



PARTICLE INSTRUMENT & ENGINEERING

A PROFESSIONAL ENTERPRISE OF PARTICLE INSTRUMENTS FOR AEROSOL GENERATION AND MEASUREMENT
PINE is composed of experts of gas and particle-based on our expertise in aerosol engineering.
OFFERING YOU THE BEST SOLUTION FOR AEROSOL GENERATION AND MEASUREMENT

CLEAN AIR SUPPLY

CAS 1014A

DRY, CLEAN AND COMPRESSED AIR
FOR AEROSOL GENERATORS



CLEAN AIR SUPPLY - CAS 1014A

The Clean Air Supply - CAS 1014A is an essential accessory for operating the most aerosol generators. It provides dry, clean, and regulated compressed air. It consists of an air regulator, air filter, desiccant dryer, and coalescing filter. The air regulator controls air pressure. The air filter removes water/oil droplets in the compressed air. The desiccant dryer removes moisture from the air stream. The coalescing filter removes particles in the compressed air.

FEATURES

- + Drying efficiency down to -40oF pressure dew point
- + Broad range of pressure control range
- + Easily replacement of desiccant
- + Easily replacement of filter element
- + Visible desiccant housing to monitor the desiccant
- + No electricity needed
- + Low-pressure drop
- + No purge air lost as with other dryer types

CLEAN AIR SUPPLY CAS 1014A SPECIFICATIONS

■ **Maximum Inlet Pressure**

1.0 MPa (145 psig)

■ **Pressure Regulator**

0.05 to 0.85 MPa (7 to 123 psig)

■ **Desiccant Type**

Silica Gel (Blue Indicator Crystal)

* The silica gel may be replaced by other desiccants such as activated charcoal or sodium aluminosilicate

■ **Desiccant Capacity**

Up to 1.5 Liter

■ **Coalescing Filter Element**

Pore Size

0.01 μm

Filtration Efficiency (DOP Smoke)

99.995% for 0.3 μm 10.5 ft/minutes

■ **Environmental Condition**

Operating Temperature

-5°C to 60°C (23 to 140°F), No Freezing

■ **Fittings**

Inlet and Outlet

8mm One Touch Fitting

■ **Dimension (H x W x D)**

39.4 cm x 46.0 cm x 20.0 cm (15.5 in. x 18.1 in. x 7.87 in.)

■ **Weight**

5.8 kg (12.8 lb), without silica gel desiccant

· The appearance and specification of the product may be changed without prior notice for the improvement of the product

JET NOZZLE TYPE ATOMIZER

JNTA 4501

COST-EFFECTIVE
SINGLE JET ATOMIZER



JET NOZZLE TYPE ATOMIZER - JNTA 4501

The Jet Nozzle Type Atomizer - JNTA 4501 is one of the collision type atomizers with a single jet-nozzle. The atomizer can use a standard bottle with a GL 45 tap. It can help easily change and storage various solutions.

It can generate aerosols from solutions prepared in water or in alcohol.

The Jet Nozzle Type Atomizer - JNTA 4501 is a cost-effective atomizer that can use various aerosol research.

FEATURES

- + Concentrations 2×10^7 particles/cm³
- + Nominal flow rate of 7.5 L/min
- + Use a standard bottle with a GL 45 tap
- + Easy to refill and clean
- + Reliable aerosol generation

JET NOZZLE TYPE ATOMIZER

JNTA 4501

SPECIFICATIONS

■ **Particle Material**

NaCl, PSL, oils, and other aqueous or alcohol solutions or suspensions

■ **Particle Number Concentration (Nominal)**

2×10^7 particles/cm³

■ **Flow Rate**

7.20-8.25 L/min at 0.25 MPa (36 psig)

■ **Fittings**

Compressed Air Inlet

6 mm One Touch Fitting

Aerosol Outlet

1/2 in. O.D.

