

# Electrostatic Sensor Monitor

## Series IZE11



### How to Order



IZE11 0 [ ] [ ] [ ]

#### Input/Output specifications

|          |  |
|----------|--|
| <b>0</b> | NPN open collector 2 outputs + Analog output 1-5 V   |
| <b>1</b> | NPN open collector 2 outputs + Analog output 4-20 mA |
| <b>2</b> | PNP open collector 2 outputs + Analog output 1-5 V   |
| <b>3</b> | PNP open collector 2 outputs + Analog output 4-20 mA |

#### Option 1

|            |   |
|------------|---|
| <b>Nil</b> | None  |
| <b>L</b>   | <p>Connector cable for power supply / output</p> <p>Connector cable for power supply / output ZS-28-A</p> |

Note) The cable is not connected but packed together with product for shipment.

#### Option 3

|            |  |
|------------|--|
| <b>Nil</b> | None   |
| <b>C</b>   | <p>With connector for sensor connection</p> <p>Connector for sensor connection (e-con connector) ZS-28-C</p> |

Note) The connector is not connected but packed together with product for shipment.

#### Option 2

|            |   |
|------------|---|
| <b>Nil</b> | None  |
| <b>A</b>   | <p>Bracket</p> <p>Mounting screw (M3 x 5L)</p> <p>Bracket</p>   |
| <b>B</b>   | <p>Panel mount adapter</p> <p>Panel</p> <p>Panel mount adapter</p> <p>Mounting screw (M3 x 8L)</p>  |
| <b>D</b>   | <p>Panel mount adapter + Front protective cover</p> <p>Panel</p> <p>Front protective cover</p> <p>Panel mount adapter</p> <p>Mounting screw (M3 x 8L)</p> |

Note) The options are not attached but packed together with product for shipment.

### Options / Part No.

| Description                                     | Part no. | Note                  |
|---|----------|-----------------------|
| Connector cable for power supply / output (2 m) | ZS-28-A  |                       |
| Bracket   | ZS-28-B  | With M3 x 5L (2 pcs.) |
| Connector for sensor connection                 | ZS-28-C  | 1 pc.                 |
| Panel mount adapter                             | ZS-27-C  | With M3 x 8L (2 pcs.) |
| Panel mount adapter + Front protective cover    | ZS-27-D  | With M3 x 8L (2 pcs.) |

