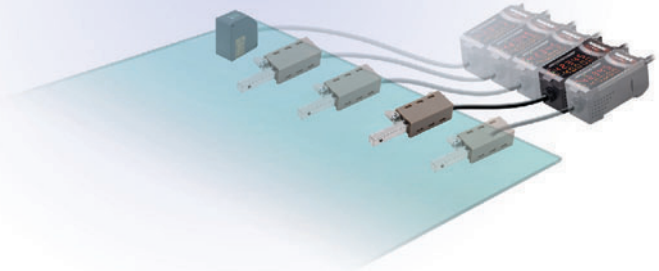
NEW

OMRON

Static Sensors and Ionizers
Series Catalog

"Visible" Static Electricity

Measuring Static Electricity In-line



Thorough Ionization

Best Ion Balance in its Class

realizing

from the FACTORY

Sensing and Control of Static Electricity

With the ever-diminishing size of components and greater detail in electronic devices, countermeasures for static electricity have become vitally important for increasing product quality and production yield on production sites. The real problems are how to make invisible static electricity "visible" and how to effectively remove it.

OMRON can help you fight static electricity and increase product quality with our High-performance Ionizers, which are based on sensing static electricity combined with the highest class of ionization performance.

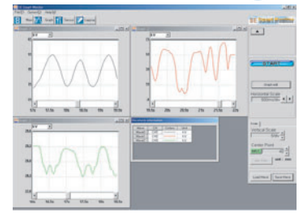
for High Quality Products

Making Static Electricity Visible — Sensing

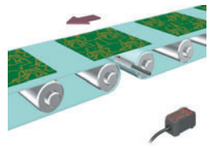
Direct Display of Static Level

ZJ-SD100/ZJ-SDA11 Electrostatic Sensor

The compact Sensor Head (6 × 6 × 67 mm) and intelligent Digital Amplifier combine to visually display the static level of the workpiece. You can measure more than one point and easily log static levels on a personal computer. Static levels can be measured accurately by using a displacement sensor for distance and workpiece area compensation.

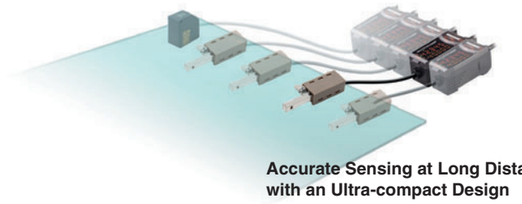


Static Countermeasures while Measuring and Logging Multiple Locations



Measuring Static on PCBs on Conveyors

Measuring Static on LCB Boards



Accurate Sensing at Long Distances with an Ultra-compact Design

High-speed, High-performance Ionization — Ionizer

Fan Type

In Cell Production Lines and Assembly Devices

Prevents Adherence of Dust When Attaching Labels

Ionizing Plastic Parts

Ionization during Assembly on Cell Production Lines

Simple, High-speed Ionization

ZJ-FA20 Basic Fan-type Ionizer

- High-speed ionization in 0.8 s.
- Long-term stable ion balance.
- Fully open structure for easy, worry-free maintenance.

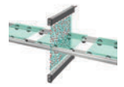
Making the Effects of Ionization Visible

ZJ-FA10 Advanced Fan-type Ionizer

- Standard HMI with superior functions, including static level displays and airflow adjustment.
- Fully open structure for easy, reliable maintenance.
- Monitor with complete external interface.

Bar Type

For Clean Processing without Disrupting Conveying or Downflow.



Ionization of LCD Boards on Conveyors

Preventing PET Bottle Repelling

Preventing Sticking of Packaging Films

High-speed, Consistent Ionization over Wide Areas

ZJ-BAS Digital Bar-type Ionizer

- Ideal design for high-speed, thorough ionization at a long distance and over a wide area.
- Consistent ionization over a wide area with a linked structure.
- Simple, worry-free setting with setting guide on a digital ion display.

Blow Type

For Ionizing Spots or Gaps

Ionizing Top and Bottom PCB Surfaces

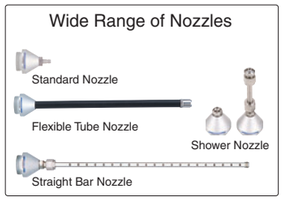
Spot Ionization on Components

Film Ionization

Compact, with High Performance

KS1 Air Push-type Ionizer

- A wide range of Nozzles for installation in various locations in equipment.
- High-frequency AC system for superior ion balance.
- Standard-feature alarm output for errors.



ZJ-SD

from the FACTORY

Smart Static Electricity Sensing: Making Static Electricity Visible

The unpredictable nature of static electricity creates the need for a sensor for constant in-line monitoring to properly capture static electricity.
Smart collection of effective data to improve production site countermeasures is now possible.

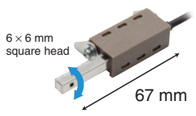
Smart Electrostatic Sensor
ZJ-SD Series

Smart In-line Measurement of Production Site Static Electricity

Compact Sensor Head and Smart Amplifier

Hand-held devices and large measuring devices are not suitable for easily measuring static charges of workpieces in-line.
The Sensor Head of the Smart Electrostatic Sensor is small (6 × 6 × 67 mm) and the bracket has a rotating mechanism, making it possible to mount it even where space is limited.

Compact Sensor Head



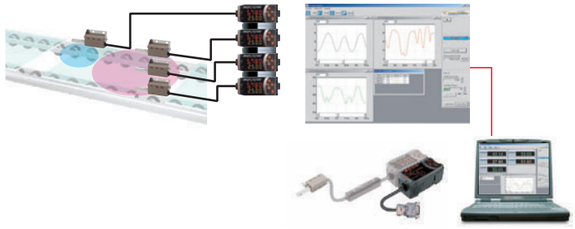
The bracket on the Head enables changing the sensing direction even after installation.

Smart Amplifier

Direct display of static charge

Smart Static Electricity Monitoring

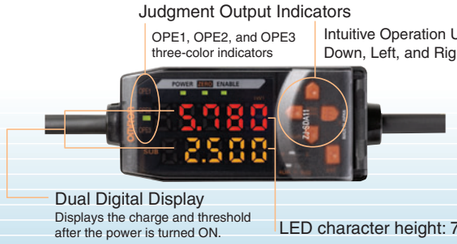
For effective discharge, measurements must be made at more than one location and changes over time need to be monitored. With the ZJ-SD, multi-point measurements from up to 5 Units Amplifiers. And the Electrostatic Sensor measurement data can be displayed and logged on a personal computer via an Interface Unit and used for static electricity countermeasures.



Our Highest Priority: Easy Onsite Operation

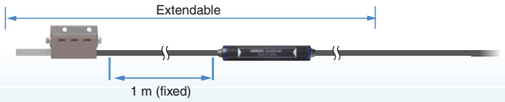
Simple Settings Using Key Operations

A seven-segment, two-row display is provided for workpiece charge and threshold displays.
Settings are easy to make using Up, Down, Left, and Right Keys.



Remote Detection

Use the ZX-XC□A (order separately) to extend the cable to 2, 5, or 9 m.



Smart Sensing

Best Long-distance, High-precision Measurements in the Industry

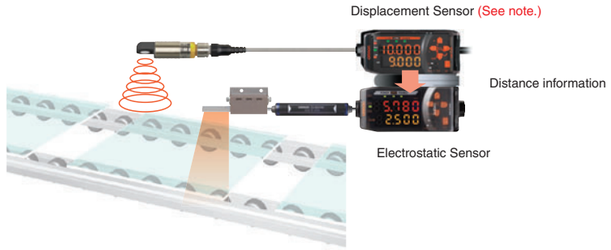
The ZJ-SD provides the highest detection accuracy in the industry when combined with a ZX Displacement Sensor. And even more precise measurements are possible with the compensation function that adjusts to the size of the workpiece.

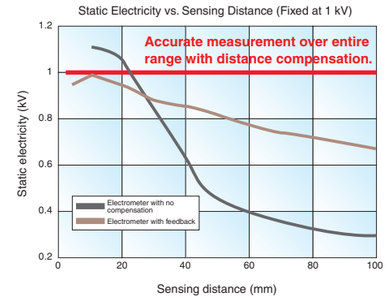
Workpiece Distance Compensation

Long-distance, High-precision Measurements

The best sensing range in the industry at 100 mm/ ±50 kV.
Sensors that measure static charges are greatly affected by the measurement distance. The ZJ-SD solves this problem by combining with a ZX-series Displacement Sensor to enable communicating distance information and thus achieve high-accuracy measurements.

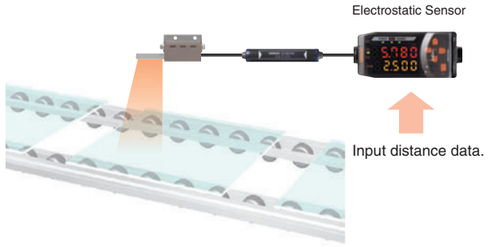
Note: Ultrasonic Displacement Sensors are also available. Contact your OMRON representative for details.





Unaffected by Measurement Distance

In addition to distance data compensation performed by the Displacement Sensor, errors from distance fluctuations can also be reduced by directly inputting the installation distance into the Amplifier.

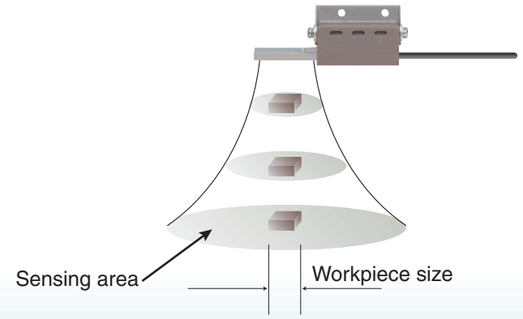


Workpiece Size Compensation

Accurate Static Charge Measurements for Small Workpieces

The Electrostatic Sensor's sensing area is approximately five times the installation distance.
Enter the workpiece size to measure the static charge of workpieces smaller than the sensing area. (See note.)
The ZJ-SD can compensate the static charge based on a comparison of the installation distance recorded in the Preamplifier and the size of the sensing area.

Note: Except for the workpiece, static charge inside the sensing area must be 0 V. Use a measurement error of approximately 10% as a guide for a measurement distance of 5 mm and a workpiece of 10 mm in diameter.



