challenges. To deliver accurate and reliable gas measurement, sensors require a sample that is free of contaminants. Sample conditioning systems built to withstand harsh processing conditions and efficiently remove damaging contaminants from the sample stream are critical to delivering reliable continuous duty low-maintenance gas monitoring.

Operation

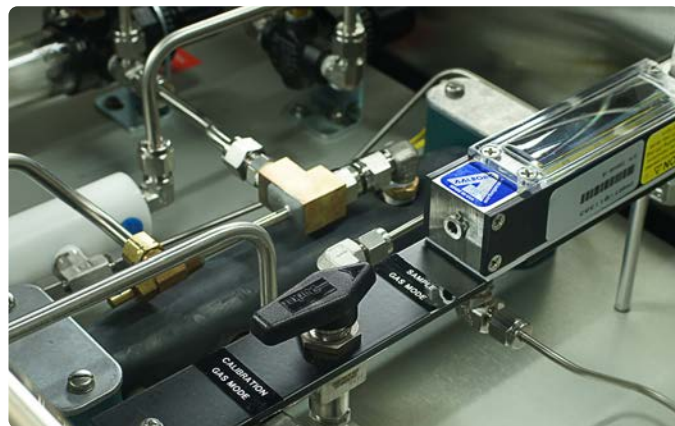
The Model 31 Series Sample Conditioning Package uses a pneumatically driven aspirator to extract the sample from the process. Using air or nitrogen as the drive gas, the aspirator produces vacuum by means of the Venturi effect. This vacuum is used to draw the sample gas from a long distance without long lag times in sensor response and to create a bypass flow to flush the vapor condenser of collected condensate. With no moving parts, the aspirator is intrinsically safe. The Model 31 sampler is ideally suited for processes operating at pressures ranging from -25 inH₂O to 5 psig.

To provide the sensor with a continuous clean sample gas flow, many solvent based processes require the removal of varying amounts of entrained vapors. Designed for process temperatures at or slightly above ambient, the integral Neutronics vapor condenser removes solvent and water vapors from the sample gas stream before they can contaminate the sensor. It consists of a heat exchanger powered by a vortex cooler. The vortex cooler provides the refrigeration for the condenser assembly that is used to collect heat from the sample flow and condense entrained vapors.

For processes with high operating temperatures, additional preconditioning components are typically included. The demister (Product Data Sheet 103) and the coalescing prefilter (Product Data Sheet 101) are frequently used to enhance liquid removal and filtration performance.

Available options

Teflon wetted parts
Explosion proof heat tracing
NEMA 4 enclosure or panel-only mounting
Single or dual oxygen sensors
Single or dual flammable or toxic gas sensors
Remote calibration valve



