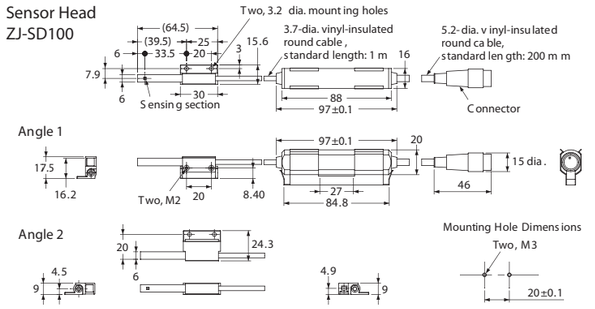
Dimensions

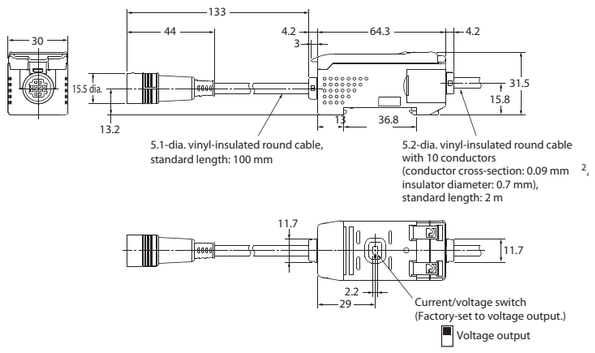
(Unit: mm)

Sensor

Sensor Head
ZJ-SD100

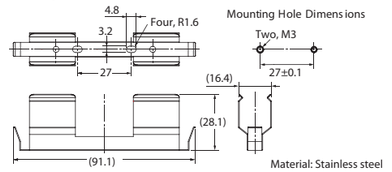


Amplifier
ZJ-SDA11

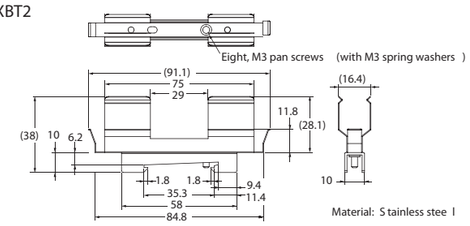


Accessories (Order Separately)

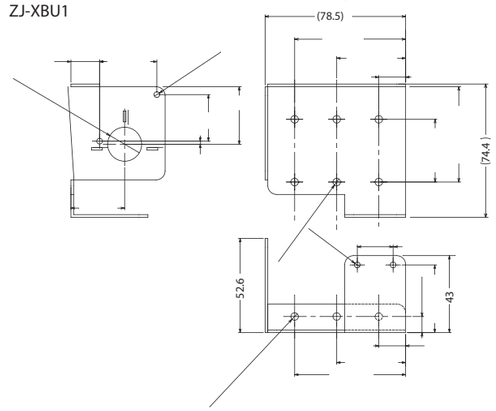
Preamplifier Mounting Brackets
ZX-XBT1



ZX-XBT2



Distance Compensation Sensor Head Mounting Bracket
ZJ-XBU1



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

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

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Note: Specifications subject to change without notice.

