

Electrostatic Sensor Monitor

Operation Manual



IZE11

Thank you for purchasing an SMC IZE11 Series Electrostatic Sensor Monitor. Please read this manual carefully before operating the product and make sure you understand its capabilities and limitations. Please keep this manual handy for future reference.

To obtain more detailed information about operating this product, please refer to the SMC website (URL <http://www.smcworld.com>) or contact SMC directly.

Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of "Caution", "Warning" or "Danger". They are all important notes for safety and must be followed in addition to International standards (ISO/IEC) and other safety regulations.

- Caution:** CAUTION indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
- Warning:** WARNING indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
- Danger:** DANGER indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

Operator

- This operation manual is intended for those who have knowledge of machinery using pneumatic equipment, and have sufficient knowledge of assembly, operation and maintenance of such equipment. Only those persons are allowed to perform assembly, operation and maintenance.
- Read and understand this operation manual carefully before assembling, operating or providing maintenance to the product.

Safety Instructions

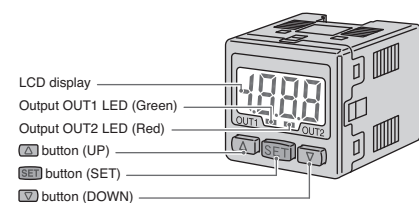
Warning	
Do not disassemble, modify (including changing the printed circuit board) or repair. An injury or failure can result.	
Do not operate the product outside of the specifications. Fire, malfunction, or damage to the product can result. Verify the specifications before use.	
Do not operate in an atmosphere containing flammable or explosive gases. Fire or an explosion can result. This product is not designed to be explosion proof.	
Do not use the product in a place where static electricity is a problem. Otherwise it can cause failure or malfunction of the system.	
If using the product in an interlocking circuit: <ul style="list-style-type: none"> Provide a double interlocking system, for example a mechanical system Check the product regularly for proper operation Otherwise malfunction can result, causing an accident.	
The following instructions must be followed during maintenance: <ul style="list-style-type: none"> Turn off the power supply Stop the air supply, exhaust the residual pressure and verify that the air is released before performing maintenance work Otherwise an injury can result.	
Sensor to connect must be selected. Actual potential can not be displayed unless selected value of the connect sensor is correctly set. At initial setting or when sensor connected, ensure the selected value of the connected sensor and the type of used Electrostatic Sensor are matched.	

NOTE

- The direct current power supply to combine should be UL approved as follows. Circuit (of class 2) which is of maximum 30 Vrms (42.4 V peak) or less, with UL1310 class 2 power supply unit or UL1585 class 2 transformer.
- The product is a approved product only if it has a mark on the body.

Summary of Product parts

Names of individual parts

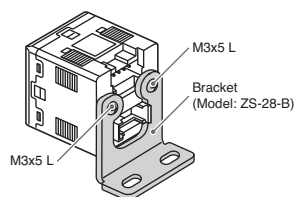


- Output OUT1 LED (Green): LED is ON when OUT1 is ON.
- Output OUT2 LED (Red): LED is ON when OUT2 is ON.
- LCD display: Displays the current status of charged potential, set mode condition and error code. Four display modes can be selected: display always in red or green, or display changing from green to red, or red to green, according to the output status.
- UP button (UP): Selects the mode or increases the ON/OFF set value. Press this button to change to the peak display mode.
- DOWN button (DOWN): Selects the mode or decreases the ON/OFF set value. Press this button to change to the bottom display mode.
- SET button (SET): Press this button to change the mode or set a value.

