Instruction Manual SUNJE

SM-50 Eng

It is recommended that only persons who have sufficient knowledge and experience such as system designers and responsible persons deal with this product after carefully reading the product manual. We are not responsible for accidents caused by not following the instructions and precautions in the product manual.

1 The matters of safety

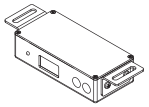
⚠ WARNING

* Do not fabricate or do maintenance by yourself. Malfunction, Electric shock, and fire danger are considered. Contact us directly if you need the item to be repaired.
* Do not let the water touch the product. It may cause electric shock or fire due to malfunction.
* Do not apply impact such as dropping or vibration. Malfunction or danger of accident may occur.
* Since this product is a precision measuring device, it must be grounded to provide sufficient performance.
* When you check or maintain the product, make it sure you turn off the power. It may cause electric shock or fire due to malfunction.
* Do not use the item off the range of usage. Malfunction or danger of accident may occur.
* For your proper cable connection, take a look at the manual「Installation & Connection」for references. Any disordered connection is detected, the malfunction might arise.
* All cables should be connected all the time. Please careful of cable disconnections.
* If power or communication cables got damaged, replace them immediately. Malfunction and fire danger may happen.
* When disposing of the product, please dispose of it as industrial waste.

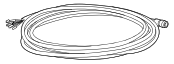
2 Check the package contents

▶ Product compositions

The package includes the following products composition.



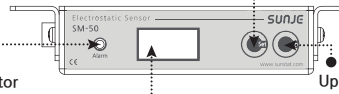
* Sensor
  SM-50
  1ea



* Output Cable
  SOC-SM-5-001
  6Pin-6Pin(Open),15m, 1ea

3 Nomenclatures of parts

Front



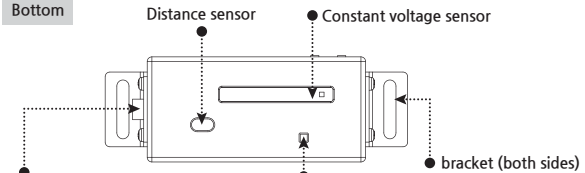
Set Switch
You can enter the Menu window and execute tasks.

Motion Indicator
This LED is used to check operation status and alarm occurrence.
* Normal : Green
* Alarm : Red

Display
You can check information such as measurement values, temperature and humidity, and settings.

Up Switch
Change menu selections sequentially.

Bottom



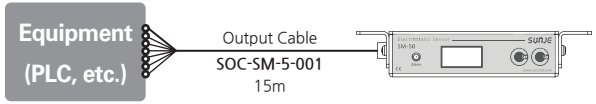
4 Installation and connection

▶ Check the installation conditions head unit

Please check the installation condition whether it meets proper specification.

- ■ No vibration on the fixed device.
- ■ Be aware of any flammable or ignitable materials around the working area.
- ■ There must be no objects between the target area and device.
- ■ Secure to have enough working space for quick maintenance of the device.

▶ Connecting the power & communication



〈 Output Cable Pin Map flow chart 〉

No.	Cable Color	Description
①	Black	485 -
②	Red	+ 24Vdc
③	Yellow	F.G
④	Green	GND(Ground)
⑤	White	485 +
⑥	Blue	F.G

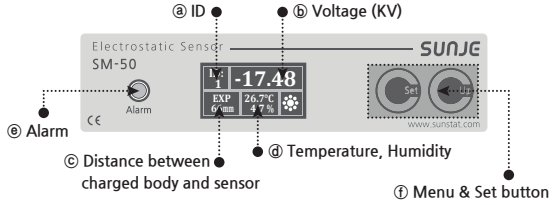
※ F.G (Frame Ground): Connects to the F.G of the equipment SMPS.

5 Main configuration screen and settings menu

▶ Check the firmware version

After turning on the power, you can check the firmware version as shown in the picture below.

▶ Basic configuration screen (HOME)



ⓐ This is the currently set address (0 ~ 32)
ⓑ Displays the constant voltage measured in real time.
ⓒ You can check the distance from the charged object through the distance sensor.
ⓓ Displays the temperature and humidity of the relevant usage environment.
ⓔ When the measured voltage value is higher than the set alarm standard value, the Red Led blinks repeatedly for X seconds every 0.5 seconds. If normal, the Green Led lights up.
ⓕ You can use the SET button to enter the menu and select the item you want to set. Adjust the setting value with the UP button.

▶ Settings menu

HOME

: Returns to the initial screen.

MODE SET

- POT MODE
  : EXP(extended mode_apply distance value X), DEXP (extension mode by distance_distance value application O), PRE (precision mode) 3 modes can be set.
- ZERO CAL
  * OFF: The zero point is not adjusted.
  * GOOD: Zero point adjustment has been completed.
- AVG CAL
  : Can be set from 01 to 50, and displays the measured value after averaging as much as the set value.

CONTROL SET

- RS485 ID
  : Can be set from 1 to 32
- EXPD (mm)
  : Adjustable in 10mm increments from 100mm to 700mm.
- EXPD IN
  : STOP, AUTO settings are possible.
  * STOP : Set distance application to fixed. Measure the electric field by applying the fixed distance value stored in DISTSET. If you press and hold the right button in the main menu, the fixed value will be saved as the current distance value. (Or measure the distance in the menu and enter it directly.)
  * AUTO : Automatically measures the distance in distance-specific expansion mode.