Cat. No. E367-E1-01

1005

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NEW

OMRON

Smart Electrostatic Sensor

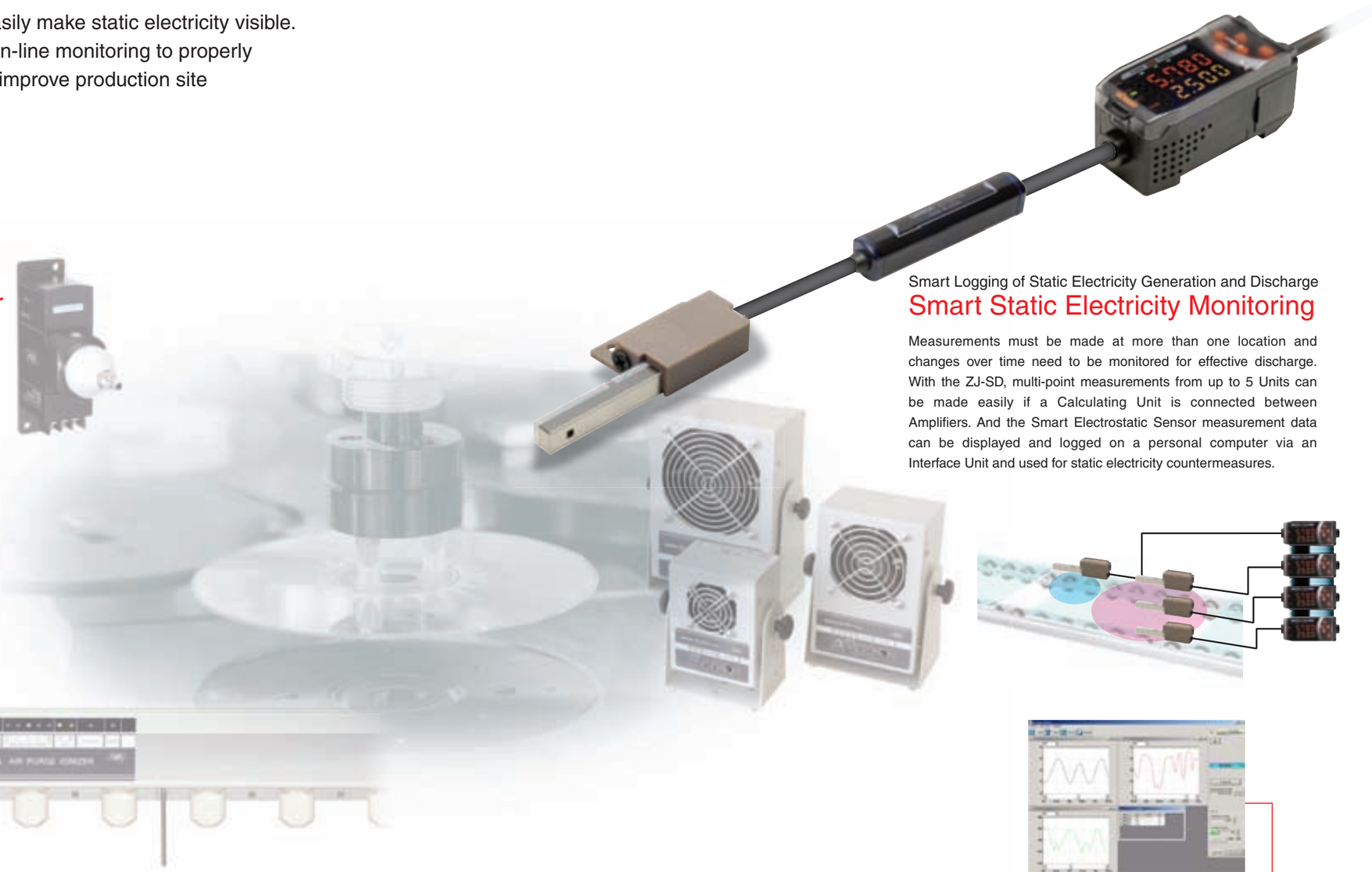
ZJ-SD Series

Smart Static Electricity Sensing: Making Static Electricity Visible

realizing

Smart In-line Measurement of Production Site Static Electricity

The ZJ-SD uses a compact Sensor Head and Amplifier to easily make static electricity visible. Low repeatability 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.

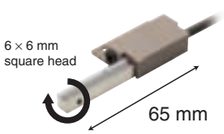


Compact Head and Digital Display Amplifier with Minimum Mounting Space

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 × 65 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

Static charge is displayed directly.

Smart Logging of Static Electricity Generation and Discharge

Smart Static Electricity Monitoring

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

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

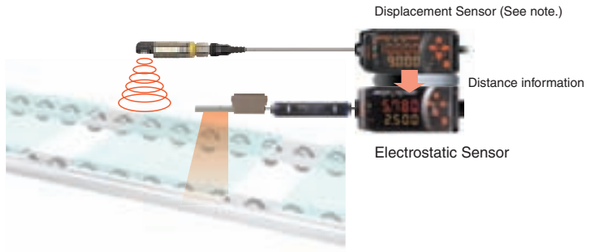
The ZJ-SD provides the highest detection accuracy in the industry when combined with the ZX Displacement Sensor. And even more precise measurements are possible with the compensation function that adjusts to the size of the workpiece.

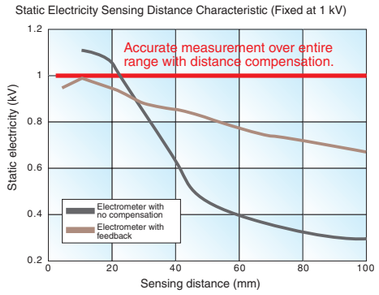
Workpiece Distance Compensation

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.

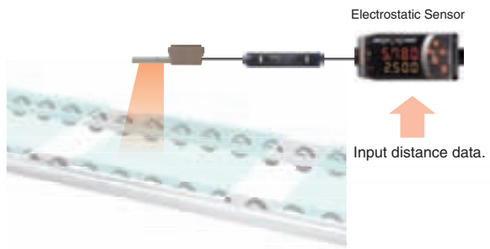
Note: Ultrasonic Displacement Sensors are also available. Ask your OMRON representative for details.





Unaffected by Measurement Distance

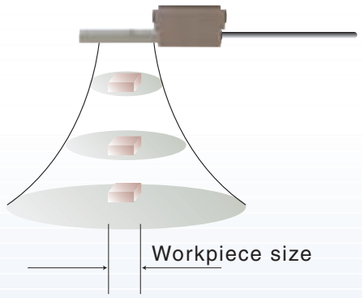
In addition to distance data compensation performed by the Displacement Sensor, errors from distance fluctuations can also be reduced by directly inputting the installation distance into the Amplifier.