Long distance, Highly accurate detection

Ordering Information

Electrostatic Sensor

Sensor Head

Appearance	Sensing distance	Model
	5 to 100 mm	ZJ-SD100

Amplifier

Appearance	Power supply	Output method	Model
	DC	NPN output	ZJ-SDA11

Accessories (Order Separately)

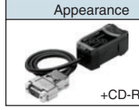
Calculating Unit

Appearance	Model
	ZX-CAL2

Preamplifier Mounting Brackets

Appearance	Model	Remarks
	ZX-XBT1	Included with Sensor Head.
	ZX-XBT2	For DIN Track mounting

SmartMonitor Sensor Setup Tool for Personal Computer Connection

Appearance	Name	Model
 +CD-ROM	Communications Interface Unit and software for setup and display	ZJ-SFW11

Cables with Connectors on Both Ends (for Extension)

Cable length	Model	Quantity
1 m	ZX-XC1A	1
4 m	ZX-XC4A	
8 m	ZX-XC8A	

Sensor Head Mounting Bracket for Distance Compensation

Appearance	Model	Remarks
	ZJ-XBU1	Used for distance compensation using a Displacement Sensor.

Specifications

Sensor Head

Item / Model	ZJ-SD100
Applicable Amplifier	ZJ-SDA11
Sensing distance	5 to 100 mm
Measurement voltage	Standard mode: ±50 KV, Precision mode: ±5 KV max. (See note 1.)
Display resolution	Standard mode: 10 V, Precision mode: 1 V (See note 2.)
Linearity (See note 3.)	±5% FS (See note 4.)
Response time	20 ms
Ambient temperature range	Operating and storage: 0 to 50°C (with no condensation or icing)
Ambient humidity range	Operating and storage: 35% to 85% (with no condensation)
Dielectric strength	1,000 VAC, 50/60 Hz, 1 min (See note 5.)
Vibration resistance	Sensor Head: 3-mm double amplitude at 10 to 55 Hz for 45 min each in the X, Y, and Z directions, Preamplifier: 1.5-mm double amplitude at 10 to 55 Hz for 2 h each in the X, Y, and Z directions
Degree of protection	IP20
Connection method	Pre-wired Connector (standard length: 2 m)
Weight (packed state)	Approx. 150 g
Materials	Sensor Head: Stainless steel Preamplifier: PC
Accessories	Instruction sheet, Preamplifier Mounting Brackets (ZX-XBT1)

Note 1. Even within the measurement voltage range, the measurement may become saturated if the Sensor is too close to the object being measured. If that happens, the display value will remain almost constant. Use the distance from the measurement surface (mm) times 1 KV as a guide.
2. This is the minimum value obtainable when a ZJ-SDA11 Amplifier Unit is connected.
3. When the ambient temperature is stable at 25°C.
4. When the measurement distance is 10 mm and the measurement voltage is −5 to 5 KV.
5. When a Preamplifier is used (excluding the Sensor Head).

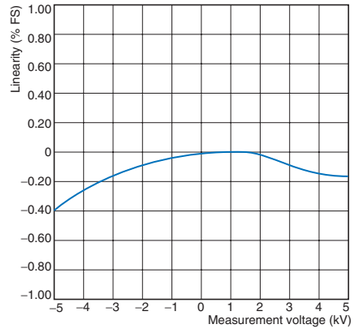
Ionizer

Item / Model	ZJ-SDA11
Measurement period	1 ms
Possible average count settings (See note 1.)	1, 2, 4, 8, 16, 32, 64, 128, 256, 512, or 1,024
Linear output (See note 2.)	Current output: 4 to 20 mA/FS, Max. load resistance: 300 Ω Voltage output: ±4 V (±5 V, 1 to 5 V (See note 3.)), Output impedance: 100 Ω
Judgment outputs (3 outputs: OPE1, OPE2, and OPE3)	NPN open-collector output, 30 VDC, 20 mA max. Residual voltage: 1.2 V max.
Bank shift input, zero reset input, timing input, reset input	ON: Short-circuited with 0-V terminal or 1.5 V or less OFF: Open (leakage current: 0.1 mA max.)
Functions	Measurement value display, display reverse, scaling, peak and bottom hold, distance compensation, present value display, limit number of display digits, monitor focus, mask hold, sensing area compensation, output value display, zero reset, linear output compensation, distance trigger, warning output, setting value display, zero reset memory, peak hold, delay hold, bank switching, resolution display, various timers, bottom hold, delay time setting, enable display, initialization, sample hold, timing inputs, zero reset display, teaching, peak-to-peak, key lock, judgment output display, direct threshold value setting, hold, clamp value setting, ECO mode, hysteresis adjustment, average hold, precise measurement mode
Indications	Operation indicators (OPE1 (orange), OPE2 (green), OPE3 (yellow), 7-segment main digital display (red), 7-segment sub-digital display (yellow), power ON indicator (green), zero reset indicator (green), enable indicator (green)
Power supply voltage	24 VDC ±10%, Ripple (p-p): 10% max.
Current consumption	24-VDC power supply: 140 mA max.
Ambient temperature range	Operating and storage: 0 to 50°C (with no icing or condensation)
Ambient humidity range	Operating and storage: 35% to 85% (with no condensation)
Insulation resistance	20 MΩ (at 500 VDC)
Dielectric strength	1,000 VAC, 50/60 Hz, 1 min
Shock resistance	Destruction: 300 m/s^2 3 times each in 6 directions (up/down, left/right, and forward/backward)
Vibration resistance	Destruction: 0.7-mm double amplitude at 10 to 150 Hz for 80 min each in the X, Y, and Z directions
Connection method	Pre-wired (standard length: 2 m)
Weight (packed state)	Approx. 350 g
Materials	Case: PBT (polybutylene terephthalate), Cover: Polycarbonate
Accessories	Instruction sheet

Note 1. The response time of the linear outputs is calculated as follows: Measurement period × (Average count setting + 1).
The response time of the judgment outputs is calculated as follows: Measurement period × (Average count setting + 1).
2. The output can be switched between a current output and voltage output using a switch on the bottom of the Amplifier.
3. Setting is possible using the monitor focus function.

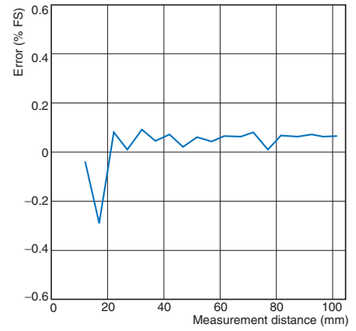
Engineering Data (Typical)

Measurement Voltage vs. Linearity



Measurement object: Charged plate (150 × 150 mm, 20 pF)
Measurement distance: 10 mm
Measurement mode: Standard

Measurement Distance vs. Error



Measurement object: Charged plate (150 × 150 mm, 20 pF)
Measurement voltage: 5 kV
Measurement mode: Standard
Measurement after teaching the measurement distance to the Amplifier.

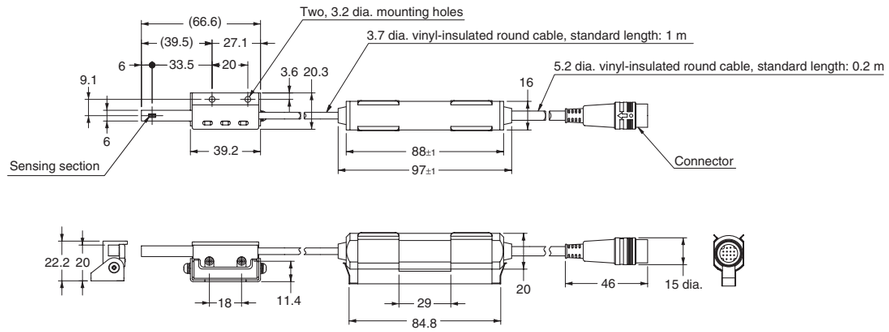
Dimensions

(Unit: mm)

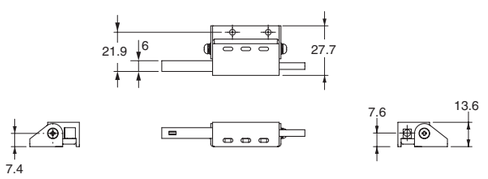
Electrostatic Sensor

Sensor Head
ZJ-SD100

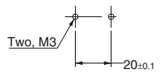
Angle 1



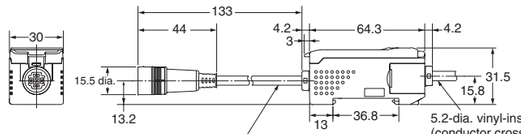
Angle 2

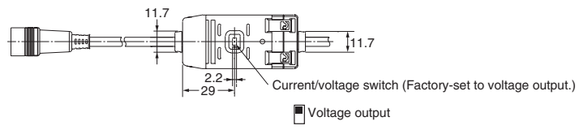


Mounting Hole Dimension



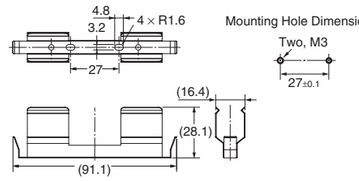
Amplifier
ZJ-SDA11





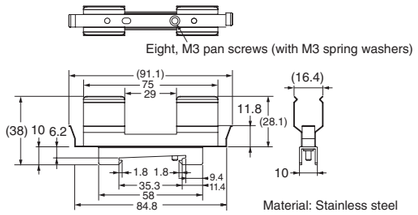
Accessories (Order Separately)