ALARM SET

- HIGH VOLT
  : Adjustable in 0.1 KV units and can be set from minimum 0.1 to maximum 9.9KV.
- ALARM ON
  : Two settings are possible: ON and OFF.
  (Output by red LED flashing and alarm signal communication)

6 Communication Protocol

▶ SM-50 MODBUS communication protocol

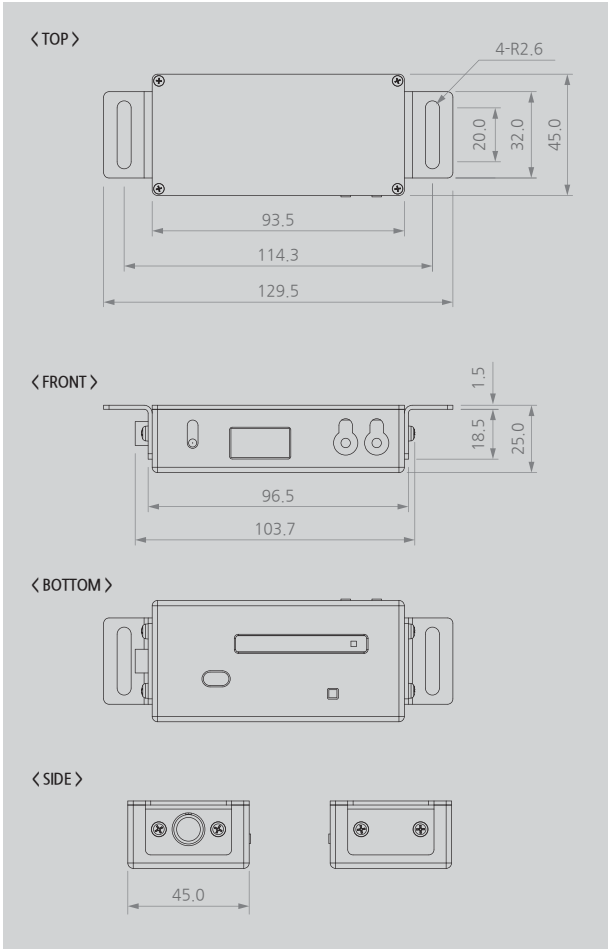
■ MODBUS function codes
03: Read holding registers
04: Read Input Registers
06: Write single register

■ MODBUS Protocol
9600 bps, 8bit, 1Stop, None

Address	Description	Permisstion	Unit	Min	Max	Default	Unit	Comment
8000	FILED	Read Only	Integer	-32768	32768	0	0.001 0.01	PRE: -2.000 ~ 2.000 EXP: -20.00~ 20.00
8001	MITER	Read Only	Unsigned Integer	0	999	-	mm	0mm ~ 999mm
8002	Temperature	Read Only	Unsigned Integer	0	999	-	0.1	0.0 'C ~ 99.9 'C
8003	Humidity	Read Only	Unsigned Integer	0	999	-	0.1	0.0% ~ 99.9%
8004	Mode	R/W	Unsigned Integer	0	2	0	1	0-PRE, 1-EXP, 2- DEXP
8005	Alarm Set	Read Only	Unsigned Integer	0	99	10	0.1	0.0kV ~ 9.9kV
8006-H	Offset Status	Read Only	Unsigned Char	0	1	-	1	0: Normal, 1: at zero
8006-L	Alarm Status	Read Only	Unsigned Char	0	1	-	1	0: Normal 1: Notifying
8007	AvgCal	R/W	Unsigned Integer	1	50	1	1	Average of data summed in real time
8008	Distance Set	R/W	Unsigned Integer	100	700	100	mm	Applies in DEXP mode
8009	Plus Span (Precision mode)	R/W	Unsigned Integer	1	4000	2000	1	Decrease below 2000, Rises above 2000
800A	Minus Span (Precision mode)	R/W	Unsigned Integer	1	4000	2000	1	Decrease below 2000, Rises above 2000
800B	Plus Span (Extended mode)	R/W	Unsigned Integer	1	4000	2000	1	Decrease below 2000, Rises above 2000
800C	Minus Span (Extended mode)	R/W	Unsigned Integer	1	4000	2000	1	Decrease below 2000, Rises above 2000
800D	Offset Command	R/W	Unsigned Integer	0	1	0	1	When in PRE, zero when in EXP
800E	Distance Set	R/W	Unsigned Integer	1	4000	2000	1	Decrease below 2000, Rises above 2000

800F	Reserved	-	-	-	-	-	-	-
8010	Reserved	-	-	-	-	-	-	-
8011	Reserved	-	-	-	-	-	-	-
8012	Reserved	-	-	-	-	-	-	-
8013	Reserved	-	-	-	-	-	-	-
8014	Reserved	-	-	-	-	-	-	-

7 Dimensions



8 Specification

Parameter		Description / Value
Input Voltage		+24VDC(±10%)
Consumption Current		〈100mA
Measurement distance	PRE	10~100mm
	EXP	100~700mm
Measurement range	PRE	±2kV
	EXP	±20kV
accuracy	PRE	±2kV(±2.5%) _±0.05kV Within
	EXP	±20kV(±5%) _±1.00kV Within
Resolution	PRE	1V
	EXP	10V
linearity		±2.5% @ Full Scale
Stability (0 electric potential)	PRE	±2.5% @ Full Scale
	EXP	±5% @ Full Scale
Operating Temperature and Humidity	Temperature	0 ~50℃ (32℉ ~ 122℉)
	Humidity	35 ~ 85% RH
Response Speed		Min. 200ms (Based on 1:1 sensor and control unit)
Save cycle		Min.1s
Communication		RS-485 2Wire (MODBUS RTU)
Case material		AL-6061(Sanding, Anodizing)
Extensions		Automatic distance correction or fixed distance correction function in extended mode, simple zero point correction function, temperature and humidity display function
Size		93.5 X 45 X 25mm
Weight		130g
Warranty		1 year

※ The appearance and specification of the product may be changed without prior notice for the improvement of the product.

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