ORDELA INC.
OAK RIDGE DETECTOR LABORATORY

3/2/00

ORDELA MODEL 8210A

LARGE-AREA IONIZATION CHAMBER

DESCRIPTION

The ORDELA Model 8210A is a large-area gridded ionization chamber designed for rapid, direct alpha spectrometry of environmental soil, water, air filter, and smear samples.

Sample preparation is quick, easy, and does not require toxic radiochemistry or special laboratory equipment. It consists of finely grinding soil samples, spraying them onto mirror-finish, 25.4 cm diameter stainless steel planchets and drying under heat lamps. Approximately 100 mg soil samples represent the practical limits for optimum alpha resolution using this procedure. Water samples, in the range of 5 to 15 mL can be directly sprayed onto the planchets and counted. Air filter paper and smear samples, up to 25.4 cm in diameter or 20 x 25 cm rectangular size, may be directly counted in the spectrometer with no sample preparation and without introducing inconsistencies due to trimming of the samples.

Assay times are short due to the 2-B geometry and background counts <15 counts per hour over a 4-6 MeV alpha energy range. LLDs for 100 mg soil samples are 15 and 40 pCi/gram (0.6 and 1.5 Bq/gram) for 60-min and 10-min counting times, respectively. Resolution is approximately 60 keV fwhm and is consistent across the entire active area of the detector.

The 44 cm diameter x 40 cm high cylindrical spectrometer is made of mild-steel and completely nickel-plated for low-background environmental counting and ease of decontamination. Its rugged construction make it an ideal analytical instrument both for mobile laboratories and for benchtop use in standard environmental counting laboratories. A sealed, horizontal access port allows easy sample insertion/extraction by a sliding tray assembly. P-10 (Ar-CH_4) counting gas, at up to 200 kPa absolute pressure, is used for the Model 8210A.

The Model 8210A includes all valves and gauges for P-10 gas management, a low-noise preamplifier, and a high voltage filtering and biasing circuit. A spectroscopy grade NIM or stand-alone amplifier, high voltage bias supply capable of an output of +3000 volts at 100 : A, and a Multichannel Analyzer are additional instruments required for operation of the 8210A. Completely integrated systems are available from ORDELA, Inc. These systems are optimized and calibrated at our factory in Oak Ridge, Tennessee in order to minimize installation time in your laboratory.

SPECIFICATIONS

ACTIVE SAMPLE AREA:	25 cm diameter circular or 20 cm x 25.4 cm rectangular
ENERGY RESOLUTION:	60 keV (fwhm) at 5 MeV alpha energy
THERMAL NOISE:	30 keV (fwhm)
DETECTION EFFICIENCY:	>45% for a weight-less, 5-cm-diameter sample
BACKGROUND:	<3 x 10^{-5} cpm/cm^2/100 keV (0.002 cpm/cm^2); 4 to 10 MeV
COUNTING GAS:	Ar-CH_4 (P-10), at <200 kPa absolute pressure
BIAS VOLTAGE:	<3 kV at 100 µA bias current
PREAMPLIFIER POWER:	+12 V at 20 mA

ORDELA, Inc., 1009 Alvin Weinberg Drive, Oak Ridge, Tennessee 37830 USA
Telephone 865-483-8675, Telefax 865-483-8404

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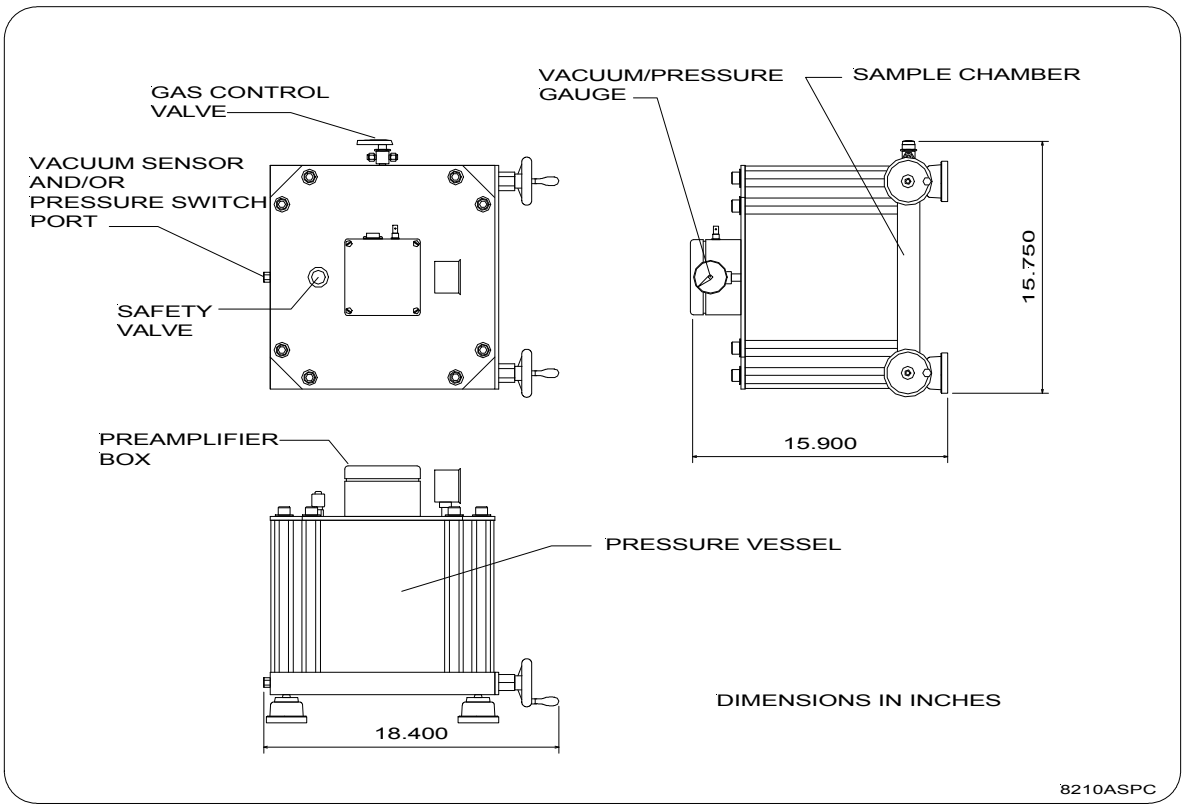
COUNTER CONSTRUCTION

BODY MATERIAL:	Nickel-plated steel
COUNTER VOLUME:	35 cm diameter, 25 cm deep
OVERALL DIMENSIONS:	44 cm diameter, 40 cm high
WEIGHT:	110 lbs (net), 130 lbs (shipping)

ACCESSORIES

Standard accessories, delivered with the Model 8210A at no extra cost are: (1) One low-noise preamplifier (ORDELA Model QS-11) and a high-voltage filter and distribution network installed and interconnected at the factory. (2) 3-m-long (10 ft) cables for interconnection of the Model 8210A with a standard NIM Amplifier and the High-Voltage Power Supply.



ORDELA MODEL 8210A OUTLINE AND DIMENSIONS

WARRANTY

ORDELA, Inc. warrants its products to be free from defects in materials and workmanship for 12 months after shipment. No other warranty is included. Specifically, no warranty of merchantability or fitness for a particular purpose is implied. ORDELA's liability under this warranty is limited to repairing or replacing the product at ORDELA's option. This warranty is void if the product is operated improperly, disassembled, or modified other than in the ORDELA laboratory.

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