Preamplifier Mounting Brackets
ZX-XBT1



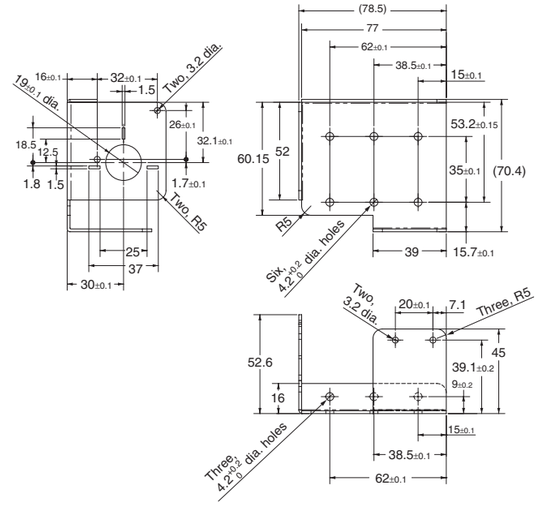
Material: Stainless steel

ZX-XBT2

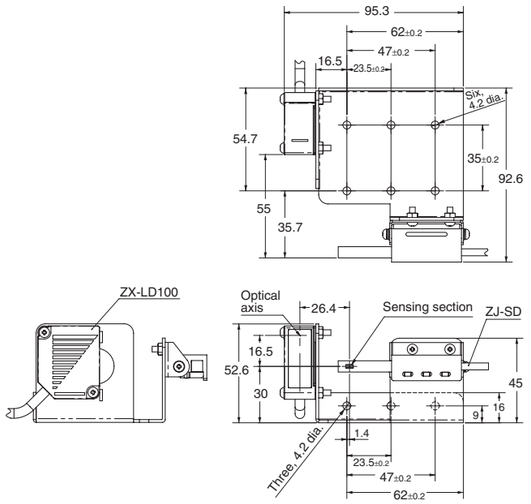


Material: Stainless steel

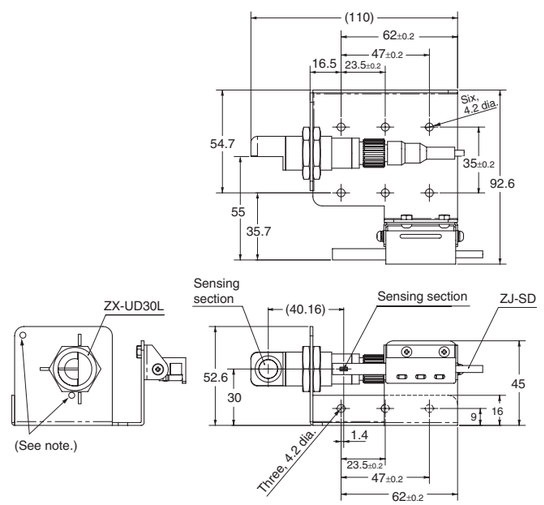
Sensor Head Mounting Bracket for Distance Compensation
ZJ-XBU1



■ Dimensions with ZX-LD100 Sensor Head



■ Dimensions with ZX-UD30L Sensor Head



Note: Mounting holes for the type ZX-LD100.

ZJ-FA20

from the FACTORY

High-performance, Low-price Standard Ionizer

Achieve a High-performance, Reliable Ionization Environment at a Reasonable Investment

Ionizer

Basic Fan Type

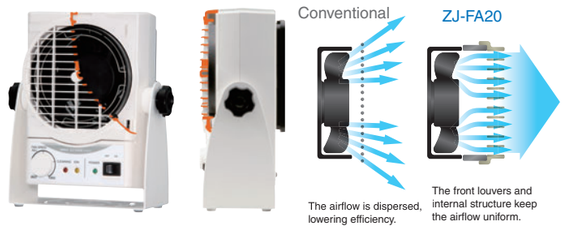
ZJ-FA20

High-speed Ionization

A Unique Structure Provides a Uniform Airflow

The newly developed airflow control system (AFCS) structure optimally controls the airflow of the fan to efficiently carry the discharged ions to the target workpiece. This gives the ZJ-FA20 the highest ionization performance in its class.
Even with the airflow at a low setting, ionization is completed in approximately 2 seconds. Small, light workpieces are not blown away by the airflow, and static electricity is effectively neutralized.

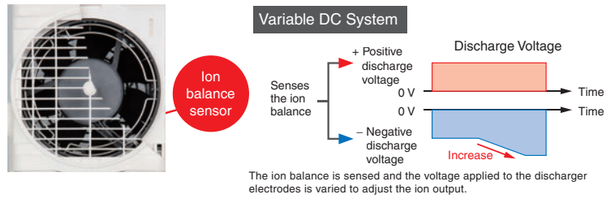
Airflow Control System (AFCS)



More Versatile Use

Long-term Ionization Performance

A built-in ion balance sensor constantly senses the ion condition, and a variable DC system maintains the optimal ion balance at all times. This provides a long-term, stable balance for reliable ionization.

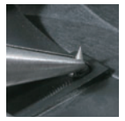


The ion balance is sensed and the voltage applied to the discharger electrodes is varied to adjust the ion output.

Clean and Easy Maintenance

The ZJ-FA20 features a fully opening front cover. Removing it allows neat and thorough cleaning, without spreading dust and other particles around.
The discharger electrodes can also be replaced for long-term operation. LED lamps show the ion-generating condition and indicate when cleaning is required.

Cleaning the discharger electrodes

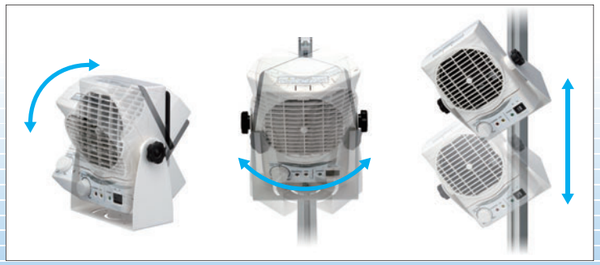


Replacing the discharger electrodes

Easy-to-see lamps

A Variety of Installation Possibilities

In addition to table-top or bench-top installation, the ZJ-FA20 can be easily mounted to an aluminum pipe. The angle can also be freely adjusted using the angle-adjustment knob and oblong stand.



Ordering Information

Ionizer

Model
ZJ-FA20

Accessories (sold separately)

Appearance	Model
Replacement Filter	ZJ9-FL120N1 (pack of 10)
Replacement Discharger Electrode	ZJ9-NDT06FN1 (pack of 6)

Ratings and Specifications

Ionizer

Item / Model	ZJ-FA20
Power supply voltage	24 VDC (See note 1.)
Current consumption	900 mA max. (input from included AC adapter)
Discharge voltage	±7 kV
Discharge method	Variable DC
Airflow (m^3/min.)	1.4 to 2.3 m^3/min (typical)
Ionization time (See note 2.)	1.2 s (0.8 s with no Filter)
Ion balance (See note 2.)	±10 V max.
Amount of generated ozone	0.01 ppm max. (measured at a distance of 50 mm from air outlet)
Indicators	High-voltage output lamp: ION (yellow), Cleaning lamp: CLEANING (orange), Power lamp: POWER (green)
Main functions	Automatic ion balance adjustment, airflow adjustment, manual ion balance adjustment
Ambient temperature range	Operating and storage: 0 to 50°C (with no icing or condensation)
Ambient humidity range	Operating: 35% to 65%, storage: 35% to 85% (with no condensation)
Weight (packed state)	Approx. 2.0 kg
Materials	Unit: ABS, Discharger: Tungsten, stand: SPCC
Accessories	Instruction sheet, AC adapter, warning labels (2 types), FG connection cable (2 m)

Note 1: Be sure to use the included AC adapter for Ionizer operation.
Note 2: Typical default settings:
Measurement conditions: Center of air outlet at a distance of 300 mm, with maximum fan speed
Ionization time: Time required to lower charge from ±1,000 V to ±100 V
Ion balance measurement time: 10 s
Plate monitor: 150 × 150 mm, 20 pF

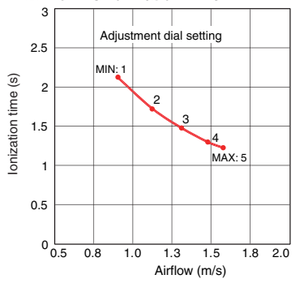
AC Adapter (Provided: UIA336-24-JR01A-998 by UNIFIVE CO., LTD.)

Item	
Input voltage	100 to 240 VAC, 50/60 Hz
Power consumption	100 VAC: 70 VA MAX 240 VAC: 115 VA max.
Output voltage	24 VDC
Output current	1.5 A max.
Ambient temperature range	0 to 40°C
Ambient humidity range	35% to 85% (with no condensation)
Weight	Approx. 175 g (excluding power cable)
Dimensions	43.8 × 28 × 95.9 (W × D × H) mm

* If an additional AC adapter is required, please contact your OMRON sales representative

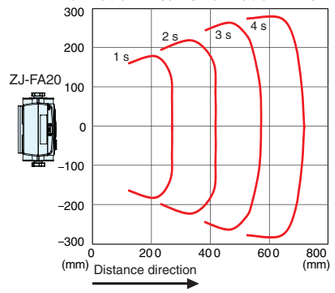
Engineering Data

Airflow vs. Ionization Time



Measurement Conditions
Installation distance: 300 mm
Ionization time: ±1,000 V to ±100 V
Plate monitor: 150 × 150 mm, 20 pF

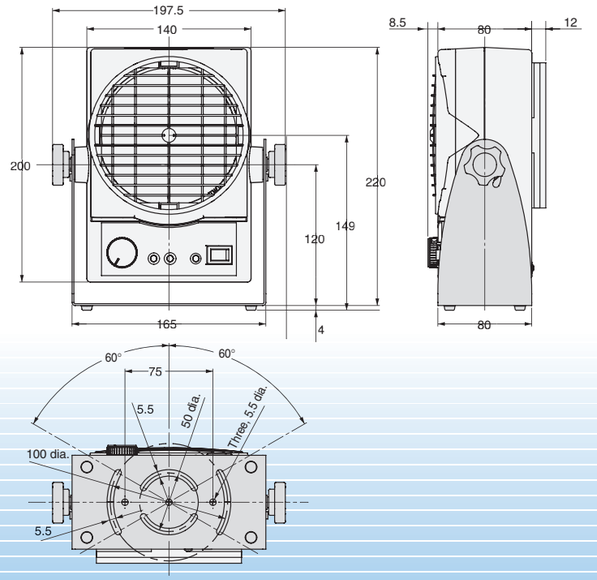
Ionization Area vs. Ionization Time



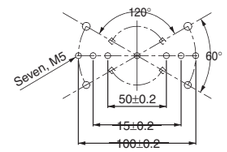
Measurement Conditions
Airflow: Max.
Ionization time: ±1,000 V to ±100 V
Plate monitor: 150 × 150 mm, 20 pF

Dimensions

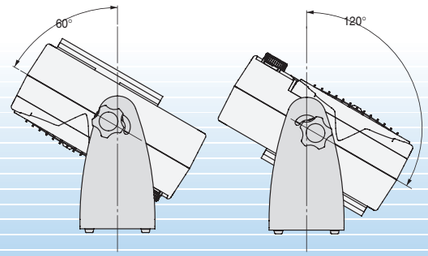
(Unit: mm)
Dimensional tolerance when not specified: International tolerance grade IT16



Mounting Hole Dimensions



Rotation Range



ZJ-FA10

from the FACTORY

Advanced Ionizer with Visible Discharge Status

Is your ionization complete?
Is your Ionizer working normally?
The ZJ-FA10 reduces on-site anxiety with its easy-to-read display and sensing functions.

