



Hand-held type
SK-H050

A new solution for
anti-static applications

STATIC ELECTRICITY

+

HUMIDITY

Simultaneous
Measurement



In-line type
SK-300/3000

The most advanced static control

Pin-point measurement of both static charge and humidity

In order to control static electricity in the workplace, it is important to ensure that ambient humidity is sufficient to reduce static charges. However, in most cases humidity varies in different areas of the same room. At many sites, while the humidity in a room may be measured, it may not be possible to measure the humidity at particular spots near target workpieces. KEYENCE offers pin-point measurement of humidity as well as static charge for enhanced anti-static control.



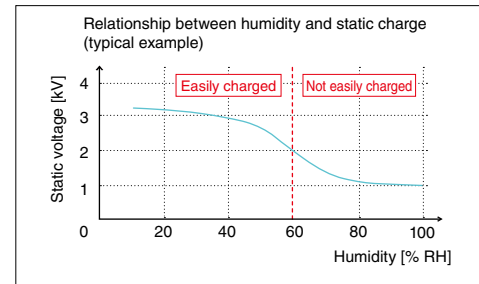
Electrostatic sensor
Hand-held type
SK-H050



Electrostatic sensor
In-line type
SK-300/3000

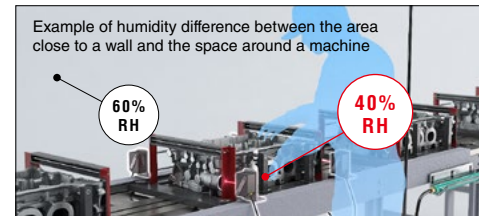
Relationship between static electricity and humidity

Static electricity and humidity are correlated: when humidity exceeds 60% RH, static charge is less likely to accumulate. Even during the winter, when static charges build up easily due to colder, drier air, static-related problems can be prevented by maintaining a constant level of humidity around target workpieces.



Humidity can vary in the same room depending on the location

Since humidity changes with temperature, humidity can vary in a room depending on the location. Temperature is generally higher around manufacturing systems, which tends to produce lower relative humidity.



STATIC
ELECTRICITY

HUMIDITY

Simultaneous measurement

By measuring the static charge and humidity at the same time, you can more accurately identify whether a particular area is likely to have static-related problems. This helps identify optimal anti-static measures, including humidification and other procedures such as installing an ionizer.

High-precision and wide-range measurements

The high-precision surface potential sensor mounted in our new anti-static resin allows the highest level of measuring accuracy in this model class. KEYENCE can accommodate your needs from high-precision measurements of highly charged objects, up to ± 50 kV with one-volt display resolution.

SK-H050

Hand-held type

Ideal for on-the-spot
measurements

180 degree rotating head for flexible measurement

The sensor head features a floating structure that rotates 180 degrees. Not only does this allow for easy measurement in narrow spaces, it offers improved shock resistance, as shock resulting from a drop will not transmit directly to the sensor.

Easy handling and operation

The body features an ergonomic design with a comfortable, easy-to-hold shape.

Laser pointer to identify the reference distance

Dual laser pointers make it simple to identify the optimal measuring distance for high precision measurement.

Large, easy-to-read liquid crystal display

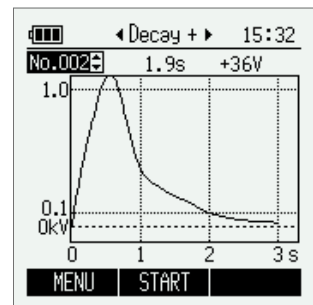
A large, highly visible liquid crystal display makes it easy for users to read measurement results on the spot.



Charge monitor function

The SK-H050 features a charge monitor function that measures static elimination speed and ion balance, both of which indicate an ionizer's static elimination capability. This allows users to conveniently measure their ionizer's static elimination ability.

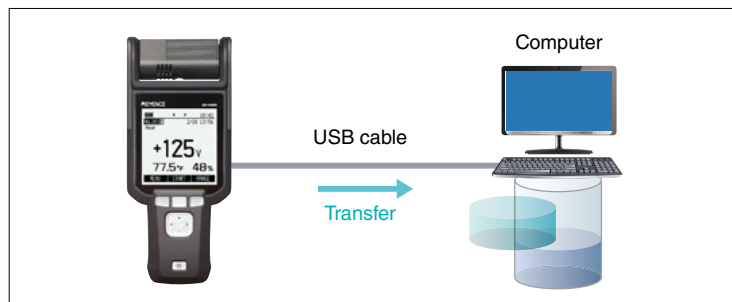
* An ionizer monitoring unit SK-H055, sold separately, is required.



Data storage function

Up to 100 sets of measurement data can be stored in the SK-H050's internal memory. The stored data can be transferred to a computer via a USB cable and saved as CSV data.

* PC software can be downloaded free of charge from our website.