Mounting and Installation

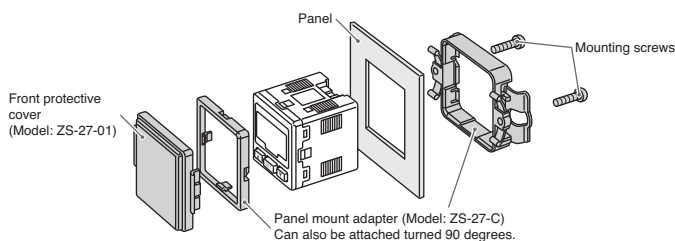
Installation

- Mounting**
 - Mount the optional bracket or panel mount adapter to the monitor.
- Mounting with bracket**
 - Fix the bracket to the monitor with the set screws M3x5 L (2 pcs.) supplied.
 - The tightening torque of the set screws must be 0.5 to 0.7 Nm.



Mounting with panel mount adapter

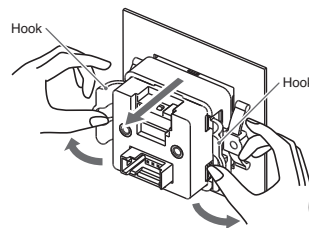
- Fix the panel mount adapter to the product with the mounting screws (nominal size: 3 x 8 L, 2 pcs.) supplied.



Refer to the product catalogue or SMC website (URL <http://www.smcworld.com>) for more information about panel cut-out and mounting hole dimensions.

Notice when removing the controller

- The monitor with panel mount adapter can be removed from the installation by removing 2 screws and releasing the hooks at the sides, as illustrated.
- Take care not to damage the monitor and panel mount adapter.



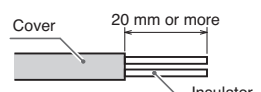
Wiring

Connection

- Connections should only be made with the power supply turned off.
- Use separate routes for the monitor wiring and any power or high voltage wiring. Otherwise, malfunction may result due to noise.
- Ensure that the FG terminal is connected to ground when using a commercially available switch-mode power supply. When a switch-mode power supply is connected to the product, switching noise will be superimposed and the product specification can no longer be met. This can be prevented by inserting a noise filter, such as a line noise filter and ferrite core, between the switch-mode power supply and the product, or by using a series power supply instead of a switch-mode power supply.

Attaching the connector to the sensor wire

- Strip the sensor wire as shown to the right. (Do not strip the wire insulation)



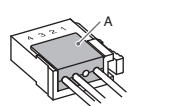
The following table gives the SMC connector part number and corresponding manufacturers number.

SMC product No.	Sumitomo 3M Ltd. product No.	Tyco Electronics AMP K.K. product No.
ZS-28-C	37104-3101-000FL	1-1473562-4

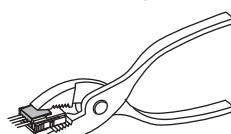
- Insert the corresponding wire colour shown in the table into the pin number printed on the sensor connector, to the bottom.

Pin number	Wire colour
1	Brown (DC+)
2	N.C.
3	Blue (DC-)
4	White (IN: 1 to 5 V)

- Check that the above preparation has been performed correctly, then part A shown should be pressed in by hand to make temporary connection.



- Part A should then be pressed in using a suitable tool, such as pliers.

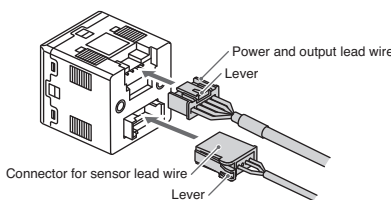


- The e-con connector cannot be re-used once it has been fully crimped. In cases of connection failure such as incorrect order of wires or incomplete insertion, please use a new connector.
- When the cable for sensor is cut in short length, do not connect the shield line. (Shield line is common with amplifier case. Frame ground shall be prepared with the amplifier case side.)

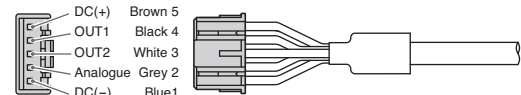
Connector

Connecting / Disconnecting

- When mounting the connector, insert it straight into the socket, holding the lever and connector body, and push the connector until the lever hooks into the housing, and locks.
- When removing the connector, press down the lever to release the hook from the housing and pull the connector straight out.