Workpiece Size Compensation

Accurate Static Charge Measurements for Minute Workpieces

Based on the detection principle of electrostatic sensors, the measurement area is approximately five times the installation distance. To accurately measure the charge for very small objects, the size of the workpiece can be input and the current compensated based on a comparison of the installation distance recorded in the Preamplifier and the size of the sensing area. Except for the workpiece, static inside the sensing area, however, must be 0 V.



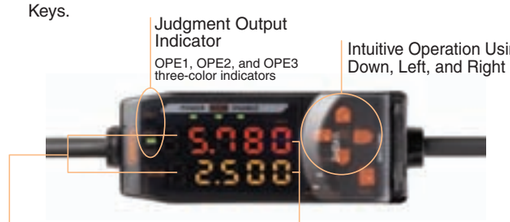
Long distance, Highly accurate detection

Our Highest Priority: Easy Onsite Operation

User Friendly

Simple Settings Using Key Operations

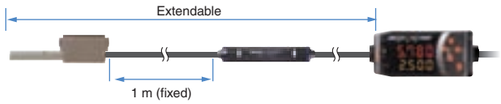
A seven-segment, two-row display is provided along with workpiece charge and threshold value displays.
Settings are easy to make using Up, Down, Left, and Right Keys.



User Friendly

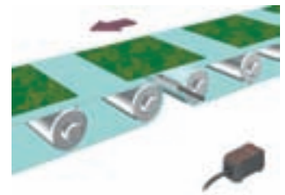
Remote Detection

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

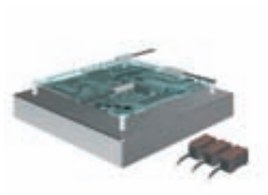


Applications

Effective for measuring static electricity that occurs when conveying liquid crystal substrates, static electricity on mounted PCBs, etc.



Measurement of Charge on PCBs during Conveying



Measurement of Charge on Liquid Crystal Substrates

Latest Information on OMRON Static Electricity Countermeasures

http://www.fa.omron.co.jp/

■ Ionizer (Bar Type)
ZJ-BA Series

■ Ionizer (Fan Type)
ZJ-FA Series

■ Ionizer (Air Push Type)
KS1 Series

Ordering Information

Sensor

Sensor Head

Appearance	Sensing distance	Model
	5 to 100 mm	ZJ-SD100

Accessories (Order Separately)

Calculating Unit

Appearance	Model
	ZX-CAL2

SmartMonitor Sensor Setup Tool for Personal Computer Connection

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

Amplifier

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

Preamplifier Mounting Brackets

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

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	

Distance Compensation Sensor Head Mounting Bracket

Appearance	Model	Remarks
	ZJ-XBU1	Used when performing distance compensation with 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 V AC, 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, Preamplifie : 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 manual, Preamplifier Mounting Brackets (ZX-XBT1)

Note 1: The measurement may become saturated if the Sensor is too close to an object not being measured, even if it is within the measurement voltage range. 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 Preamplifier 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 KV to 5 KV.
5: When a Preamplifier is used (excluding the Sensor Head).

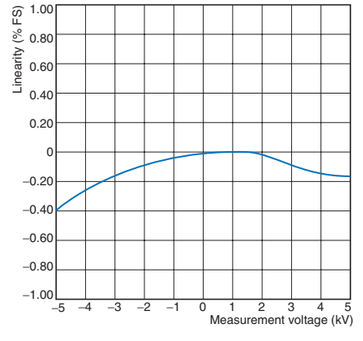
Amplifier

Item / Model	ZJ-SDA11
Measurement period	1 ms
Possible average count setting (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, detection 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	Operating and storage: 35% to 85% (with no condensation)
Insulation resistance	20 MΩ (at 500 VDC)
Dielectric strength	1,000 V AC, 50/60 Hz, 1 min
Shock resistance	Destruction: 300 m/s² 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 manual

Note 1: The response speed of the linear output is calculated as follows: Measurement period x (Average count setting + 1).
The response speed of the judgment outputs is calculated as follows: Measurement period x (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.

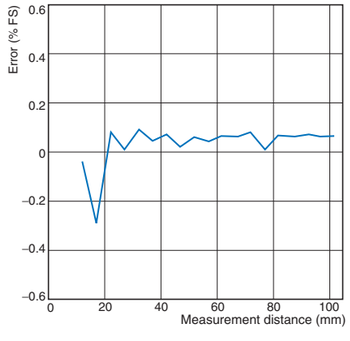
Engineering Data (Typical)

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 (kV): 5 kV
Measurement mode: Standard
Measurement after teaching the measurement distance to the Amplifier.