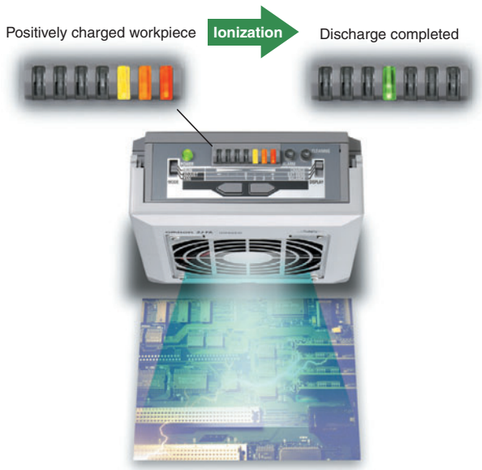
Ionizer
Advanced Fan Type
ZJ-FA10

CE

Sensing

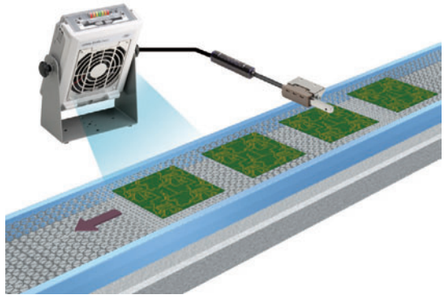
Sensing Charge and Discharge Status

Sensing workpiece charge and discharge status using the sensor on the face of the ZJ-FA10.
Easy-to-read indicator display on top of the ZJ-FA10.



Connect an Electrostatic Sensor Head

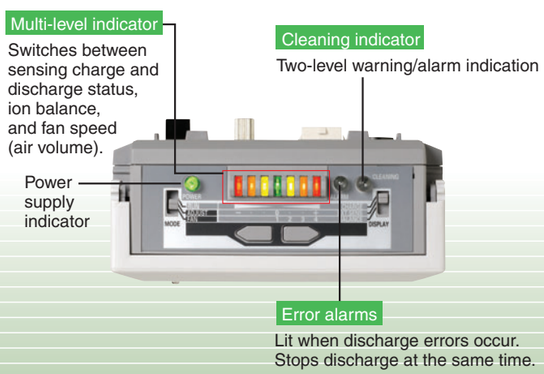
More accurate checking of remote workpiece charge and discharge status is possible by connecting the ZJ-SD100 Electrostatic Sensor Head.



Visualization

Easy-to-read Indicators

All indicators are located on top of the ZJ-FA10 for greater visibility. Charge/discharge status, ion balance/cleaning alarms, and other operation status can be checked easily. Alarm signals can also be sent as external outputs.

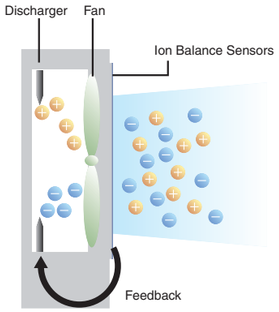


Performance

Efficient Ionization and Slimmer Unit with Dual-mixing Variable-DC Method

Thorough mixing and blowing of generated ions by the fan together with sensing and control of the ion balance. This method enables more sophisticated use of both ionization speed and ion balance performance. Innovations in the internal structure have made the Sensor dramatically slimmer.

Slim



Setting

Wide Range of Installation Options Perfect for Cell Manufacturing

Use the ZJ9-FA-BR01 Pipe-mounting Bracket to rotate the Sensor up, down, left, or right after installation by turning a knob. The Sensor can also be mounted to pipes in the cell manufacturing line.

Sensor can be adjusted to any direction after installation.

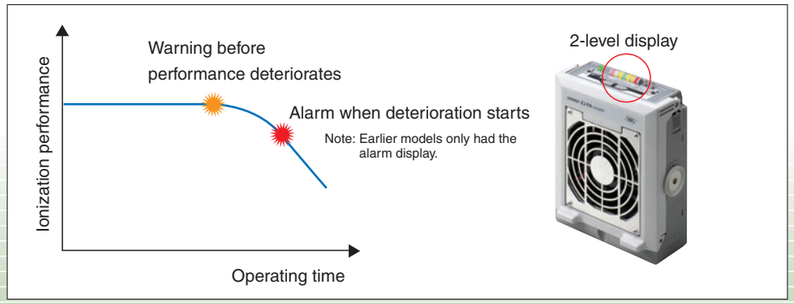
Pipe mounting makes the Sensor suitable for a variety of installation environments.

Maintenance

Completely Open Construction Means Simple Maintenance

The front panel opens up in three stages to a maximum of 180°. The discharger, internal parts, and the fan can be simply and effectively cleaned.

The ion output status is constantly monitored and a cleaning warning (output) given before the ionization characteristics deteriorate. The ZJ-FA10 facilitates on-site maintenance to maintain optimal ionization performance.



Ordering Information

Ionizer

Model
ZJ-FA10

Accessories

	Model
Pipe-mounting Bracket (for 28-dia. pipes)	ZJ9-FA-BR01
Replacement Filters	ZJ9-FL92 (pack of 10)
Replacement Dischargers	ZJ9-NDT08F (pack of 8)

Specifications

Ionizer

Item / Model	ZJ-FA10
Power supply voltage	24 VDC ±10% ripple (p-p) 10% max.
Current consumption	600 mA max.
Discharge voltage	±7 kV max.
Discharge method	Dual-mixing variable-DC method
Airflow	1.8 m^3/min max.
Discharge time (See note.)	Within 3.0 seconds
Ion balance (See note.)	±10 V max.
Amount of generated ozone	0.01 ppm max. (measured at a distance of 10 mm from air outlet)
Main functions	Fan speed adjustment, manual balance adjustment, charge/discharge status display, cleaning display/output, error display/output, key lock, connection to an external Electrostatic Sensor
External outputs	Warning output/cleaning output: Output from photo-MOS relay (300 mA at 30 VDC)
External Sensor	ZJ-SD-100 Electrostatic Sensor Head
Ambient temperature range	Operating and storage: 0 to 50°C (with no condensation or icing)
Ambient humidity range	Operating and storage: 35% to 65% (with no condensation or icing)
Weight (packed state)	2.7 Kg
Materials	Unit: ABS, Discharger: Tungsten
Accessories	Instruction sheet, AC adapter, I/O cable, English warning labels (3 types)

SA130A-2413V-S AC Adapter (enclosed, made by Sino-American Japan Co., Ltd.)

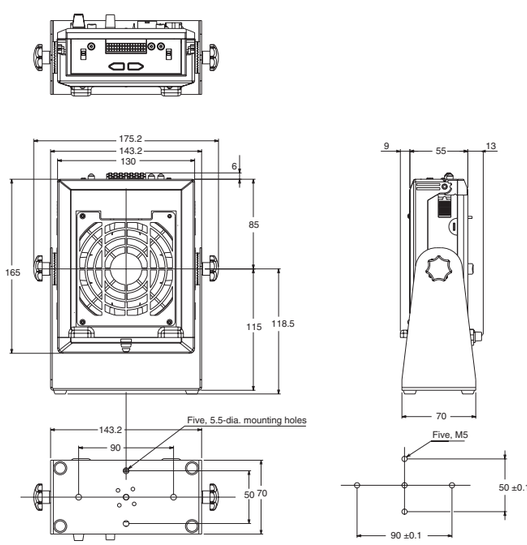
Item	
Input voltage	90 to 240 VAC, 50/60 Hz
Input current	0.5 A max.
Output voltage	24 VDC
Output current	1.3 A max.
Ambient operating temperature	0 to 40°C
Ambient operating humidity	20% to 80% (with no condensation)
Weight	250 g (without power cable)
Dimensions	52 × 35.2 × 119 mm (W × D × H)

Note: Measurement location: center of air outlet at a distance of 300 mm
Discharge time: From ±1,000 V to ±100 V
Ion balance measurement time: 10 seconds
Plate monitor: 150 x 150 mm, 20 pF

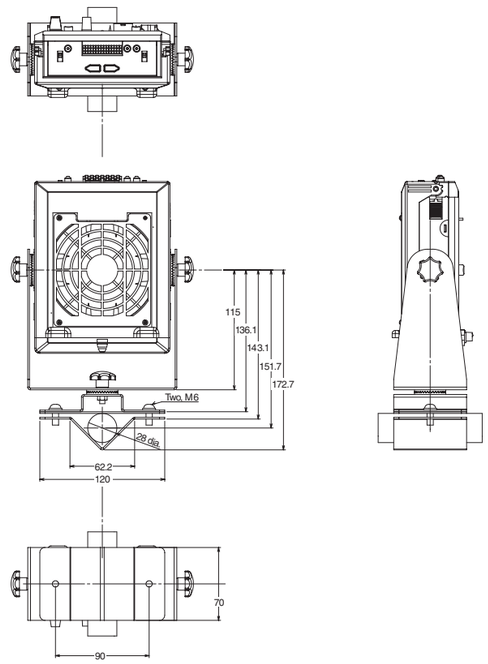
Dimensions

(Unit: mm)

ZJ-FA10 Ionizer

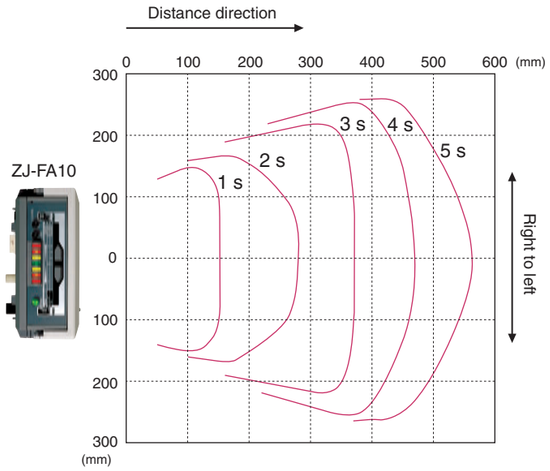


Using ZJ9-FA-BR01
Pipe-mounting Bracket

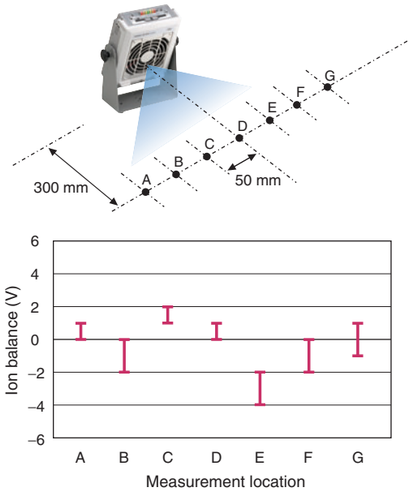


Engineering Data (Typical)

Discharge Area vs. Discharge Time



Ion Balance (Position Fluctuation Characteristics)



[Measurement conditions]
Airflow: Maximum
Discharge time: From +1,000 V to +100 V
Plate monitor: 150 x 150 mm, 20 pF

ZJ-BAS

from FACTORY

The highest level of ionization in its class.