■ **Dimension (H × W × D)**

8.5 cm × 6.5 cm × 5.2 cm (3.3 in. × 2.6 in. × 2.0 in.), without standard clear bottle

■ **Weight**

140 g (0.3 lb), without standard clear bottle

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DIFFUSION DRYER

DD 1448A

DRY AND REMOVE WATER VAPOR
FROM AEROSOL



DIFFUSION DRYER - DD 1448A

The Diffusion Dryer - DD 1448A is one of the instruments to dry wet aerosol. It consists of two parts. One is a water trap that eliminates large water droplets. The other one is a desiccant dryer it has two concentric tubes formed by a porous inner tube and an acrylic outer tube. And silica gel is contained in an annular space between two concentric tubes. The silica gel can easily regenerate using an oven with 120 °C. Additionally, the silica gel may be replaced by other desiccants such as activated charcoal or sodium aluminosilicate.

FEATURES

- + Drying efficiency down to R.H. 20%
- + Easy and quick removable eliminated water
- + Visible desiccant housing to monitor the desiccant
- + Provides dedicated stand

DIFFUSION DRYER DD 1448A

SPECIFICATIONS

■ **Flow Rate Range**

0 to 4 L/min

■ **Maximum Pressure**

415 kPa (60 psig)

■ **Relative Humidity at Outlet**

20% when incoming R.H. is 60%

■ **Desiccant Type**

Silica Gel (Blue Indicator Crystal)

*The silica gel may be replaced by other desiccants such as activated charcoal or sodium aluminosilicate

■ **Desiccant Capacity**

Up to 2.0 Liter

■ **Inlet and Outlet Tubes**

1/2 in. O.D.

■ **Dimension (H × W × D)**

31.5 cm × 70.8 cm × 18.0 cm (12.4 in. × 27.9 in. × 7.1 in.)

■ **Weights**

Diffusion Dryer

1.8 kg (4.0 lb), without silica gel desiccant

Stand

2.4 kg (5.3 lb)

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SOFT X-RAY AEROSOL NEUTRALIZER SXAN 4915A

NONRADIOACTIVE SOURCE
AEROSOL NEUTRALIZER



SOFT X-RAY AEROSOL NEUTRALIZER - SXAN 4915A

The Soft X-ray Aerosol Neutralizer - SXAN 4915A is a bipolar diffusion charger with balanced levels of positive and negative ions to neutralize electrostatic charges on aerosol particles. It makes the particles have a Boltzmann equilibrium charge distribution. It uses a soft X-ray ionizer instead of ^{85}Kr , ^{210}Po and ^{241}Am radioactive isotope. The control device helps easily turn on and off soft X-ray emission. The Soft X-ray Aerosol Neutralizer - SXAN 4915A designed to fit into a 3082 classifier.

FEATURES

- + Nonradioactive alternative to ^{85}Kr , ^{210}Po and ^{241}Am aerosol neutralizers
- + No restrictions for buying, using, and handling
- + Easily turned on and off soft X-ray using dedicated control device
- + Bipolar diffusion charger balanced levels of positive and negative ions
- + No particle generation

SOFT X-RAY AEROSOL NEUTRALIZER

SXAN 4915A

SPECIFICATIONS

Neutralize Method

Bipolar diffusion charging using soft X-ray.

Ion Generation Source

Source	Soft X-ray Tube
Voltage	4.9 kV
Current	400 μ A
Lifetime	>4,500 hours

Flow Rate Range

0.3 to 5.0 L/min

* For flow rate \geq 0.3 L/min, using clean air. Air containing reactive and/or condensable gases or vapors can lead to higher particle production rates.

Equipment Operating Conditions

Temperature Range	0 to 50°C (32°F to 122°F)
Humidity Range	35% to 85% RH non-condensing

Power

Input	100 to 240 VAC, 50/60 Hz
Power Consumption	Max. 50 W

Inlet and Outlet Tubes

1/4 in O. D.

Dimensions (H x W x D)

Soft X-Ray Aerosol Neutralizer	358 mm x 143 mm x 50 mm (14.1 in. x 5.63 in. x 2.0 in.)
Controller Device	44 mm x 163 mm x 113 mm (1.7 in. x 6.4 in x 4.4 in.)

Weights

Soft X-Ray Aerosol Neutralizer	1.45 kg (3.2 lb.)
Control Device	0.46 kg (1.01 lb.)

The soft X-ray source in the Soft X-Ray Aerosol Neutralizer – SXAN 4915A has a lifetime of approximately 4,500 operating hours. Since the device can be turned off when not in use, the neutralizer has an operating lifetime of many years for most applications. An elapsed operating lifetime is indicated in the control device. When the operating lifetime is reached, return the neutralizer to PINE for repair and calibration.

