Electrostatic Sensor Monitor Series IZE11



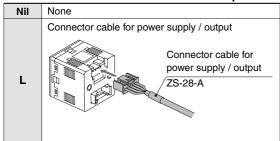
How to Order

IZE11 0-

Input/Output specifications

0	NPN open collector 2 outputs + Analog output 1-5 V
1	NPN open collector 2 outputs + Analog output 4-20 mA
2	PNP open collector 2 outputs + Analog output 1-5 V
3	PNP open collector 2 outputs + Analog output 4-20 mA

Option 1

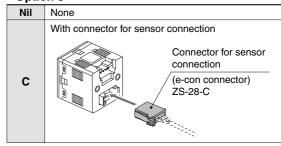


Note) The cable is not connected but packed together with product for shipment.

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.)

Option 3



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

Option 2

Nil	None
A	Bracket Mounting screw (M3 x 5L) Bracket Mounting screw (M3 x 5L)
В	Panel mount adapter Panel Mounting screw (M3 x 8L)
D	Panel mount adapter + Front protective cover Panel Front protective cover Mounting screw (M3 x 8L) Panel mount adapter

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

Specifications

Rated measurement range	Model		IZE11□		
Min. unit setting 0.001 kV 0.1 kV 25 to 75 mm 26 to 75 mm 27 to 75 mm 28 to 75 mm 29 to 75 mm 20	Connection sen	sor	IZD10-110	IZD10-510	
Measurement distance setting 10 to 50 mm 25 to 75 mm	Rated measurer	ment range	-0.4 kV to +0.4 kV Note 1)	-20 kV to +20 kV Note 2)	
Power supply voltage 24 VDC, Ripple (p-p) 10% or less (with power supply polarity protection) Current consumption 50 mA or less (excluding sensor unit's current consumption) Number of inputs 1 input 26.4 V) Hysteresis With excess voltage protection (up to 26.4 V) Hysteresis mode: Variable Window comparator mode: Variable Window comparator mode: Variable Window comparator mode: Variable Window comparator mode: Variable Max. load current 80 mA Max. load current 80 mA Max. applied voltage 30 VDC (with NPN output) Residual voltage 1 V or less (with load current of 80 mA) Short circuit protection With short circuit protection Response time (including sensor response time) (including sensor response time) Voltage output Output voltage: 1 to 5 V (with rated pressure range), Output impedance: Approx. 1 k Accuracy (for readings) (25°C) Accuracy (for readings) (25°C) Accuracy (for readings) (25°C) Response time (including sensor response time) Display acurracy Display 3 + 1/2 digit, 7-segment indicator, 2-color display (Red/Green) Sampling cycle: 5 times/s Indicator light Poperating temperature range Operating: 0 to 50C, Stored: —10 to 60°C (with no freezing or condensation) Operating temperature range Operating: 0 to 50C, Stored: —10 to 60°C (with no freezing or condensation) Vibration resistance Vibration resistance Vibration resistance Vibration resistance Vibration resistance Vibration for 2 hrs. each (de-energized)	Min. unit setting	1	0.001 kV	0.1 kV	
Current consumption So mA or less (excluding sensor unit's current consumption)	Measurement di	istance setting	10 to 50 mm	25 to 75 mm	
Sensor input Number of inputs 1 to 5 VDC (input impedance: 1 M)	Power supply ve	oltage	24 VDC, Ripple (p-p) 10% or less (v	vith power supply polarity protection)	
Number of inputs 1 input	Current consum	pption	50 mA or less (excluding sens	sor unit's current consumption)	
Input protection With excess voltage protection (up to 26.4 V)	Sensor input				
Hysteresis mode: Variable Window comparator mode: Variable Window comparator mode: Variable Window comparator mode: Variable Window comparator mode: Variable NPN or PNP open collector: 2 outputs Max. load current Max. applied voltage Residual voltage 1 V or less (with NPN output) Residual voltage 1 V or less (with load current of 80 mA) Short circuit protection Response time (including sensor response time) With short circuit protection 100 ms or less Response time with anti-chattering function: 500 ms, 1 s, 2 s or less Voltage output Accuracy (for readings) (25°C) 41% F.S. or less Current output Output voltage: 1 to 5 V (with rated pressure range), Output impedance: Approx. 1 k Accuracy (for readings) (25°C) Accuracy (for readings) (25°C) Response time (including sensor response time) Display accurracy 200 ms (without filter), 1.5 s (with filter) or less Display accurracy 200 ms (without filter), 1.5 s (with filter) or less Display accurracy 3 + 1/2 digit, 7-segment indicator, 2-color display (Red/Green) Sampling cycle: 5 times/s Indicator light Enciosure Operating temperature range Operating: 0 to 50C, Stored: -10 to 60°C (with no freezing or condensation) Operating humidity range Operating/Stored: 35 to 85% RH (with no condensation) Withstand voltage Insulation resistance Vibration resistance 10 to 150 Hz at whichever is smaller of 1.5 mm amplitude or 98 m/s² acceleration, in X, Y, Z direction for 2 hrs. each (de-energized)		Number of inputs			
