Smart Electrostatic Sensor
ZJ-SD

CSM_ZJ-SD_DS_E_2_3

Smart Static Electricity Sensing: Making Static Electricity Visible

- Compact sensor head and smart digital amplifier measure the electrostatic charge quantity of workpieces at all times.
- Multi-point measurements and data logging of the static electricity quantity can be performed easily.
- Best long-distance, high-precision measurements in the industry

For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

⚠ Refer to *Safety Precautions* on page 3.

Ordering Information

Electrostatic Sensor

Sensor Head

Appearance	Sensing distance	Model
	5 to 100 mm	**ZJ-SD100**

Amplifier

Appearance	Cable length	Power supply	Output method	Model
	2 m	DC	NPN output	**ZJ-SDA11**

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**

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**	

Sensor Head Mounting Bracket for Distance Compensation

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

Ratings and 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. *1
Display resolution	Standard mode: 10 V, Precision mode: 1 V *2
Linearity *3	±5% FS *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 *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
Connecting 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)

*1. The measurement may become saturated if the Sensor is too close to an object 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 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).

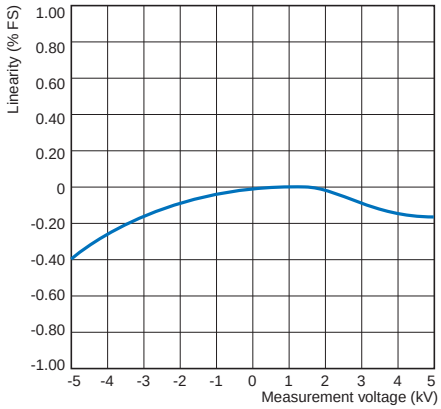
Amplifier

Item / Model	ZJ-SDA11
Measurement period	1 ms
Possible average count settings *1	1, 2, 4, 8, 16, 32, 64, 128, 256, 512, or 1,024
Linear output *2	Current output: 4 to 20 mA/FS, Max. load resistance: 300 Ω Voltage output: ±4 V (±5 V, 1 to 5 V *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
Connecting method	Pre-wired (standard length: 2 m)
Weight (packed state)	Approx. 350 g
Materials	Case: PBT (polybutylene terephthalate), Cover: Polycarbonate
Accessories	Instruction sheet

*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.

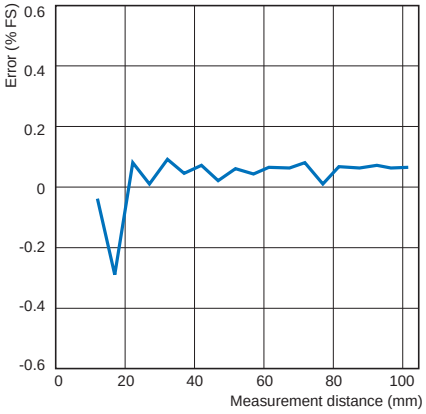
Engineering Data (Reference Value)

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.

Safety Precautions

⚠ WARNING

This product is not designed or rated for ensuring safety of persons either directly or indirectly.
Do not use it for such purposes.

Precaution for Correct Use

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

For technical information and product FAQs, refer to the *Technical Guide* on your OMRON website.

For details on information such as the usage precautions, refer to the *ZJ-SD Series Smart Electrostatic Sensor User's Manual* (Cat. No.: Z237).

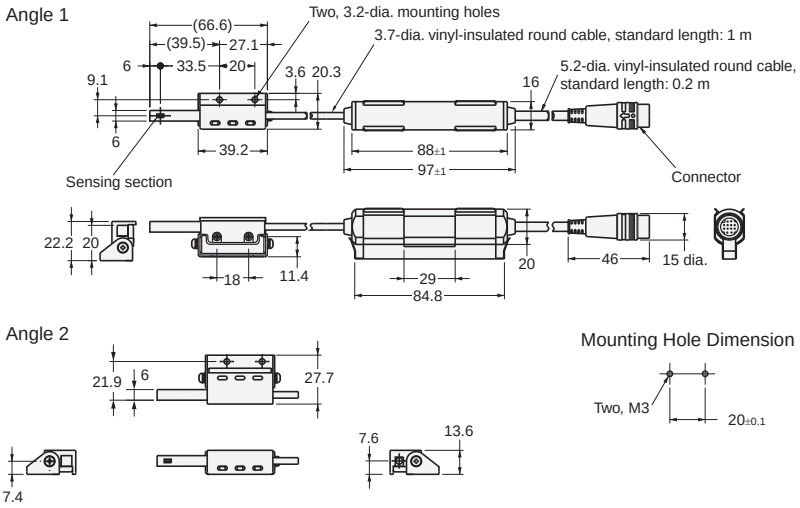
Dimensions

(Unit: mm)

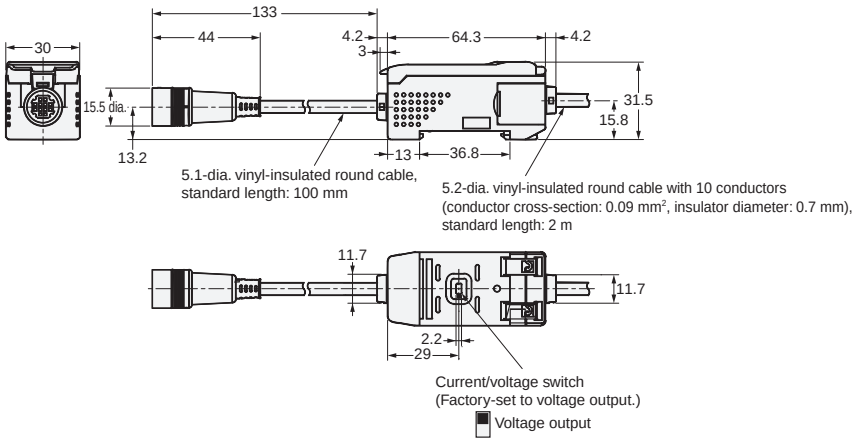
Tolerance class IT16 applies to dimensions in this data sheet unless otherwise specified.