## Specifications

| Model  | IZE11□  |   |
|--|---|---|
| <b>Connection sensor</b>                                       | IZD10-110   | IZD10-510   |
| <b>Rated measurement range</b>                                 | -0.4 kV to +0.4 kV <small>Note 1)</small>   | -20 kV to +20 kV <small>Note 2)</small>   |
| <b>Min. unit setting</b>                                       | 0.001 kV  | 0.1 kV  |
| <b>Measurement distance setting</b>                            | 10 to 50 mm   | 25 to 75 mm   |
| <b>Power supply voltage</b>                                    | 24 VDC, Ripple (p-p) 10% or less (with power supply polarity protection)                              |   |
| <b>Current consumption</b>                                     | 50 mA or less (excluding sensor unit's current consumption)   |   |
| <b>Sensor input</b>  | 1 to 5 VDC (Input impedance: 1 M)   |   |
| <b>Number of inputs</b>  | 1 input   |   |
| <b>Input protection</b>  | With excess voltage protection (up to 26.4 V)   |   |
| <b>Hysteresis</b>  | Hysteresis mode: Variable<br>Window comparator mode: Variable   |   |
| <b>Switch output</b>   | NPN or PNP open collector: 2 outputs  |   |
| <b>Max. load current</b>                                       | 80 mA   |   |
| <b>Max. applied voltage</b>                                    | 30 VDC (with NPN output)  |   |
| <b>Residual voltage</b>  | 1 V or less (with load current of 80 mA)  |   |
| <b>Short circuit protection</b>                                | With short circuit protection   |   |
| <b>Response time (including sensor response time)</b>          | 100 ms or less<br>Response time with anti-chattering function: 500 ms, 1 s, 2 s or less               |   |
| <b>Analog output</b>   | <b>Voltage output</b>   | Output voltage: 1 to 5 V (with rated pressure range), Output impedance: Approx. 1 k   |
|  | <b>Accuracy (for readings) (25°C)</b>   | ±1% F.S. or less  |
|  | <b>Current output</b>   | Output current: 4 to 20 mA (with rated pressure range)<br>Max. load impedance: 600 (at 24 VDC), Min. load impedance: 50                           |
|  | <b>Accuracy (for readings) (25°C)</b>   | ±1% F.S. or less  |
| <b>Response time (including sensor response time)</b>          | 200 ms (without filter), 1.5 s (with filter) or less  |   |
| <b>Display accuracy</b>  | ±0.5% F.S. ±1 digit or less   |   |
| <b>Display</b>   | 3 + 1/2 digit, 7-segment indicator, 2-color display (Red/Green) Sampling cycle: 5 times/s             |   |
| <b>Indicator light</b>   | OUT1: Illuminates when output is turned ON (Green), OUT2: Illuminates when output is turned ON (Red). |   |
| <b>Environmental resistance</b>                                | <b>Enclosure</b>  | IP40  |
|  | <b>Operating temperature range</b>  | Operating: 0 to 50°C, Stored: -10 to 60°C (with no freezing or condensation)  |
|  | <b>Operating humidity range</b>   | Operating/Stored: 35 to 85% RH (with no condensation)   |
|  | <b>Withstand voltage</b>  | 1000 VAC for 1 min, between live parts and housing  |
|  | <b>Insulation resistance</b>  | 50 M or more (with 500 VDC Mega), between live parts and housing  |
|  | <b>Vibration resistance</b>   | 10 to 150 Hz at whichever is smaller of 1.5 mm amplitude or 98 m/s <sup>2</sup> acceleration, in X, Y, Z direction for 2 hrs. each (de-energized) |
| <b>Impact resistance</b>                                       | 100 m/s <sup>2</sup> in X, Y, Z directions 3 times each (de-energized)                                |   |
| <b>Temperature characteristics</b>                             | ±0.5% F.S. or less (based on 25°C)  |   |
| <b>Connection method</b>                                       | Power supply, Output connection: 5-pin connector, Sensor connection: 4-pin connector                  |   |
| <b>Material</b>  | Front case: PBT, Rear case: PBT   |   |
| <b>Weight (excluding power supply/output connection cable)</b> | 30 g  |   |
| <b>Standards</b>   | CE marking, UL (CSA) compliant  |   |

Note 1) Rated value when the distance between the charged object and the sensor is 25 mm

Note 2) Rated value when the distance between the charged object and the sensor is 50 mm

# Series IZE11

## Example of Internal Circuit and Wiring

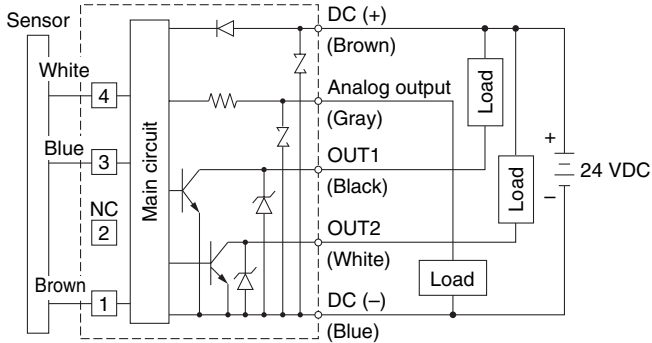
### Output specifications

The wire colors (brown, black, white, gray and blue) shown in the circuit diagram apply when SMC's power supply and output connection cable (Part no.: ZS-28-A) are used.