Features

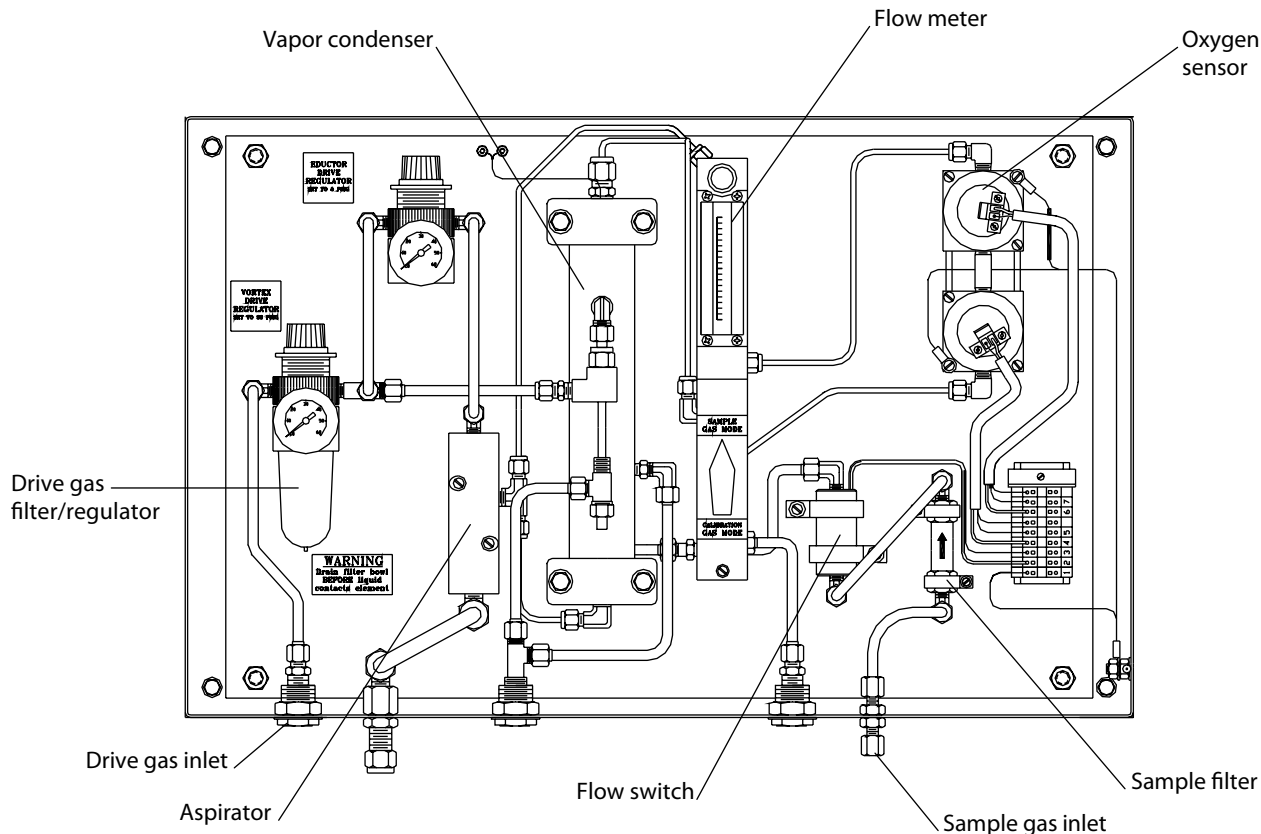
- Intrinsically safe design – with no moving parts, the pneumatically-powered Model 31 sampler is suitable for hazardous area locations
- Corrosion resistant NEMA 4X enclosure – suitable for indoor or outdoor use with protection against ingress of dust and water
- Integral flow switch – opens contacts in alarm when sample gas flow falls below a preset level
- Single or dual sensor compatible – option for redundant dual sensors enhances reliability
- Internal vapor condenser – air-cooled heat exchanger powered by a high efficiency vortex cooler with no moving parts removes contaminants from the sample gas stream
- Low maintenance package – high quality components with few replacement parts minimizes maintenance costs and unplanned downtime

Applications

Process vessels
Reactors
Mixers
Dryers
Vent header monitoring
Solvent recovery systems

MODEL 31 SERIES SAMPLE CONDITIONING PACKAGE—SPECIFICATIONS

Sample gas pressure	-25 inH ₂ O to 5 psig
Sample gas flow	5 slpm (±1 slpm) total flow
Vortex/venturi drive gas	Instrument quality air or nitrogen 35 psig (min) @ 2 scfm (± 0.5 scfm)
Sample filter	90 micron sintered metal particulate filter
Sampling method	5 slpm flow via 55 inH ₂ O vacuum draw from aspirator/Venturi pump, suitable for applications ranging from -25 inH ₂ O to 5 psig
Vacuum capacity	55 inH ₂ O (± 5 inH ₂ O)
Vapor conditioning	Air-cooled vortex-driven vapor condenser with continuous drainage
Wetted materials	Stainless steel, glass, Teflon
Outside dimensions	23.62"(w) x 14.96" (h) x 8.6" (d) (600 x 380 x 211mm)
Weight	50 lbs. (22.7 kg)



Spare parts

Part No. 4-05-2700-03-0	Drive gas filter/regulator element
Part No. 4-05-2300-07-0	Sample gas particulate filter 90 micron

Order information

Part No. 7-04-3000-02-0	Model 31-609-123000-1	Single sensor, NEMA 4 enclosure
Part No. 7-04-3000-03-0	Model 31-609-123000-2	Single sensor, NEMA 4X enclosure
Part No. 7-04-3000-03-3	Model 31-609-123000-2U	Single sensor, NEMA 4X enclosure, UL listed
Part No. 7-04-3000-12-0	Model 31-609-123040-2	Single sensor, NEMA 4X enclosure, XP heater
Part No. 7-04-3000-17-0	Model 31-669-123000-2	Dual sensor, NEMA 4X enclosure



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