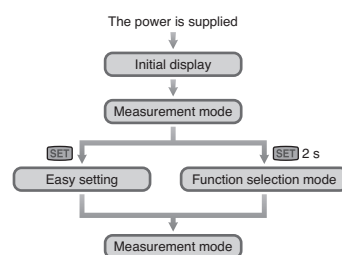


Power / Output connector pin numbers

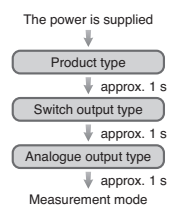


Setting

Setting procedures



Initial display

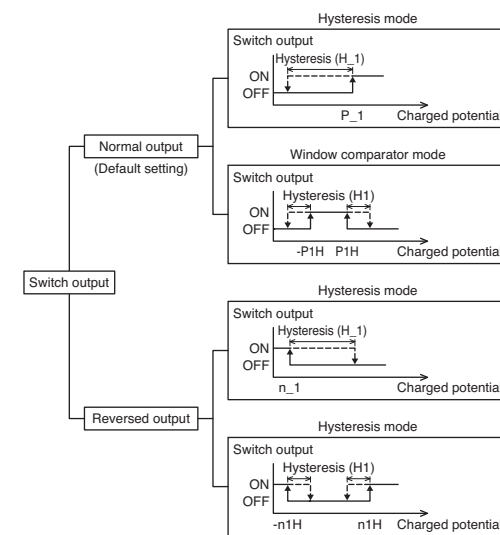


Item	Display	Content
Product type	Esd	IZE11 □ series
Switch output type	nPn	NPN open collector output
	PnP	PNP open collector output
Analogue output type	1.5	Voltage output (1 to 5 V)
	420	Current output (4 to 20 mA)

Measurement mode

Detects charged potential and performs display and switch operations. Setting change and setting of other functions are available depending on purpose.

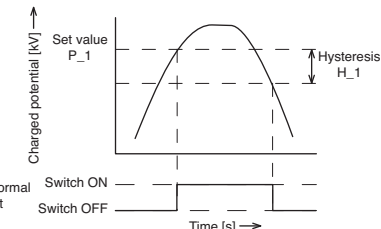
List of output mode



- The following is given using OUT1 as an example. The descriptions for OUT2 are the same as those for OUT1, under the conditions that [P_1] should be replaced by [P_2], [P1H] should be replaced by [P2H], [n_1] should be replaced by [n_2], [n1H] should be replaced by [n2H], [H_1] should be replaced by [H_2] and [H1] should be replaced by [H2].
- Absolute setting is assigned when window comparator is set. Therefore, set minus value is automatically reflected.

Easy setting

Set ON and OFF point of switch output. Switch turns ON when charged potential exceed set value. Switch turns OFF when charged potential is below the set value by more than hysteresis. (The example shows when the switch output is normal with hysteresis mode) The default setting of the Electrostatic Sensor Monitor is that it turns ON for OUT1 at +0.2 kV and for OUT2 at -0.2 kV. If this condition, shown to the right, is acceptable, then keep these settings. Output mode can be changed with the operation of function selection mode [F 1] OUT1 and [F 2] OUT2.



<How to operate> *: The switch will also output during setting.

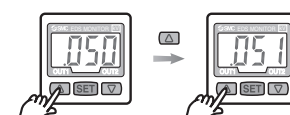
- Press the button in measurement mode.



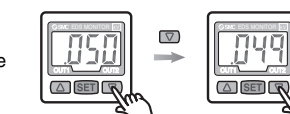
- [P_1] and set value are displayed in turn.



- Press the or button to change the set value. The button to increase and the button is to decrease.



- Press the button once to increase by one digit, and press it continuously to keep increasing the set value.