#### IZE110

NPN open collector output: 2 outputs  
 Max. 30 V, 80 mA  
 Residual voltage 1 V or less

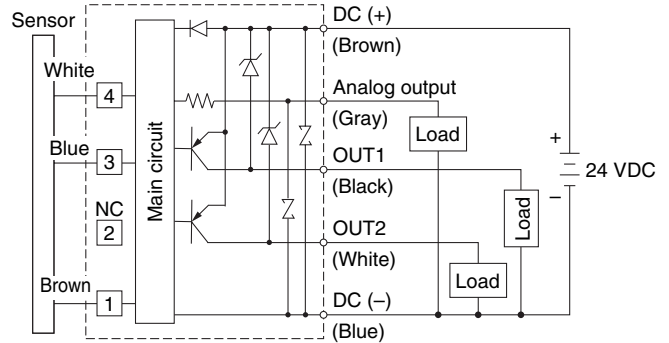
Analog output: 1 to 5 V  
 Output impedance: Approx. 1 k



#### IZE112

PNP open collector output: 2 outputs  
 Max. 80 mA  
 Residual voltage 1 V or less

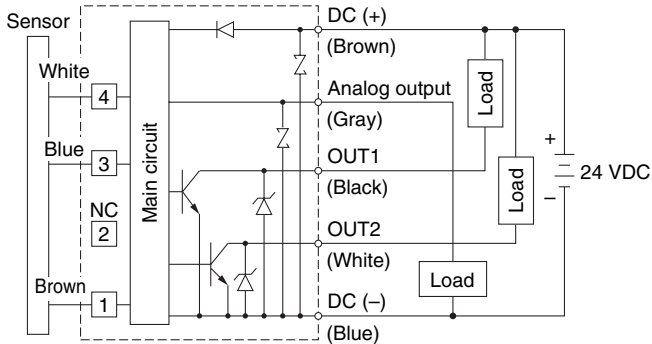
Analog output: 1 to 5 V  
 Output impedance: Approx. 1 k



#### IZE111

NPN open collector output: 2 outputs  
 Max. 30 V, 80 mA  
 Residual voltage 1 V or less

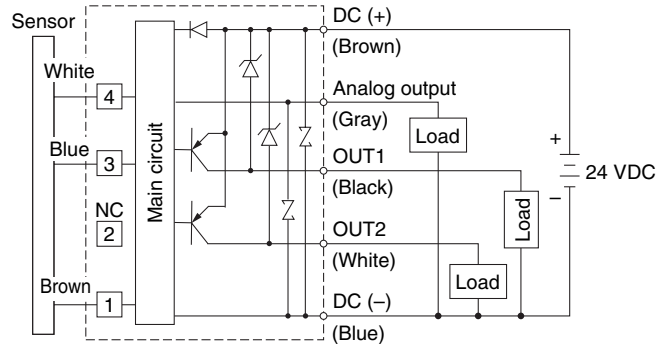
Analog output: 4 to 20 mA  
 Max. load impedance: 600 (24 VDC)  
 Min. load impedance: 50



#### IZE113

PNP open collector output: 2 outputs  
 Max. 80 mA  
 Residual voltage 1 V or less

Analog output: 4 to 20 mA  
 Max. load impedance: 600 (24 VDC)  
 Min. load impedance: 50



## Description

### LCD display

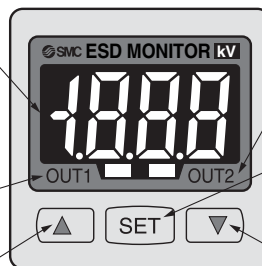
Shows the current electrostatic potential, set mode, and error code. Four display methods are available for selection, including an option for always displaying in a single color, red or green, and an option for switching from green to red in conjunction with the output.

### Output (OUT1) display (Green)

Turns on when the OUT1 output is on.

### ▲ button

Use this button to change the mode or increase the ON/OFF set value. It also allows you to switch to the peak value display mode.



### Output (OUT2) display (Red)

Turns on when the OUT2 output is on.