Switch output Max. load current Max. applied voltage Residual voltage Residual voltage Nover (with NPN output) Residual voltage Response time (including sensor response time) Voltage output Accuracy (for readings) (25°C) Response time (including sensor response time) Current output Accuracy (for readings) (25°C) Response time (including sensor response time) Paper output current: 4 to 20 mA (with rated pressure range), Output impedance: Approx. 1 k Accuracy (for readings) (25°C) Accuracy (for readings) (25°C) Response time (including sensor response time) Display acurracy Display acurracy Display 3 + 1/2 digit, 7-segment indicator, 2-color display (Red/Green) Sampling cycle: 5 times/s indicator light Outp: Illuminates when output is turned ON (Green), OUT2: Illuminat		Input protection	·		
Max. load current 80 mA		Hysteresis			
Max. applied voltage 30 VDC (with NPN output)	Switch output		NPN or PNP open	collector: 2 outputs	
Residual voltage		Max. load current	80	mA	
Short circuit protection Response time (Including sensor response time) Voltage output Output voltage: 1 to 5 V (with rated pressure range), Output impedance: Approx. 1 k Accuracy (for readings) (25°C) Current output Accuracy (for readings) (25°C) Response time (Including sensor response time) Output current: 4 to 20 mA (with rated pressure range) Max. load impedance: 600 (at 24 VDC), Min. load impedance: 50 Accuracy (for readings) (25°C) Response time (Including sensor response time) Display acurracy 10 5° F.S. ±1 digit or less Display 3 + 1/2 digit, 7-segment indicator, 2-color display (Red/Green) Sampling cycle: 5 times/s Indicator light Out1: Illuminates when output is turned ON (Green), OUT2: Illuminates when output is turned ON (Red) Operating temperature range Operating: 0 to 50°C, Stored: -10 to 60°C (with no freezing or condensation) Operating humidity range Operating/Stored: 35 to 85% RH (with no condensation) Withstand voltage Insulation resistance 10 to 150 Hz at whichever is smaller of 1.5 mm amplitude or 98 m/s² acceleration, in X, Y, Z direction for 2 hrs. each (de-energized)		Max. applied voltage	30 VDC (with	NPN output)	
Response time (including sensor response time) Response time with anti-chattering function: 500 ms, 1 s, 2 s or less		Residual voltage	1 V or less (with loa	nd current of 80 mA)	
Cincluding sensor response time Response time with anti-chattering function: 500 ms, 1 s, 2 s or less		Short circuit protection	With short cir	cuit protection	
Analog output Accuracy (for readings) (25°C) Lurrent output Accuracy (for readings) (25°C) Accuracy (for readings) (25°C) Accuracy (for readings) (25°C) Response time (including sensor response time) Display acurracy Lurrent output Accuracy (for readings) (25°C) Response time (including sensor response time) Display acurracy Lurrent output Lurrent output Lurrent output Accuracy (for readings) (25°C) Lurrent output Lurrent output is turned on (with filter) or less Lurrent output is sumed on (seen) (seen) Sampling cycle: 5 times/s Lurrent output Lurrent output is turned on (Green) output is turned on (Red) Lurrent output Lurrent: 4 to 20 mA (with rated pressure range) Lurrent output Lurrent: 4 to 20 mA (with rated pressure range) Lurrent output Lurrent: 4 to 20 mA (with rated pressure range) Lurrent output Lurrent: 4 to 20 mA (with rated pressure range) Lurrent output Lurrent output Lurrent: 4 to 20 mA (with rated pressure range) Lurrent output					
Analog output Current output Output current: 4 to 20 mA (with rated pressure range) Max. load impedance: 600 (at 24 VDC), Min. load impedance: 50 £1% F.S. or less Response time (including sensor response time) Display acurracy £0.5% F.S. ±1 digit or less Display 3 + 1/2 digit, 7-segment indicator, 2-color display (Red/Green) Sampling cycle: 5 times/s Indicator light Out1: Illuminates when output is turned ON (Green), OUT2: Illuminates when output is turned ON (Red) Enclosure Operating temperature range Operating: 0 to 50C, Stored: -10 to 60°C (with no freezing or condensation) Operating humidity range Operating/Stored: 35 to 85% RH (with no condensation) Withstand voltage Insulation resistance 10 to 150 Hz at whichever is smaller of 1.5 mm amplitude or 98 m/s² acceleration, in X, Y, Z direction for 2 hrs. each (de-energized)		Voltage output	Output voltage: 1 to 5 V (with rated pressu	ure range), Output impedance: Approx. 1 k	
Analog output Max. load impedance: 600 (at 24 VDC), Min. load impedance: 50 Accuracy (for readings) (25°C)		Accuracy (for readings) (25°C)	±1% F.S. or less		