Ionizer

Digital Bar Ionizer

ZJ-BAS

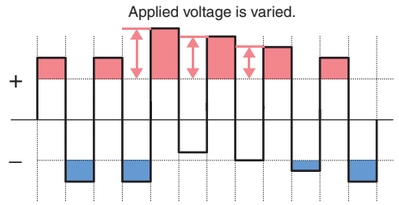
CE

Three Technologies Supporting Effective and Efficient Ionization

Ion Sensing and Variable-AC System

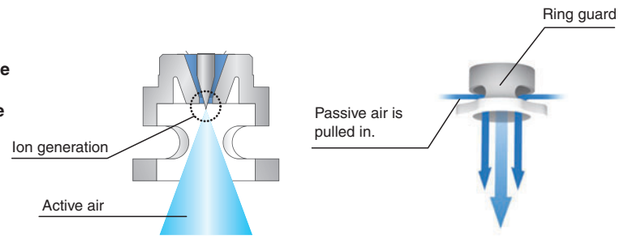
Industry First

An ion sensor installed on the bottom of the Ionizer detects the charge and ion balance.
The applied voltage is flexibly controlled according to the ion balance conditions to raise ionization efficiency.



Micro Power Spraying (MPS) Structure

High-speed airflow is achieved by minimizing the air nozzle diameter. An optimal cone shape is also employed for the inside of the nozzle to further improve ion dispersion. By using a special ring guard shape to pull passive (external) air into the active air stream, the total airflow is dramatically increased.

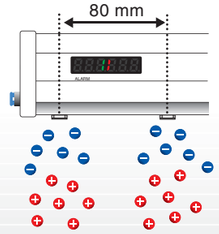


Optimized Discharge Electrode Pitch Optimized Discharge Electrode Pitch

Setting the discharge electrodes at a pitch that is 80 mm longer than in our previous models achieves an optimal layout that unifies ionizing performance and reduces ion recombination. This model ionizes over long distances with or without the use of an Air Purge Ionizer.

■ **ZJ-BAS**

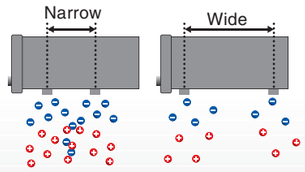
A small amount of ion recombination.



■ **Previous Models**

A large amount of ion recombination.

The larger pitch causes uneven ion discharge.



Improving Ease of Use

The Digital Ion Display Supports Safe, Reliable Settings.

Industry First

From either the Remote Control or the Ionizer...

The Digital Ion Display guides you when making settings. Settings that are important for ionization performance, such as the frequency and ion balance, can be made and displayed safety and reliably from the Ionizer itself, or by using the Remote Control.

Settings can be made from the Ionizer itself.

ZJ-BAS-R01/R02 (sold separately)

A Variety of Displays

Ion Balance Display

The charged state is displayed using colors.

Negative ions Positive ions

When there are many negative ions

When there are many positive ions

Set Value Display

The current set value is shown on the right side of the display.
The set value can be numerically confirmed, so the setting can be quantified.
This allows identical settings to be made reliably and in a short time even across multiple Ionizers.

Frequency setting

Ion balance adjustment

Cleaning sensitivity

Cleaning Display

Notifies when cleaning is required.

Setting Lock

Disables all operations.

Operation Stop Mode Makes Maintenance Easy

The Operation Stop Mode allows for safe cleaning and replacement work. The digital display and LED lamps tell you that the Ionizer is in Operation Stop Mode so you won't forget to return to Operation Mode when you are finished doing maintenance. Both regular operations and maintenance can be done safety and reliably.

Operation Stop Mode

The LED lamp will flash to indicate that the Ionizer is in Operation Stop Mode.

Operations from external equipment, such as stopping ionization and performing status management, can be done easily by connecting the Ionizer to a PLC using an I/O cable.

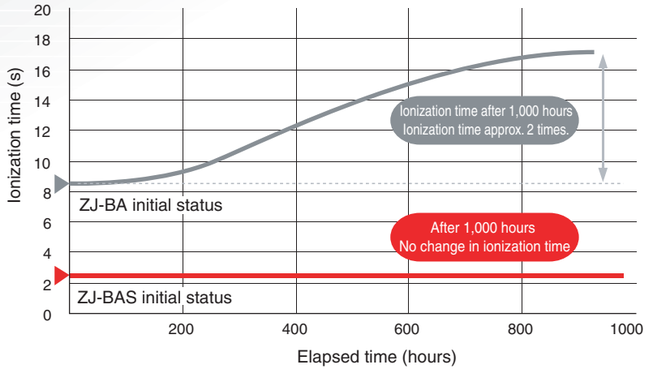
PLC

Low Running Cost

M.P.S. Construction Prolongs the Required Maintenance Period by 5 Times Compared to Our Previous Model

Greatly Reduces Maintenance Requirements

The M.P.S. nozzle emits clean air from around the discharge electrode, thus decreasing the amount of foreign matter adhesion, and dramatically extending the time before cleaning is required.



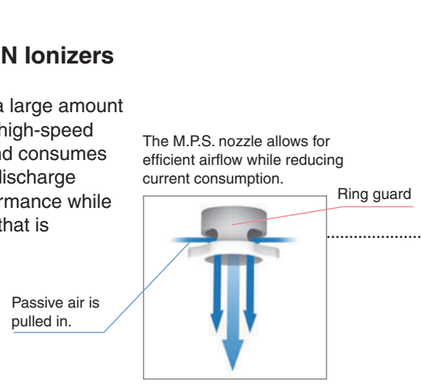
ZJ-BA
ZJ-BAS

Measurement conditions
Installation distance: 1,000 mm
Air pressure: 0.3 Mpa
Charge plate monitor: 150 mm × 150 mm, 20 pF
Ionization time: ±1,000 V to ±100 V

Energy-saving is a Basic Concept for OMRON Ionizers

Generally, bar-type Ionizers use compressed air. Therefore, a large amount of compressed air is needed, especially for long-distance or high-speed ionization. This increases the load rate of the compressor, and consumes large amounts of electricity. The ZJ-BAS uses an optimized discharge electrode pitch and M.P.S. nozzle to improve ionization performance while using an energy-saving structure (low-current consumption) that is environmentally friendly.

The M.P.S. nozzle allows for efficient airflow while reducing current consumption.



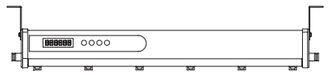
80-mm Discharge Electrode Pitch Dramatically Reduces Replacement Costs

The 80 mm discharge electrode pitch and variable-AC system reduce the number of discharge electrodes required by 60%. In addition to reducing the cleaning time, the periodic replacement of the electrodes has also been reduced, thereby dramatically reducing the running cost of the Ionizer.

Effective length (mm)	Number of Discharge Modules
500	5
580	6
740	8
900	10
1,300	15
1,540	18

Ratings and Characteristics

Ionizer
ZJ-BAS

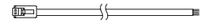


I/O Cable
ZJ-BAS-FC

Used for connecting external devices.

Power Supply Cable
Select from the two available types.

Cable with Connector on One End
ZJ-BAS-MC□□A
Used when using a DC power supply.



Cable with Connectors on Both Ends
ZJ-BAS-MC□□B
Used when using an AC adapter.

AC Adapter
ZJ-BAS-PS01

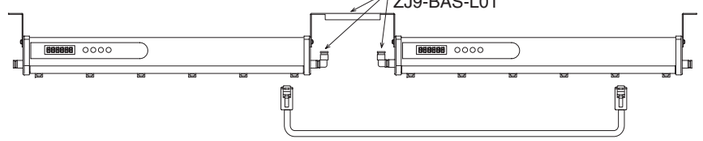
Special Remote Control

Remote Control
ZJ-BAS-R01

Remote Control Receiver
ZJ-BAS-R02

When Linking Ionizers

Linking Bracket Set
ZJ9-BAS-L01



Power Supply Cable
ZJ-BAS-MC□□RB
(for linking Ionizers)

The length of the cables that can be linked depends on the number of Ionizers to be linked together.
Contact your OMRON sales representative for details.