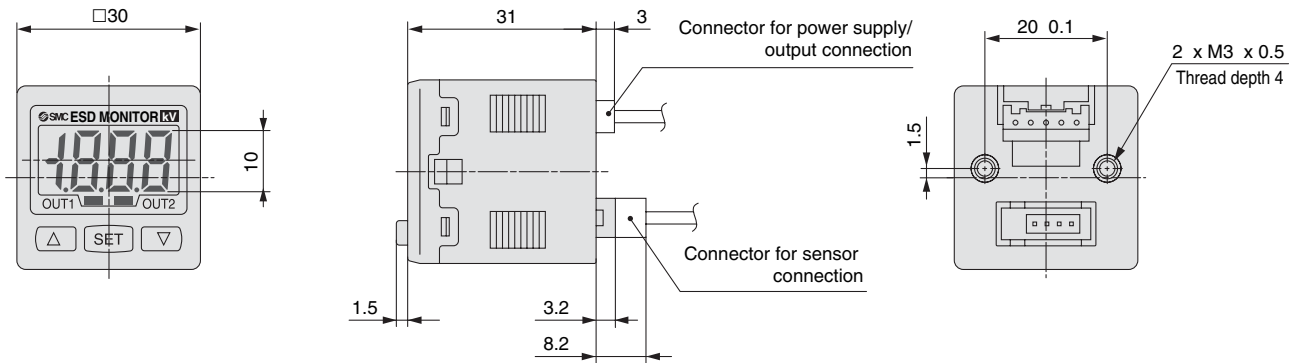
### SET button

Use this button to switch the mode and set the set value.

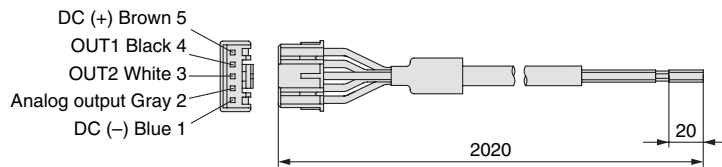
### ▼ button

Use this button to change the mode or decrease the ON/OFF set value. It also allows you to switch to the bottom value display mode.

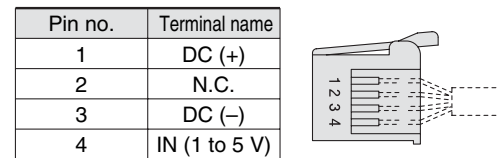
## Dimensions



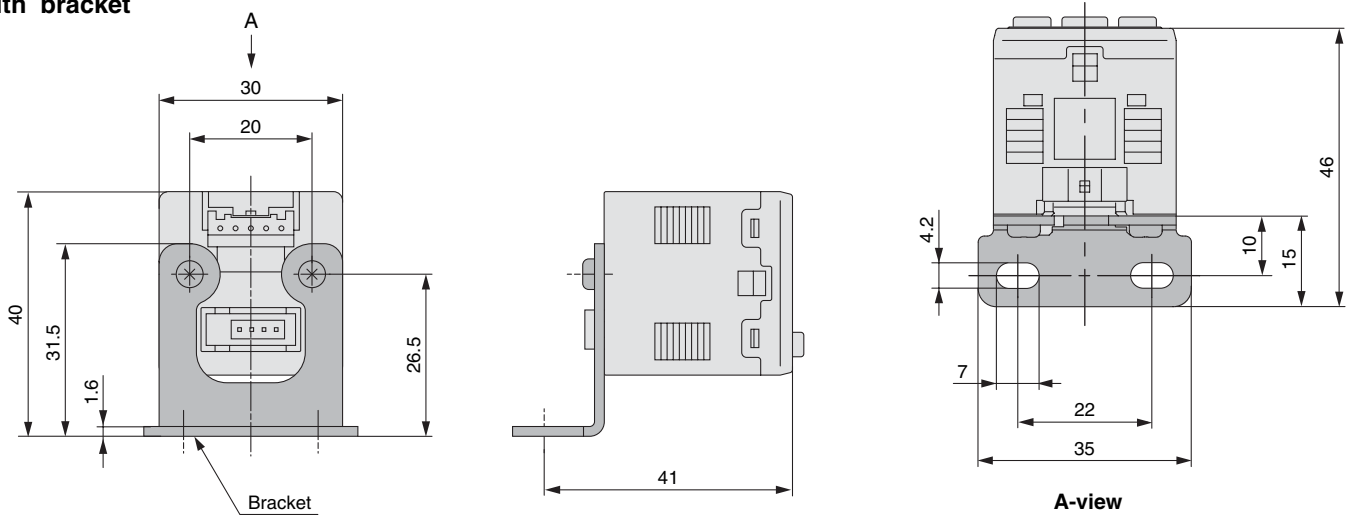
### Connection cable for power supply / output (ZS-28-A)