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Indicator light OUT1: Illuminates when output is turned ON (Green), OUT2: Illuminates when output is turned ON (Red) Enclosure Operating temperature range Operating: 0 to 50C, Stored: -10 to 60°C (with no freezing or condensation) Operating humidity range Operating/Stored: 35 to 85% RH (with no condensation) Withstand voltage Insulation resistance Vibration resistance OUT1: Illuminates when output is turned ON (Green), OUT2: Illuminates when output is turned ON (Red) IP40 Operating temperature range Operating: 0 to 50C, Stored: -10 to 60°C (with no freezing or condensation) 1000 VAC for 1 min, between live parts and housing Insulation resistance Vibration resistance 10 to 150 Hz at whichever is smaller of 1.5 mm amplitude or 98 m/s² acceleration, in X, Y, Z direction for 2 hrs. each (de-energized)	Display acurracy		±0.5% F.S. ±1 digit or less		
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Operating temperature range Operating: 0 to 50C, Stored: -10 to 60°C (with no freezing or condensation) Operating humidity range Operating/Stored: 35 to 85% RH (with no condensation) Withstand voltage Insulation resistance Vibration resistance Operating: 0 to 50C, Stored: -10 to 60°C (with no freezing or condensation) Operating bumidity range Operating: 0 to 50C, Stored: -10 to 60°C (with no freezing or condensation) 1000 VAC for 1 min, between live parts and housing Operating temperature range Operating: 0 to 50C, Stored: -10 to 60°C (with no freezing or condensation) 1000 VAC for 1 min, between live parts and housing Operating for 1000 VAC for 1 min, between live parts and housing Operating for 1000 VAC for 1 min, between live parts and housing Operating for 1000 VAC for 1 min, between live parts and housing Operating for 1000 VAC for 1 min, between live parts and housing Operating for 1000 VAC for 1 min, between live parts and housing Operating for 1000 VAC for 1 min, between live parts and housing Operating for 1000 VAC for 1 min, between live parts and housing Operating for 1000 VAC for 1 min, between live parts and housing Operating for 1000 VAC for 1 min, between live parts and housing Operating for 1000 VAC for 1 min, between live parts and housing Operating for 1000 VAC for 1 min, between live parts and housing Operating for 1000 VAC for 1 min, between live parts and housing Operating for 1000 VAC for 1 min, between live parts and housing Operating for 1000 VAC for 1 min, between live parts and housing Operating for 1000 VAC for 1 min, between live parts and housing Operating for 1000 VAC for 1 min, between live parts and housing	Indicator light		OUT1: Illuminates when output is turned ON (Green), OUT2: Illuminates when output is turned ON (Red		
Coperating humidity range Operating/Stored: 35 to 85% RH (with no condensation) Withstand voltage Insulation resistance Vibration resistance Operating/Stored: 35 to 85% RH (with no condensation) 1000 VAC for 1 min, between live parts and housing 50 M or more (with 500 VDC Mega), between live parts and housing 10 to 150 Hz at whichever is smaller of 1.5 mm amplitude or 98 m/s² acceleration, in X, Y, Z direction for 2 hrs. each (de-energized)		Enclosure	IP	40	
Environmental resistance Withstand voltage Insulation resistance 1000 VAC for 1 min, between live parts and housing 50 M or more (with 500 VDC Mega), between live parts and housing 10 to 150 Hz at whichever is smaller of 1.5 mm amplitude or 98 m/s² acceleration, in X, Y, Z direction for 2 hrs. each (de-energized)		Operating temperature range	Operating: 0 to 50C, Stored: -10 to 60°C (with no freezing or condensation)		
resistance Insulation resistance 50 M or more (with 500 VDC Mega), between live parts and housing 10 to 150 Hz at whichever is smaller of 1.5 mm amplitude or 98 m/s² acceleration, in X, Y, Z direction for 2 hrs. each (de-energized)		Operating humidity range	Operating/Stored: 35 to 85% RH (with no condensation)		
Vibration resistance 10 to 150 Hz at whichever is smaller of 1.5 mm amplitude or 98 m/s² acceleration, in X, Y, Z direction for 2 hrs. each (de-energized)	Environmental	Withstand voltage	1000 VAC for 1 min, between live parts and housing		
in X, Y, Z direction for 2 hrs. each (de-energized)		Insulation resistance	50 M or more (with 500 VDC Mega), between live parts and housing		
Impact resistance 100 m/s² in X, Y, Z directions 3 times each (de-energized)		Vibration resistance			
		Impact resistance	100 m/s² in X, Y, Z directions 3 times each (de-energized)		
Temperature characteristics ±0.5% F.S. or less (based on 25°C)	Temperature characteristics		±0.5% F.S. or less (based on 25°C)		
Connection method Power supply, Output connection: 5-pin connector, Sensor connection: 4-pin connector	Connection method		Power supply, Output connection: 5-pin connector, Sensor connection: 4-pin connector		
Material Front case: PBT, Rear case: PBT	Material		Front case: PBT, Rear case: PBT		
Weight (excluding power supply/output connection cable) 30 g	Weight (excluding	power supply/output connection cable)	30 g		
Standards CE marking, UL (CSA) compliant	Standards		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