Ordering Information

Ionizer

Appearance	Total length	Effective length	Model
	370 mm	500 mm	ZJ-BAS050
	450 mm	580 mm	ZJ-BAS058
	610 mm	740 mm	ZJ-BAS074
	770 mm	900 mm	ZJ-BAS090
	1,170 mm	1,300 mm	ZJ-BAS130
	1,410 mm	1,540 mm	ZJ-BAS154

Power Supply Cable

Appearance	Type	Cable length	Model
	Cable with Connector on One End (one ferrite core provided, 30-dia × 39 mm)	2 m	ZJ-BAS-MC02A
		5 m	ZJ-BAS-MC05A
		10 m	ZJ-BAS-MC10A
		15 m	ZJ-BAS-MC15A
		20 m	ZJ-BAS-MC20A
	Cable with Connector on Both Ends (one ferrite core provided, 30-dia × 39 mm)	2 m	ZJ-BAS-MC02B
		5 m	ZJ-BAS-MC05B
		10 m	ZJ-BAS-MC10B
		15 m	ZJ-BAS-MC15B
		20 m	ZJ-BAS-MC20B
	Used for connecting Ionizers	710 mm	ZJ-BAS-MC07RB
		790 mm	ZJ-BAS-MC08RB
		950 mm	ZJ-BAS-MC09RB
		1,110 mm	ZJ-BAS-MC11RB
		1,510 mm	ZJ-BAS-MC15RB
		1,750 mm	ZJ-BAS-MC17RB

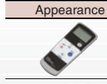
I/O Cable

Appearance	Cable length	Model
	2 m	ZJ-BAS-FC02A
	5 m	ZJ-BAS-FC05A
	10 m	ZJ-BAS-FC10A
	15 m	ZJ-BAS-FC15A
	20 m	ZJ-BAS-FC20A

AC Adapter

Appearance	Specifications	Model
	Input: 100 to 240 VAC Output: 24 VDC × 2	ZJ-BAS-PS01

Special Remote Control

Appearance	Type	Model
	Remote Control	ZJ-BAS-R01
	Remote Control Receiver (Receiver, USB cable, Bracket)	ZJ-BAS-R02

Linking Bracket Set

Appearance	Contents	Model
	Linking Bracket (1) 6-dia. Elbow Air Joint (×2)	ZJ9-BAS-L01

Discharge Electrode Module

Appearance	Quantity	Model
	Set of 5	ZJ9-BAS-NT105
	Set of 10	ZJ9-BAS-NT110

Cleaning Tool

Appearance	Quantity	Model
	Pack of 20	ZJ9-BA-CT01

Ratings and Characteristics

Ionizer

Item \ Model	ZJ-BAS050	ZJ-BAS058	ZJ-BAS074	ZJ-BAS090	ZJ-BAS130	ZJ-BAS154
Ionizer length (mm)	370	450	610	770	1,170	1,410
Effective ionization length (mm)*1	500	580	740	900	1,300	1,540
Power supply voltage	24 VDC ±10%, ripple (p-p) 10% max.					
Current consumption	520 Ma max. (discharge frequency 0.08 to 0.5 Hz: 400 mA (typical), 1 to 10 Hz: 350 mA (typical), 20 to 40 Hz: 300 mA (typical)					
Discharge method	Sensing and a Variable-AC System					
Discharge voltage	6.5 k VP-P					
Discharge electrode	Tungsten electrode					
Recommended installation distance	50 to 2,000 mm					
Ion balance*2	±30 V max.					
Power supply connector	Modular type, 8-pin connector (at both ends of Unit)					
Air inlet	6-dia., one-touch coupling (at both ends of Unit)					
Maximum air pressure	0.3 MPa max.					
External I/O – Input	Discharge stop input (Turns ON at 12 to 24 VDC), input impedance: 8.2 kΩ					
External I/O – Output	Discharge stop output, cleaning output, alarm output, high-pressure error output: Signal output from photo MOS relay (100 mA max at 24 VDC)					
Display	Seven-segment LED display					
ID number	001 to 050					
Ion balance adjustment function	Yes					
Maximum number of linkable units	7 Units					
Material	Ionizer: ABS-resin, facing electrodes: Stainless steel					
Ambient temperature range	Operating: 10 to 40°C, Storage: 0 to 40°C (with no icing or condensation)					
Ambient humidity range	Operating: 35% to 65%, Storage: 35% to 85% (with no condensation)					
Weight (Ionizer only)	Approx. 0.58 kg	Approx. 0.64kg	Approx. 0.8 kg	Approx. 0.94kg	Approx. 1.28 kg	Approx. 1.5 kg
Accessories	Two mounting brackets, two M4 screws, instruction manual				Two mounting brackets, two M4 screws, 1 medium bracket, instruction manual	

*1 Measurement conditions
Installation distance: 50 mm
Airflow: 1 L /min per hole
Frequency: 10 Hz
Charge plate monitor: 150 × 150 mm, 20 pF
Ionization time: (1,000 V to 100V/–1,000V to –100V): 1 s max.)

*2 Measurement conditions
Installation distance: 300 mm
Airflow: 1 L /min per hole
Frequency: 10 Hz
Charge plate monitor: 150 × 150 mm, 20 pF

AC Adaptor

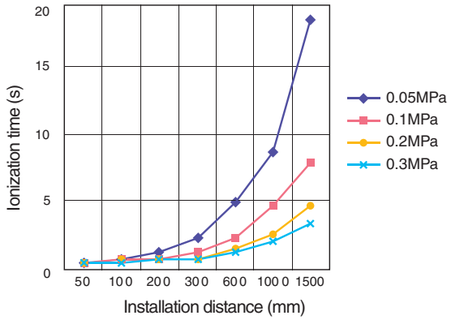
Item \ Model	ZJ-BAS-PS01
Input voltage	100 to 240 VAC
Input current	1.2A max.
Output voltage	24 VDC
Output current	3.75A max.
Number of output ports	2 ports
Product configuration	Adaptor box, AC adaptor AC power cable
Weight (without package)	Adapter box: Approx. 30 g AC Adapter: Approx. 430 g AC power supply cable: Approx. 260 g

Special Remote Control

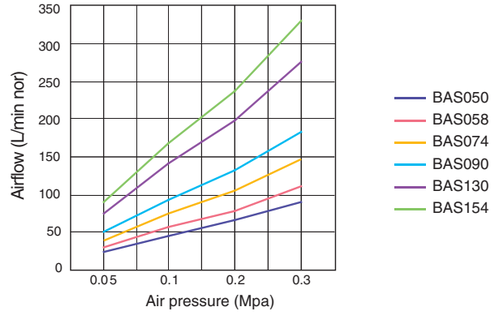
Item \ Model	ZJ-BAS-R01	ZJ-BAS-R02
Product configuration	Remote Control only	Receiver Cable (150 mm) Brackets (not including Remote Control)
Communications method	Infrared communications	
Number of detectable Units	50 Units	---
Power supply	Three AAA batteries	Supplied from the ZJ-BAS Ionizer
Weight (without package)	Approx. 115 g	Receiver: Approx. 5 g Cable: Approx. 6 g Bracket: Approx. 5 g
Accessories	Instruction manual	

Engineering Data

Relationship of Air Pressure and Installation Distance to Ionization Time

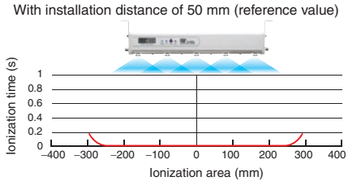


Bar Length vs. Air Pressure and Airflow



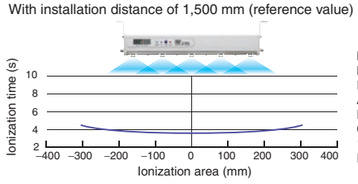
Ionization Time for Each Ionization Area

With installation distance of 50 mm (reference value)



Measuring conditions:
Model: ZJ-BAS050
Installation distance: 50 mm
Air pressure: 0.3 MPa
Frequency: 10 Hz
Charge plate monitor: 150 mm × 150 mm, 20 pF
Ionization time: ±1,000 V to ±100 V

With installation distance of 1,500 mm (reference value)



Measuring conditions:
Model: ZJ-BAS050
Installation distance: 1,500 mm
Air pressure: 0.3 MPa
Frequency: 10 Hz
Charge plate monitor: 150 mm × 150 mm, 20 pF
Ionization time: ±1,000 V to ±100 V

Safety Precautions

Refer to *Warranty and Limitations of Liability*.

⚠ WARNING

This product cannot be used in applications to directly or indirectly detect people for the purpose of providing safety.
Do not use this product as a sensing device to protect people.

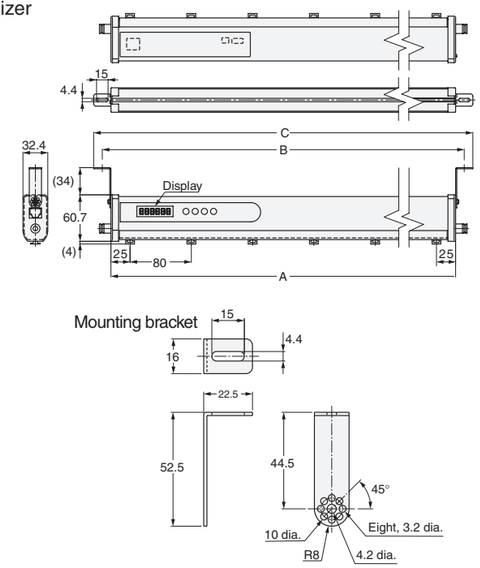
Precaution for Correct Use

Do not use the product in ambient atmospheres or environments that exceed the ratings.

Dimensions

(Units: mm)
Dimensional tolerance when not specified: International tolerance grade IT16

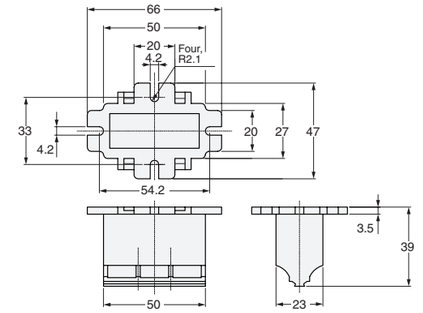
Ionizer



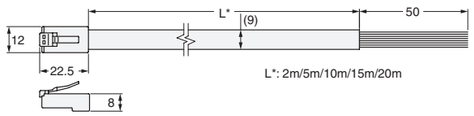
The dimensions and number of Discharge Electrode Modules for each model are shown in the following table.

