

# DETECTION UNITS

## **M**odels AEP-47 & BEP-47 Particulate Detector Assemblies

The AEP-47 and BEP-47 are Alpha and Beta emitting particulate detection assemblies respectively for use with the Pylon AB-5 monitor. Both detectors use 47 mm Nuclepore filters. The Pylon model AEP-47 Alpha Detection Assembly is designed for collection and measurement of airborne particles such as those produced by radon daughters. The BEP-47 is used for measuring beta emitting airborne particles. Nuclepore polycarbonate filters are recommended for use with this unit.

### **Applications:**

- Industrial Applications
- Epidemiological Studies

### **Features:**

- Measurements can be taken during and after sampling
- The AEP-47 can be used for Working Level Measurements of alpha emitting airborne particles
- Features allow execution of Tsivoglou-Thomas, Rolle and Kuznetz sampling methods



AEP-47

### **Theory of Operation:**

Pylon model AEP-47 and BEP-47 detectors attach to the PMT mount on the front panel of the AB-5 radiation monitor. With the use of the AB-5's internal pump, these detectors use a filter to trap airborne particles. A scintillation disc which responds to Alpha or Beta radiation depending on the model, is positioned to react with the sample collected on the back of the filter. The light released from the scintillation material is then counted by the AB-5's PMT. The construction ensures minimum contamination of the detector, when used with the recommended filter type.

AEP - 47 / BEP - 47

## DETECTION UNITS

### Specifications:

	<u>AEP-47</u>	<u>BEP-47</u>	
Radiation Detected:	Alpha	Beta	
Scintillator:	ZnS(Ag)	Plastic	
		Type BC400	
Energy Ranges:	4.5 to 9	0.1 to 3	MeV
Efficiency:	16	16	%
Accuracy <sup>1</sup> :	± 5	± 5	%
Active Surface Area:	10.55 (1.64)	11.86 (1.84)	cm <sup>2</sup> (in <sup>2</sup> )
Detector Background:	< 0.5	< 15	cpm
Calibration <sup>2</sup> :	Single Point	Single Point	
Filter Size:	47 (1.9)	47 (1.9)	mm (in)
Light Shield:	Aluminized Mylar	Aluminum	
Maximum Flow Rate:	10	10	l/min
Operating Temperature Range:	0 to +50 (+32 to +122)	0 to +50 (+32 to +122)	°C (°F)
Storage Temperature Range:	-20 to +75 (-4 to +167)	-20 to +75 (-4 to +167)	°C (°F)
Relative Humidity Range <sup>3</sup> :	0 to 90	0 to 90	%
Diameter:	6.2 (2.4)	6.2 (2.4)	cm (in)
Height:	7.2 (2.8)	7.2 (2.8)	cm (in)
Weight:	200 (0.44)	200 (0.44)	g (lb)

<sup>1</sup> At a 1 $\sigma$  Confidence Level.

<sup>2</sup> Custom calibrations available. Custom calibrations include multi-point calibrations and calibrations at non standard activity levels.

<sup>3</sup> Non-Condensing.

- Values are nominal.
- Specifications are based on new units which have been appropriately calibrated.
- Alpha efficiency refers to an Am241 point source at contact and at mid-point with a 0.8 um pore size Nuclepore filter.
- Beta efficiency refers to a Sr90/Y90 point source at contact and at mid-point with a 0.8 um pore size Nuclepore filter.

### Ordering Information:

<b>Model</b>	<b>Part Number</b>	<b>Description</b>
AEP-47	A202041	Alpha Emitting Particulate Detector Assembly
BEP-47	A202043	Beta Emitting Particulate Detector Assembly

Specifications subject to change without notice.

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