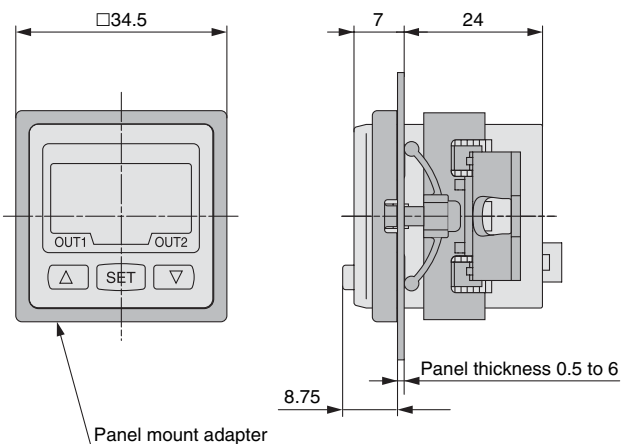
### Connector for sensor connection



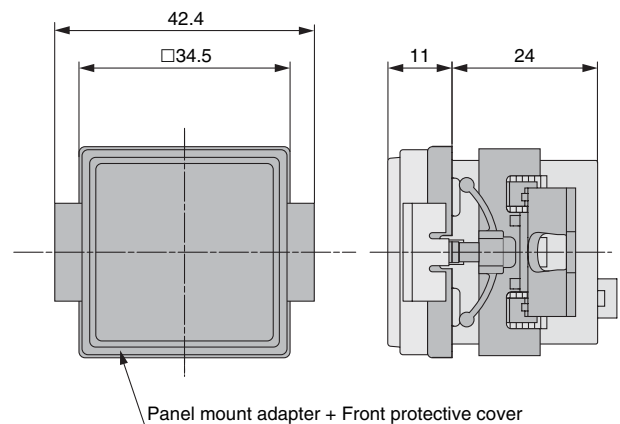
### With bracket



### With panel mount adapter



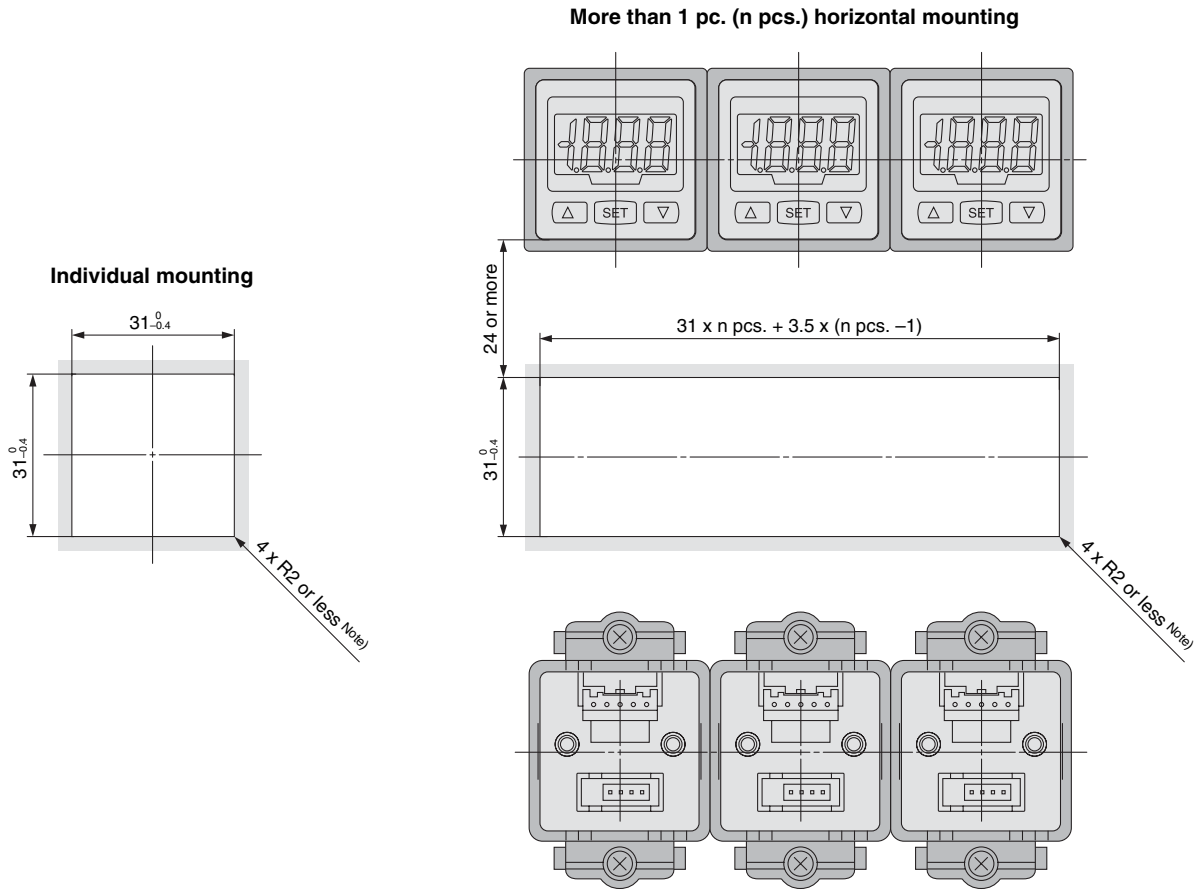
### With panel mount adapter + Front protective cover