Model	A (mm)	B (mm)	C (mm)	Discharge Electrode Module
ZJ-BAS050	370	394	416	5
ZJ-BAS058	450	474	496	6
ZJ-BAS074	610	634	656	8
ZJ-BAS090	770	794	816	10
ZJ-BAS130	1,170	1,194	1,216	15
ZJ-BAS154	1,410	1,434	1,456	18

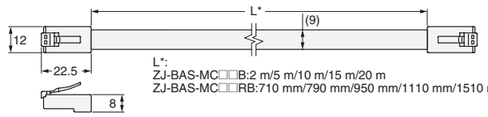
Auxiliary mounting bracket
Provided with the ZJ-BAS130/BAS154



Power Supply Cable
ZJ-BAS-MC□□A

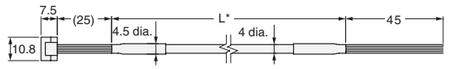


ZJ-BAS-MC□□B/MC□□RB



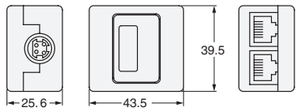
L*:
ZJ-BAS-MC□□B:2 m/5 m/10 m/15 m/20 m
ZJ-BAS-MC□□RB:710 mm/790 mm/950 mm/1110 mm/1510 mm/1750 mm

I /O Cable
ZJ-BAS-FC□□A

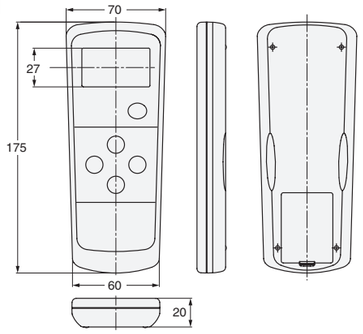


L*: 2 m/5 m/10 m/15 m/20 m

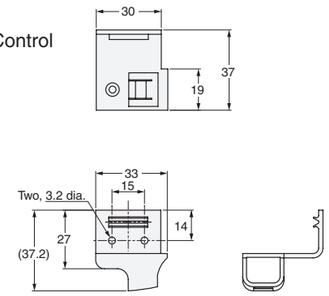
AC Adapter (Adapter box)
ZJ-BAS-PS01



Remote Control
ZJ-BAS-R01

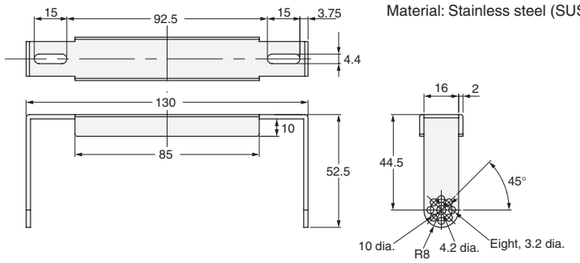


Receiver for the Remote Control (Bracket)
ZJ-BAS-R02



Linking Bracket
ZJ-BAS-L01

Material: Stainless steel (SUS304)



KS1

from the FACTORY

Ionizer
Air Push Type
KS1

Wide Range of Nozzles for Optimal Ionization

From pin-point to wide-area ionization,
the optimal ionization for the application is now possible.

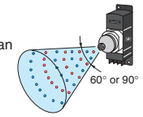
Select the Nozzle for the Application

●Standard Nozzle

- An application example of the basic standard nozzle.

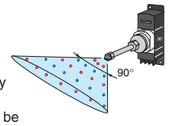
●Shower Nozzle

- Injects ionized air over an angle of 60° or 90°.



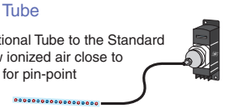
●Flat Nozzle

- Injects ionized air over an angle of 90° to enable ionization of comparatively wide objects.
- The air blow direction can be changed.



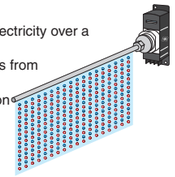
●Combination of Standard Nozzle and Optional Tube

- Attach the Optional Tube to the Standard Nozzle to blow ionized air close to the workpiece for pin-point ionization.



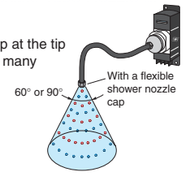
●Straight Bar Nozzle

- Neutralizes static electricity over a wide area.
- Five ionization areas from 100 to 500 mm.
- The air blow direction can be changed.



●Combination of Flexible Tube Nozzle and Optional Cap

- Combine the nozzle cap at the tip of the nozzle to enable many ionization applications.



Efficient Pin-point Ionization

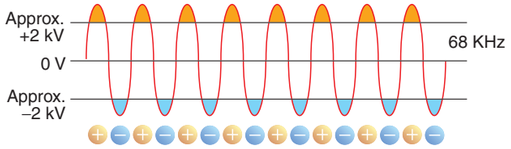
High-speed ionization of the target spot is possible by using a tube or metal pipe to get closer to the workpiece.
The Ionizer can be brought as close as 1 mm to the workpiece.

24-VDC Power Supply with No High-voltage Wiring Required

Only the 24-VDC power supply for the Ionizer is needed.
No dangerous high-voltage wiring is required.

High-frequency AC Method with Excellent Ion Balance

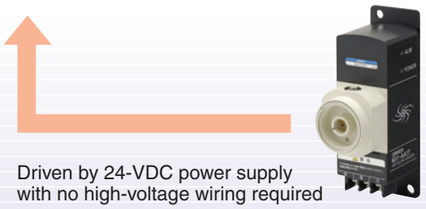
Uses more compact high-frequency AC method with excellent ion balance and stability.



Compact Type with Built-in Controller

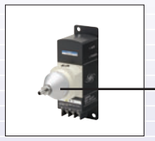
Controller section built in. Simple all-in-one Unit that installs easily just about anywhere.

The Ionizer oscillates at a much higher frequency (68 kHz) than the previous AC method to generate high-density ions.
Noise generation is also reduced by a ±2 kV low-voltage corona discharge.



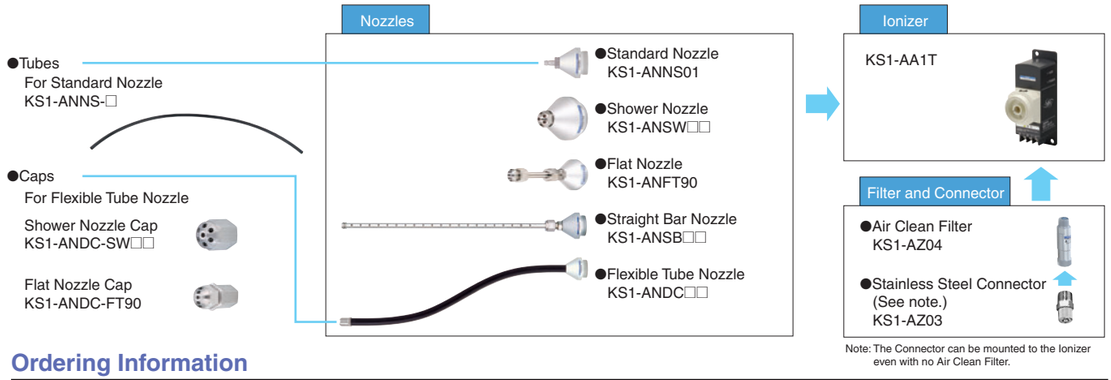
Driven by 24-VDC power supply with no high-voltage wiring required

●With standard nozzle



Safe because the high-voltage parts are covered by the nozzle.

Product Configuration



Note: The Connector can be mounted to the Ionizer even with no Air Clean Filter.

Ordering Information

Ionizer

Model
KS1-AA1T

Nozzles

Product		Model
Standard Nozzle		KS1-ANNS01
Shower Nozzle	60°	KS1-ANSW60
	90°	KS1-ANSW90
90° Flat Nozzle		KS1-ANFT90
Straight Bar Nozzle	100 mm	KS1-ANSB10
	200 mm	KS1-ANSB20
	300 mm	KS1-ANSB30
	400 mm	KS1-ANSB40
	500 mm	KS1-ANSB50
Flexible Tube Nozzle	100 mm	KS1-ANDC10
	200 mm	KS1-ANDC20
	300 mm	KS1-ANDC30
	400 mm	KS1-ANDC40
	500 mm	KS1-ANDC50

Tubes

Product	Model
500-mm Conductive Urethane Tube	KS1-ANNS-U
500-mm Fluororesin Tube	KS1-ANNS-F
500-mm Silicone Tube	KS1-ANNS-S

Caps

Product	Model
60° Flexible Shower Nozzle Cap	KS1-ANDC-SW60
90° Flexible Shower Nozzle Cap	KS1-ANDC-SW90
90° Flexible Flat Nozzle Cap	KS1-ANDC-FT90

Optional Products

Product	Model
Replacement Dischargers (set of 5)	KS1-AZ01T
Tool for Replacing Dischargers	KS1-AZ02
Stainless Steel Connector	KS1-AZ03
Air Clean Filter	KS1-AZ04

Specifications

Ionizer

Item \ Model	KS1-AA1T
Power supply voltage	24 VDC ±5%
Current consumption	Approx. 100 mA
Discharge method	High-frequency AC (Approx. 68 kHz)
Output voltage	±2 kV
Safety circuit	Outputs alarms for ionization errors
Discharge time	0.8 s max. (at a distance of 50 mm from air outlet)
Ion balance	±15 V or less (at a distance of 50 mm from air outlet)
Fluid used	Air (refer to Applicable Air)
Amount of generated ozone	0.04 ppm or less (when standard nozzle used, at a distance of 300 mm from air outlet and primary side voltage of 0.25 Mpa)
Supplied air flow	Approx. 100 L/min (ANR) (when standard nozzle used, at primary side voltage of 0.15 Mpa)
Indicators	Green POWER indicator lit while Ionizer ON, red ALM indicator lit for ionizing errors.
Air pressure range	When Standard Nozzle or Flexible Tube Nozzle is used. 0.02 to 0.25 MPa
	When Standard Nozzle Tube is attached. 0.02 to 0.12 MPa
	When Shower Nozzle, Flat Nozzle, or Straight Bar Nozzle is used. 0.05 to 0.40 MPa
Operating ambient temperature	0 to 40°C (with no condensation or icing)
Operating ambient humidity	35% to 65% (with no condensation)
Weight	235 g (Ionizer only)
Accessories	One ground lead (2 m)

Air Clean Filter

Item \ Model	KS1-AZ04
Fluid used	Air
Connection aperture	R(Rc)1/8
Collected particle size	0.1 μm
Collection efficiency	99.9%
Volume of air processed	40 l/min (ANR) (See note.)
Film area	29.9 cm^2
Max. voltage used	0.97 MPa
Withstanding pressure	1.47 MPa
Operating temperature range	5 to 45°C
Weight	11 g
Recommended tightening torque	400 to 600 N·cm
Unit material	Aluminum alloy (alumite treated)
Element material	Porous, hollow thread membrane

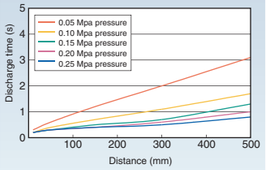
Note: At 0.7 Mpa (pressure drop of 0.03 Mpa)

Air Used

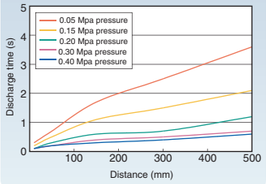
1. Make sure the pipes are adequately flushed with compressed air before connection. The pipes may become clogged or malfunctions may occur if the air in the pipes is contaminated by chips, sealing tape, rust, or other impurities.
2. Use air that does not contain oil or water. We recommend using clean dry air with a dew point of −10°C or lower and a maximum collected particle size of 0.01 μm.
3. Application is not possible if the air or the surrounding atmosphere contains organic solvents, phosphate hydraulic oil, sulfur dioxide, chlorine gas, acid or similar substance.