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.

IZF110

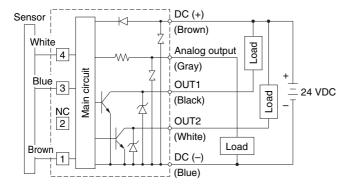
NPN open collector output: 2 outputs

Max. 30 V, 80 mA

Residual voltage 1 V or less

Analog output: 1 to 5 V

Output impedance: Approx. 1 k



IZE111

NPN open collector output: 2 outputs

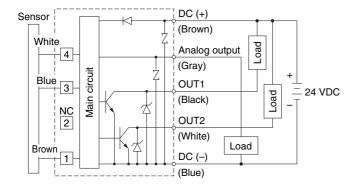
Max. 30 V, 80 mA

Residual voltage 1 V or less

Analog output: 4 to 20 mA

Max. load impedance: 600 (24 VDC)

Min. load impedance: 50



IZE112

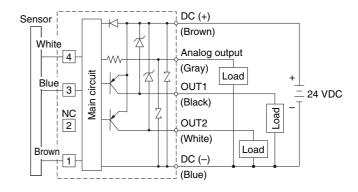
PNP open collector output: 2 outputs

Max. 80 mA

Residual voltage 1 V or less

Analog output: 1 to 5 V

Output impedance: Approx. 1 k



IZE113

PNP open collector output: 2 outputs

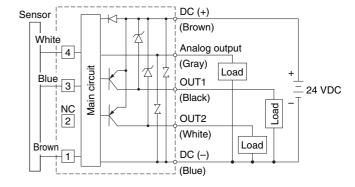
Max. 80 mA

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

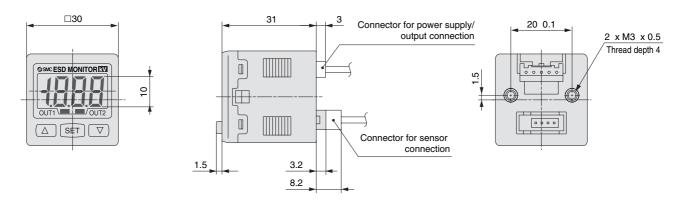
Use this button to switch the mode and set the set value.

