



PSD-2 and PSD-4 Pressure Swing Dryers

A source of clean, dry or super-dry compressed air for humidity calibration systems or as a zero gas for laboratory applications

- Ultra-stable
- Maintenance free
- Modular, self-contained
- Two ranges: 1 ppm, 10 ppb

Method of operation

The air dryers in the Michell range operate on the 'pressure swing' principle. Two desiccant columns are connected to each other in a series-parallel mode. Compressed air is passed through the first desiccant column to remove virtually all the moisture present. A large proportion (typically 85 %) of this dry air is available for the application in question. The remaining 15 % is back-purged through the second, off-line desiccant column to sweep away to atmosphere the moisture it collected during its "on-line" cycle. At a point in the purge cycle, the off-line column is rapidly de-pressurised and this sudden pressure drop causes any moisture adsorbed in the desiccant to be released and purged away. After a pre-set period of time, the function of the two columns is changed over - the first column now being regenerated whilst the second column goes on-line, producing a flow of dry air. One cycle of this operation is represented diagrammatically in Figure 1.

PSD-2

The Michell PSD-2 Pressure Swing Dryer utilises aluminium columns filled with 4Å molecular sieve desiccant, which are used alternately on an automatically switched two-minute cycle. The PSD-2 dryer operates continuously and desiccant life is normally in excess of five years. The PSD-2 is fitted with inlet and outlet pressure regulation and delivers up to 10 Nlmin⁻¹ of dry air at 1 part per million by volume or better (-75 °C dew point). Outlet pressure is regulated at 10 p.s.i.g. Front panel pressure gauges



indicate the operational status of the dryer columns. The PSD-2 requires only mains power, to operate the timer circuit and solenoid valves.

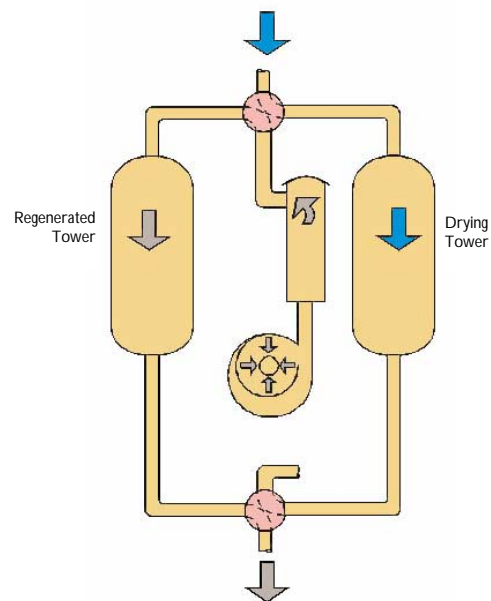


Figure 1: Cycle of a Pressure Swing Dryer

PSD-4

This high performance dryer is constructed entirely from stainless steel with high integrity valves and fittings. The PSD-4 produces an output of better than $-100\text{ }^{\circ}\text{C}$ dew point (less than 13 ppb moisture content) and is suitable for calibration of the latest

generation hygrometers, or as a zero reference gas supply for laboratory analysers. The PSD-4 delivers its output at a controlled pressure of 10 p.s.i.g. and can provide a maximum flow of 10 Nlmin⁻¹.

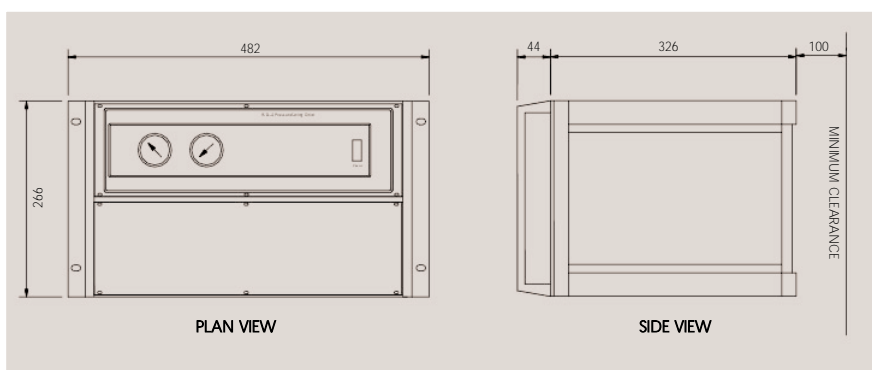
Technical Specifications

PSD-2

Type	Twin column desiccant, pressure swing
Desiccant	4 Angstrom Molecular sieve bead
Timer	Motorised cam
Gauges	Bourdon type
Exhausts	Sintered bronze silencers
Gas inlet and liquid water free	10 Nlmin ⁻¹ at 70 to 100 p.s.i.g; oil free
Gas outlet	7 Nlmin ⁻¹ (max) at stp less than 1 ppm _v (= less than $-75\text{ }^{\circ}\text{C}$ dew point); outlet pressure 10 p.s.i.g
Power	100/120 or 220/240 V, 50/60 Hz
Operating temp	+5 to +35 $^{\circ}\text{C}$
Storage temp	-40 to +35 $^{\circ}\text{C}$
Construction	Aluminium case, 19" sub-rack 6U x 350 mm deep
Weight	12.5 kg approx

PSD-4

Type	Twin column desiccant, pressure swing
Desiccant	4 Angstrom Molecular sieve bead
Timer	Motorised cam
Gas ports	Gas inlet - stainless steel 6 mm Swagelok® bulkhead union tube fitting Gas outlet - stainless steel ¼" Swagelok® bulkhead union VCR fitting
Gas inlet	20 Nlmin ⁻¹ at 70 to 100 p.s.i.g; oil free and liquid water free (better or equal to $-40\text{ }^{\circ}\text{C}$ dew point)
Gas outlet	10 Nlmin ⁻¹ (max) at stp less than 13 ppb _v ($-100\text{ }^{\circ}\text{C}$ dew point)
Filter	Millipore Wafergard IIF Micro Inline, sealed type, retention rating of 0.003 μm , greater than 99.999 %
Power	220/240 V, 50/60 Hz
Operating temp	+10 to +40 $^{\circ}\text{C}$
Storage temp	-40 to +50 $^{\circ}\text{C}$
Construction	IP66 GRP wall mounting enclosure (700 x 500 x 270 mm); all gas wetted components 316 stainless steel
Weight	27 kg approx



Model shown: PSD-2
Dimensions mm