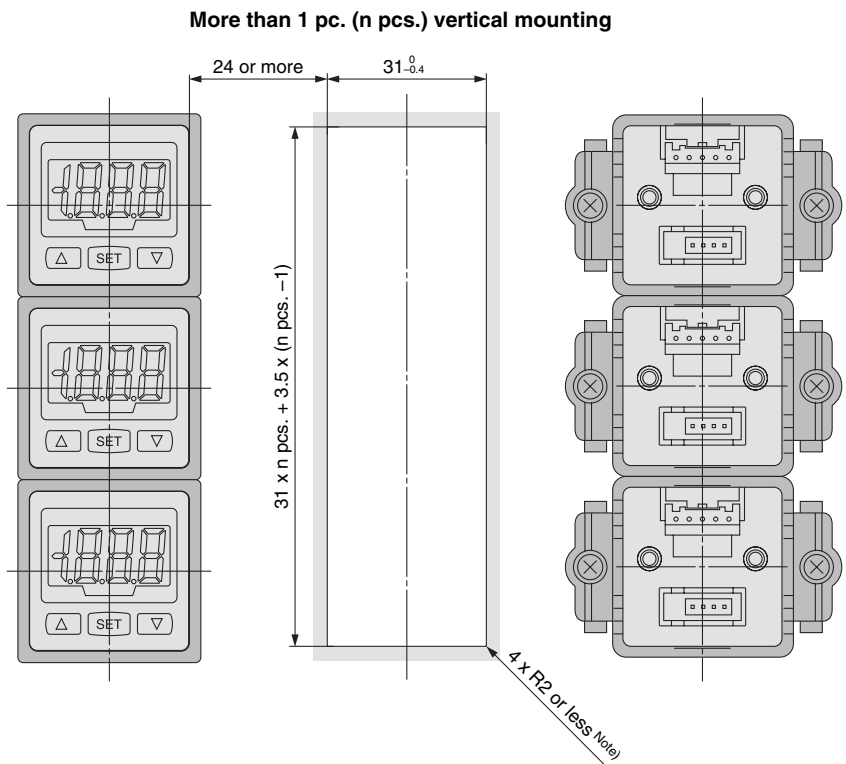
# Series IZE11

## Dimensions

**Panel fitting dimensions** \* Panel thickness: 0.5 to 6 mm



Note) When providing a curvature radius (R), keep it to R2 or smaller.