▼ 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.

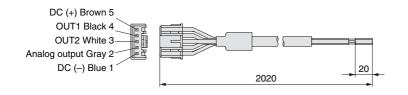


Dimensions

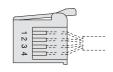


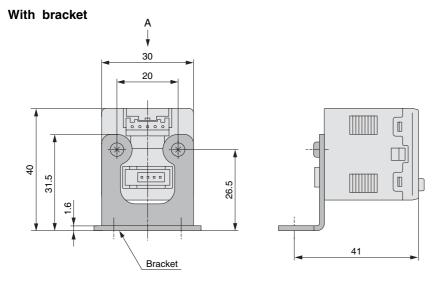
Connection cable for power supply / output (ZS-28-A)

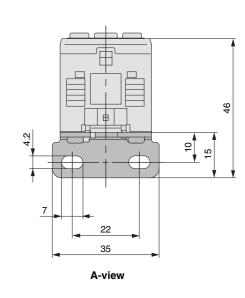
Connector for sensor connection



Pin no.	Terminal name
1	DC (+)
2	N.C.
3	DC (-)
4	IN (1 to 5 V)

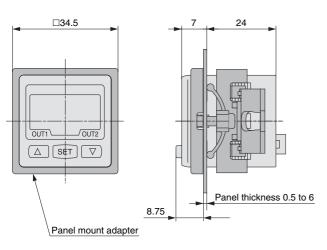


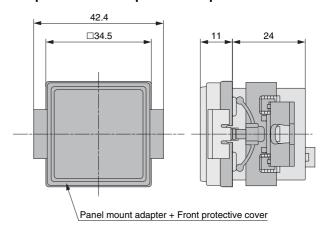




With panel mount adapter

With panel mount adapter + Front protective cover



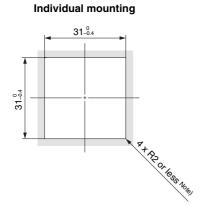




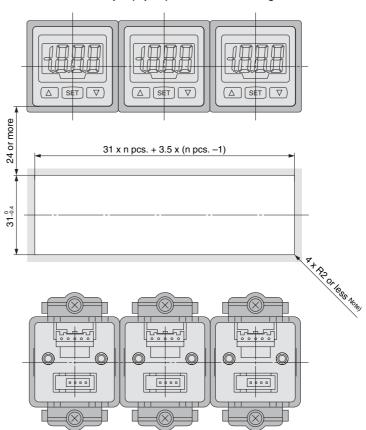
Series IZE11

Dimensions

Panel fitting dimensions * Panel thickness: 0.5 to 6 mm

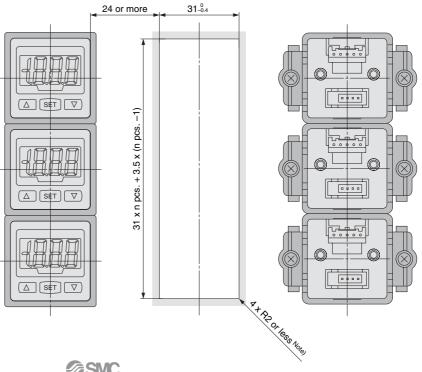


More than 1 pc. (n pcs.) horizontal mounting



More than 1 pc. (n pcs.) vertical mounting

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 ±10% of F.S. from the factory-set condition.

E Error display function

Error description		Error display	Condition	
Over-current error	OUT1	Er 1	Load current of switch output is more than 80 mA.	
	OUT2	Er2		
System error		Er3	Internal data error	
Zero-adjust error		Er4	During zero adjustment, an amount of static electricity beyond ±10% of F.S. has been given to the sensor. * 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 Under-flow		ннн	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.	
		LLL	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.	

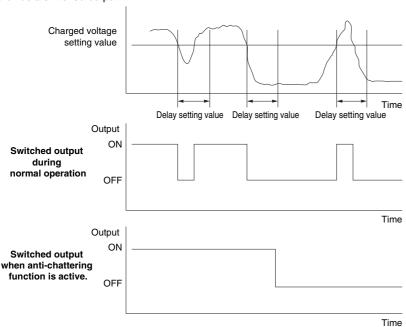
F Anti-chattering function

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 ±0.4 kV option.