The appearance and specification of the product may be changed without prior notice for the improvement of the product.

SOFT X-RAY AEROSOL NEUTRALIZER SXAN 4920

NONRADIOACTIVE SOURCE
AEROSOL NEUTRALIZER



SOFT X-RAY AEROSOL NEUTRALIZER - SXAN 4920

The Soft X-ray Aerosol Neutralizer – SXAN 4920 is a bipolar diffusion charger with balanced levels of positive and negative ions to neutralize electrostatic charges on aerosol particles. It makes the particles have a Boltzmann equilibrium charge distribution. It uses a soft X-ray ionizer instead of ^{85}Kr , ^{210}Po and ^{241}Am radioactive isotope. The control device helps easily turn on and off soft X-ray emission.

FEATURES

- + Nonradioactive alternative to ^{85}Kr , ^{210}Po and ^{241}Am aerosol neutralizers
- + No restrictions for buying, using, and handling
- + Easily turned on and off soft X-ray using dedicated control device
- + Bipolar diffusion charger balanced levels of positive and negative ions
- + No particle generatio

SOFT X-RAY AEROSOL NEUTRALIZER

SXAN 4920

SPECIFICATIONS

■ Neutralize Method

Bipolar diffusion charging using soft X-ray.

■ Ion Generation Source

Source	Soft X-ray Tube
Voltage	4.9 kV
Current	400 μ A
Lifetime	>4,500 hours

■ Maximum Flow Rate

10.0 L/min

■ Equipment Operating Conditions

Temperature Range	0 to 50°C (32°F to 122°F)
Humidity Range	35% to 85% RH non-condensing

■ Power

Input	100 to 240 VAC, 50/60 Hz
Power Consumption	Max. 50 W

■ Inlet and Outlet Tubes

1/2 in O. D.

■ Dimensions (H × W × D)

Soft X-Ray Aerosol Neutralizer	354 mm × 149 mm × 52 mm (13.9 in. × 5.87 in. × 20.2 in.)
Controller Device	44 mm × 163 mm × 113 mm (1.7 in. × 6.4 in. × 4.4 in.)

■ Weights

Soft X-Ray Aerosol Neutralizer	1.60 kg (3.53 lb)
Control Device:	0.46kg (1.01 lb)

The soft X-ray source in the Soft X-Ray Aerosol Neutralizer – SXAN 4920 has a lifetime of approximately 4,500 operating hours. Since the device can be turned off when not in use, the neutralizer has an operating lifetime of many years for most applications. An elapsed operating lifetime is indicated in the control device. When the operating lifetime is reached, return the neutralizer to PINE for repair and calibration. The appearance and specification of the product may be changed without prior notice for the improvement of the product.

UNIVERSAL SAMPLING PROBE USP 3030

MINIATURE DESIGN
ISOKINETIC SAMPLING PROBE



UNIVERSAL SAMPLING PROBE - USP 3030

The Universal Sampling Probe - USP 3030 is a miniature design isokinetic sampling probe for representative sampling of PM at freestream velocities in the range from 0 to 300 km/h. The design verified with numerical analyses and experiments. A material of the Universal Sampling Probe - USP 3030 is electropolishing treated stainless steel to prevent deposit the particles.

Tight tolerances are maintained for all critical dimensions of the sampling probe to ensure the accuracy of this isokinetic sampling.

FEATURES

- + Isokinetic sampling probe
- + Double shrouded type
- + 0 to 300 km/h sampling range
- + Miniature design
- + Electropolishing treatment

UNIVERSAL SAMPLING PROBE

USP 3030

SPECIFICATIONS

■ **Sampling Probe Type**

Double-Shrouded Probe

■ **Freestream Velocity Range**

0 to 300 km/h

■ **Sampling Flow Rate**

3.0 L/min

■ **Outlet Tube**

1/4 in. O.D.

■ **Material**

Electropolishing Stainless Steel

*To reduce the particle deposit

■ **Dimension (H × W × D)**

7.1 cm × 2.5 cm × 2.5 cm (7.1 in. × 1.0 in. × 1.0 in.)

■ **Weight**

40g (0.1 lb)

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