Electrostatic Sensor

Sensor Head
ZJ-SD100

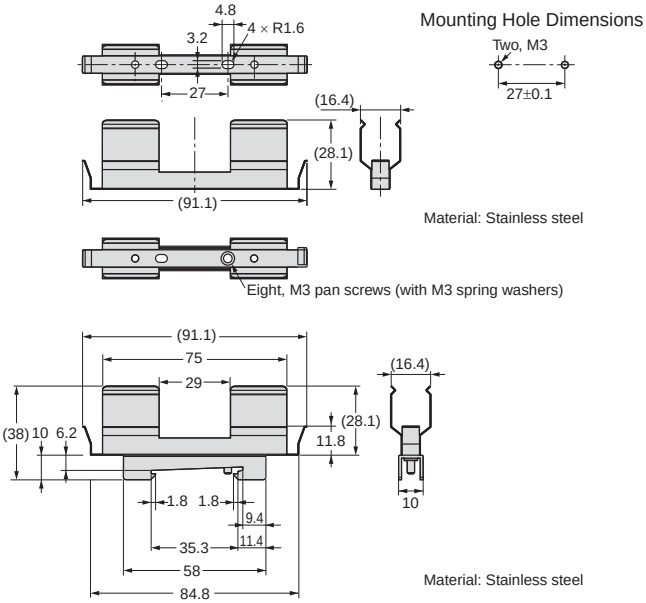


Amplifier
ZJ-SDA11

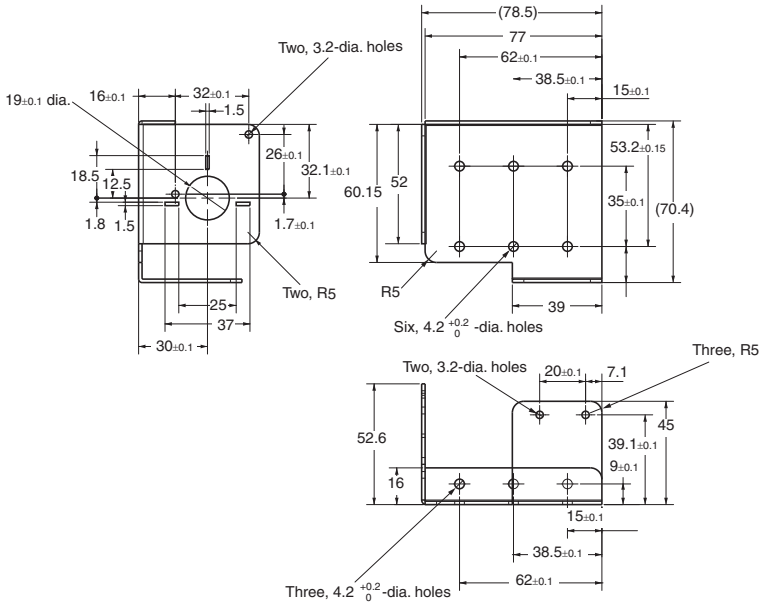


Accessories (Order Separately)

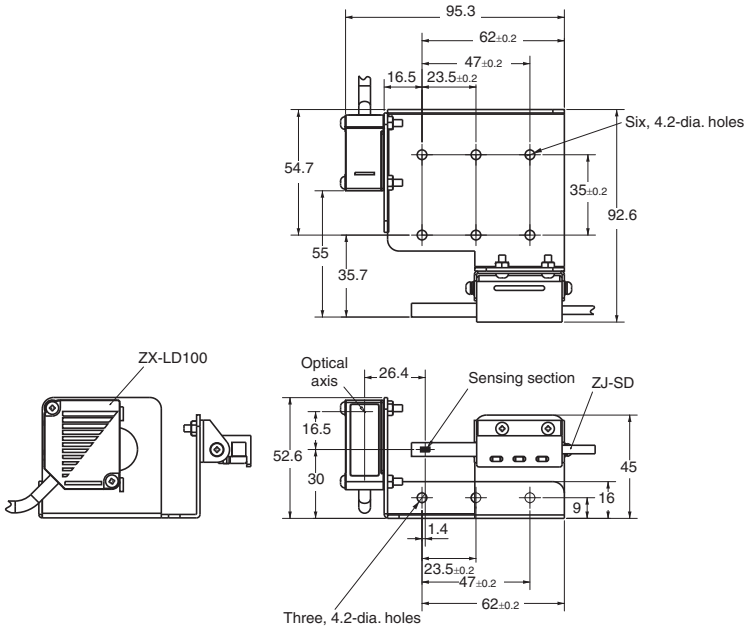
Preamplifier Mounting Brackets
ZX-XBT1



Sensor Head Mounting Bracket for Distance Compensation
ZJ-XBU1



Dimensions with ZX-LD100 Sensor Head



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