## Function Details

### A Detection range correction function

By previously inputting a distance from the sensor to the object being measured, it is possible to reduce errors due to variations in the measurement distance.

### B Peak/Bottom hold function

This function constantly detects and updates the maximum and minimum pressure values and allows to hold the display value.

### C Key lock function

This function prevents incorrect operations such as changing the set value accidentally.

### D Zero-adjust function

The reading of the measured voltage can be adjusted to zero. The reading can be corrected within  $\pm 10\%$  of F.S. from the factory-set condition.

### E Error display function

| Error description       | Error display   | Condition   |
|-------------------------|-----------------|---|
| Over-current error      | OUT1 <i>Er1</i> | Load current of switch output is more than 80 mA.   |
|                         | OUT2 <i>Er2</i> |   |
| System error            | <i>Er3</i>      | Internal data error   |
| Zero-adjust error       | <i>Er4</i>      | During zero adjustment, an amount of static electricity beyond $\pm 10\%$ of F.S. has been given to the sensor.<br>* After displaying the error code for approximately one second, the sensor automatically returns to measurement mode. The zero point may slightly fluctuate depending on the individual product difference and the sensor's mounting condition during zero adjustment. |
| Over-flow<br>Under-flow | <i>HHH</i>      | The displayable range has been exceeded because an amount of static electricity beyond the upper limit of the voltage measurement range has been given to the sensor or the measurement distance setting and/or the sensor mounting position is inappropriate, or for other reasons.  |
|                         | <i>LLL</i>      | The sensor may not have been wired yet or may have mistakenly wired. Alternatively, the displayable range has been exceeded because an amount of static electricity beyond the upper limit of the voltage measurement range has been given to the sensor or the measurement distance setting and/or the sensor mounting position is inappropriate, or for other reasons.                  |

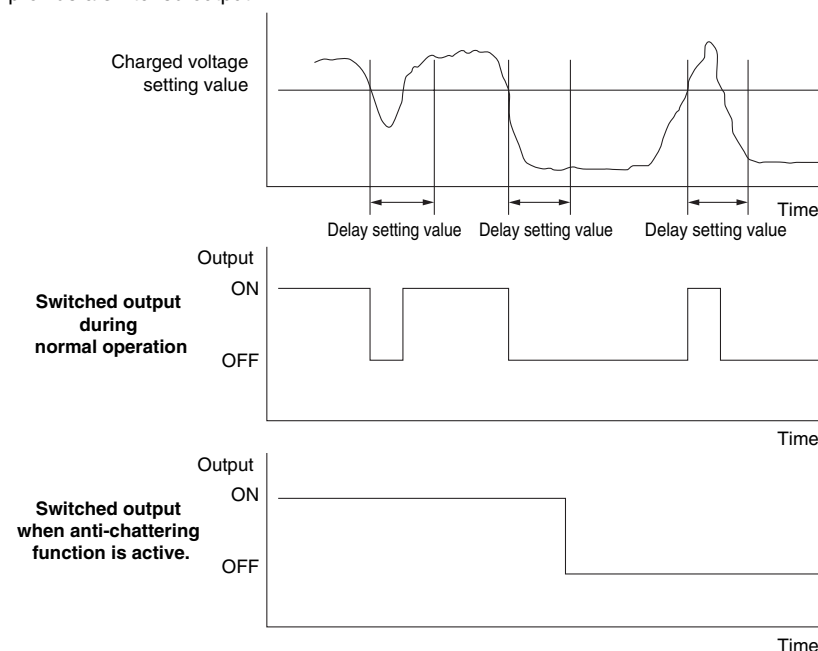
### F Anti-chattering function

The charged voltage may vary temporarily. This function prevents such a momentary change from being detected as an abnormal voltage by changing the response time setting.

Response time: 100 ms, 500 ms, 1 s, 2 s or less

(Principal)

When a measured value is retained for an optionally set time length (delay time), the sensor compares the measured value with the setpoint to provide a switched output.



### G Connection sensor selection function

The type (range) of electrostatic sensor to be connected can be selected. The monitor is factory-set to the  $\pm 0.4$  kV option.