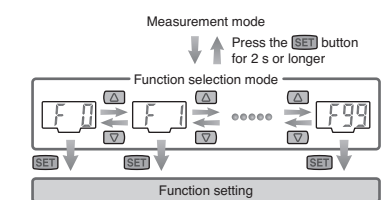


- Press the button once to decrease by one digit, and press it continuously to keep decreasing the set value.

- Press the button to finish the setting. Then [P_2] is displayed. Set as above.

Function selection mode

In measurement mode, press the button for 2 seconds or more to display [F 0]. Select to display the function to be changed [F □□]. Press the button for 2 seconds or more in function selection mode to return to measurement mode.



Default setting

At the time of shipment, the following settings are provided. If the setting is acceptable, keep it for use.

To change the settings, refer to the SMC website (URL <http://www.smcworld.com>) for more detailed information, or contact SMC.

NOTE

- When changing the default setting, since the different setting item is displayed in order depending on how many times the button is pressed, check that the setting to be changed is displayed, to prevent undesired setting changes.

Items below can be set at function selection mode.

Item	Default setting	
[F 0] Select connected sensor	Sensor for 0.4 kV	
[F 1] Operation of OUT1	Output mode	Hysteresis mode
	Reversed output	Normal output
[F 2] Operation of OUT2	Charged potential setting	OUT1: +0.2 kV OUT2: -0.2 kV
	Hysteresis	Hysteresis: 0.04 kV
[F 1] Operation of OUT1	Display colour	ON: Green OFF: Red
[F 3] Measured distance setting		25 mm
[F 4] Setting of switch output response time		1 s
[F 5] Select analogue output filter		ON
[F 6] Setting of security code		OFF
[F98] Setting of all functions		OFF
[F99] Reset to the default setting		OFF

Other Settings

- Peak / Bottom hold display
- Zero adjust function
- Key lock

To set each of these functions, refer to the SMC website (URL <http://www.smcworld.com>) for more detailed information, or contact SMC.

Maintenance

How to reset the product after a power cut or forcible de-energizing
The setting of the product will be retained as it was before a power cut or de-energizing.

The output condition is also basically recovered to that before a power cut or de-energizing, but may change depending on the operating environment. Therefore, check the safety of the whole installation before operating the product. If the installation is using accurate control, wait until the product has warmed up (approximately 20 to 30 minutes).

Troubleshooting

Error Indication

This function is to display error location and content when a problem or an error occurs.

Error Name	Error Display	Error Type	Troubleshooting Method
Over current Error	Er 1 Er 2	The switch output load current is more than 80 mA.	Turn the power off and remove the cause of the over current. Then turn the power on.
System Error	Er 3	Displayed in the case of an internal data error.	Turn the power off and turn it on again. If resetting fails, an investigation by SMC CORPORATION will be required.
Zero adjust Error	Er 4	During the zero adjustment, potential exceeding the default setting value by ±10%F.S. has been applied. After approx. 1s measurement mode will return automatically. Slight displacement occurs depending on individual product differences and the sensor adjustment condition at zero adjustment.	Perform zero adjustment again after removing any charge from the sensor.

Over flow / Under flow Error	HHH LLL	Value is out of display range. Potential exceeding upper limit of measured voltage range is supplied to the sensor, or sensor installation position is not appropriate. Value is out of display range. Disconnection or incorrect wiring of the sensor is possible. Or, potential exceeding lower limit of measured voltage range is supplied to the sensor, or incorrect measured distance setting or sensor mounting position is possible.	Eliminate the charge until the potential is reduced within measured voltage level. Check if measured distance and sensor mounting position is correct.
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If the error cannot be reset after the above measures are taken, then please contact SMC.

Refer to the SMC website (URL <http://www.smcworld.com>) for more information about troubleshooting.

Specifications Outline with Dimensions (in mm)

Refer to the product catalogue or SMC website (URL <http://www.smcworld.com>) for more information about the product specifications and outline dimensions.

SMC Corporation URL <http://www.smcworld.com>

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Note: Specifications are subject to change without prior notice and any obligation on the part of the manufacturer.
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