Engineering Data (Typical)

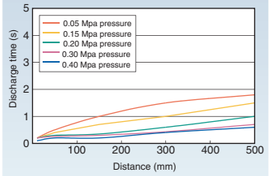
Standard Nozzle
KS1-ANNS01



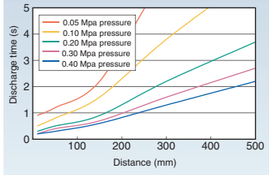
60° Shower Nozzle
KS1-ANSW60



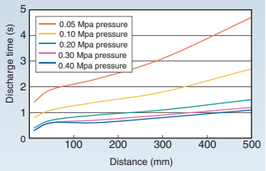
90° Shower Nozzle
KS1-ANSW90



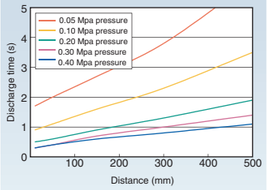
Flat Nozzle
KS1-ANFT90



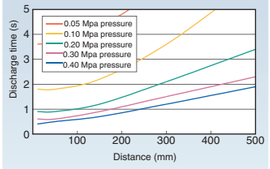
100-mm Straight Bar Nozzle
KS1-ANSB10



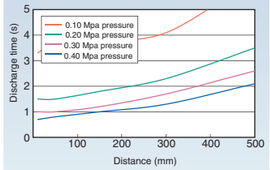
200-mm Straight Bar Nozzle
KS1-ANSB20



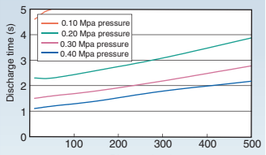
300-mm Straight Bar Nozzle
KS1-ANSB30



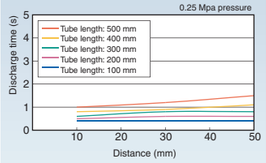
400-mm Straight Bar Nozzle
KS1-ANSB40



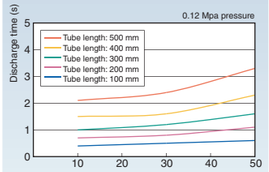
500-mm Straight Bar Nozzle
KS1-ANSB50



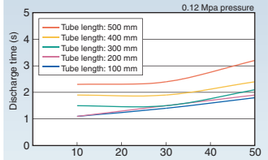
Flexible Tube Nozzle
KS1-ANDC□



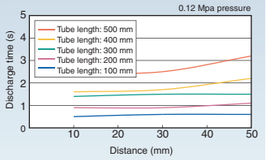
KS1-ANNS-U□ Connected to KS1-ANNS01
Standard Nozzle with Conductive Urethane Tube



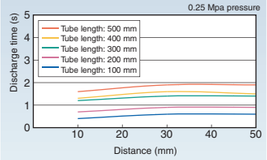
KS1-ANNS-F□ Connected to KS1-ANNS01
Standard Nozzle with Fluororesin Tube



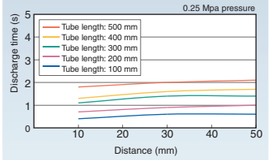
KS1-ANNS-S□ Connected to KS1-ANNS01
Standard Nozzle with Silicon Tube



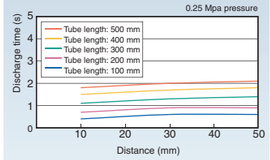
KS1-ANDC-SW60 Connected to KS1-ANDC□
Flexible Tube and 60° Shower Nozzle Cap



KS1-ANDC-SW90 Connected to KS1-ANDC□
Flexible Tube and 90° Shower Nozzle Cap



KS1-ANDC-FT90 Connected to KS1-ANDC□
Flexible Tube and Flat Nozzle Cap

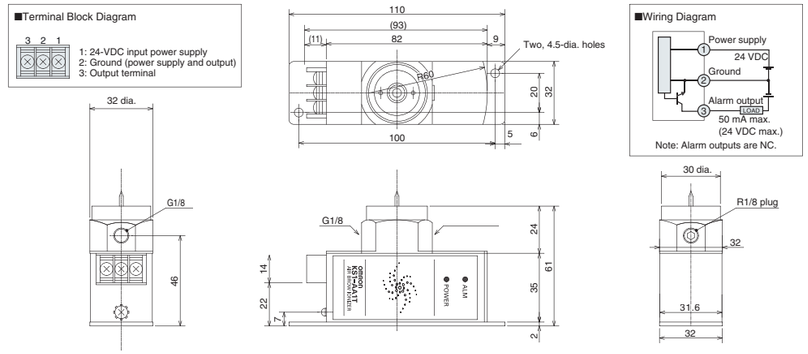


Measurement conditions
Discharge time: Time required to lower charge from 1,000 V to 100 V
Plate monitor: 150 × 150 mm, 20pF

Dimensions

(Unit: mm)

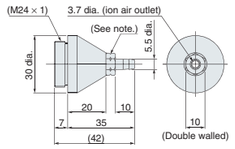
Ionizer



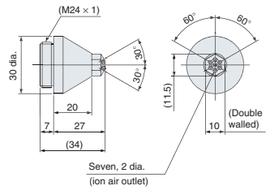
Nozzles and Optional Products Used with the Ionizer

Nozzles

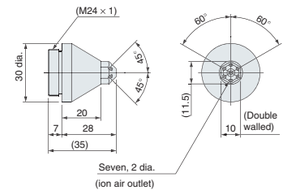
Standard Nozzle
KS1-ANNS01



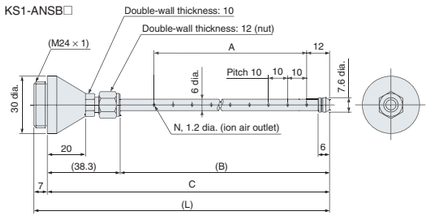
60° Shower Nozzle
KS1-ANSW60



90° Shower Nozzle
KS1-ANSW90

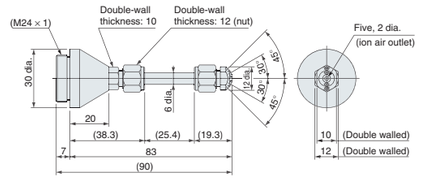


Straight Bar Nozzles
KS1-ANSB□

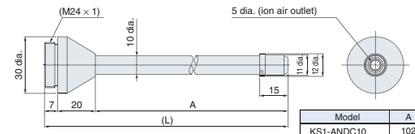


Model	A	B	C	L	N
KS1-ANSB10	100	129.7	168	175	11
KS1-ANSB20	200	229.7	268	275	21
KS1-ANSB30	300	329.7	368	375	31
KS1-ANSB40	400	429.7	468	475	41
KS1-ANSB50	500	529.7	568	575	51

Flat Nozzle
KS1-ANFT90



Flexible Tube Nozzles
KS1-ANDC□



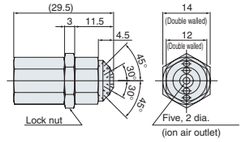
Model	A	L
KS1-ANDC10	102	129
KS1-ANDC20	202	229
KS1-ANDC30	302	329
KS1-ANDC40	402	429
KS1-ANDC50	502	529

Dimensions

Caps

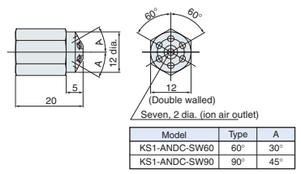
Flexible Flat Nozzle Cap

KS1-ANDC-FT90



Flexible Shower Nozzle Caps

KS1-ANDC-SW□

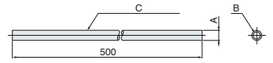


Model	Type	A
KS1-ANDC-SW60	60°	30°
KS1-ANDC-SW90	90°	45°

Optional Tubes

Optional Tubes for Standard Nozzles

KS1-ANNS-□

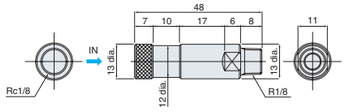


Model	A	B	C
KS1-ANNS-U	6 dia.	4 dia.	Conductive Urethane Tube
KS1-ANNS-F	7 dia.	5 dia.	Fluororesin Tube
KS1-ANNS-S	7 dia.	4 dia.	Silicon Tube

Optional Products

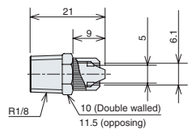
Optional Air Clean Filter

KS1-AZ04



Stainless Steel Connector

KS1-AZ03



- Attached to the Ionizer for air tube connection.
- If using products from other manufacturers, consider using stainless steel products for less impact on the ozone layer.

MEMO

This document provides information mainly for selecting suitable models. Please read the Instruction Sheet carefully for information that the user must understand and accept before purchase, including information on warranty, limitations of liability, and precautions.

Note: Do not use this document to operate the Unit.

OMRON Corporation **Industrial Automation Company**
Tokyo, JAPAN
Contact: www.ia.omron.com

Regional Headquarters
OMRON EUROPE B.V.
Sensor Business Unit
Carl-Benz-Str. 4, D-71154 Nufringen, Germany
Tel: (49) 7032-811-0/Fax: (49) 7032-811-199

OMRON ELECTRONICS LLC
One Commerce Drive Schaumburg,
IL 60173-5302 U.S.A.
Tel: (1) 847-843-7900/Fax: (1) 847-843-7787

OMRON ASIA PACIFIC PTE. LTD.
No. 438A Alexandra Road # 05-05/08 (Lobby 2),
Alexandra Technopark,
Singapore 119967
Tel: (65) 6835-3011/Fax: (65) 6835-2711

OMRON (CHINA) CO., LTD.
Room 2211, Bank of China Tower,
200 Yin Cheng Zhong Road,
PuDong New Area, Shanghai, 200120, China
Tel: (86) 21-5037-2222/Fax: (86) 21-5037-2200

Authorized Distributor:

© OMRON Corporation 2009 All Rights Reserved.
In the interest of product improvement,
specifications are subject to change without notice.

CSM_1_6_0911 Printed in Japan
Cat. No. E374-E1-04 0809 (1205)