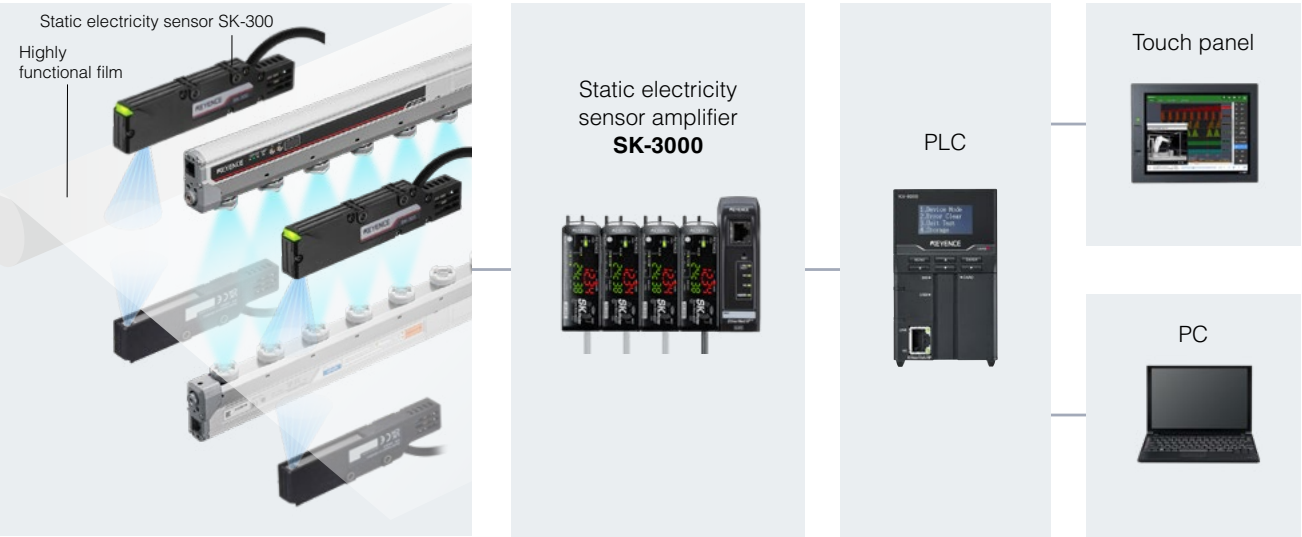


In-line type

Static Eliminator Traceability

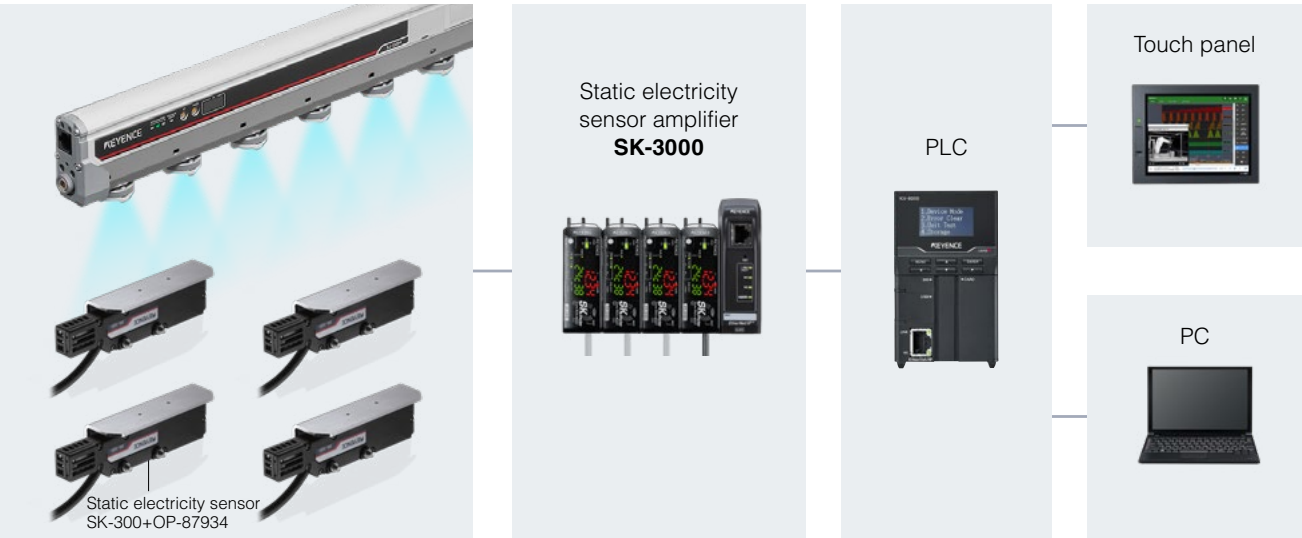
The necessary room can be provided by constantly monitoring the electrostatic charge of the workpiece and static elimination performance. If the predetermined standard is exceeded during a regular inspection such as that conducted once a month, there was risk of loss of products during that period. We can offer greater improvement of quality by constantly managing the static electricity figures for each product.

Workpiece electrostatic charge management package



Ion balance management package

When management of ion balance within 100 V is necessary

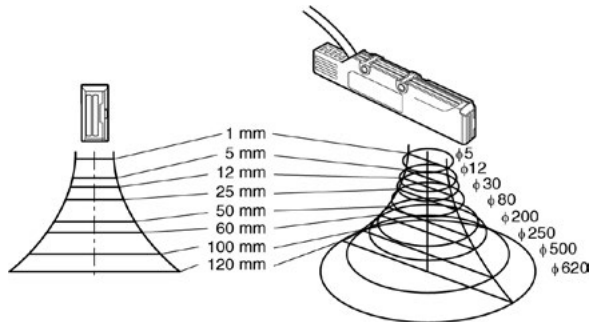


Data

SK-3000

Installation distance and measuring areas

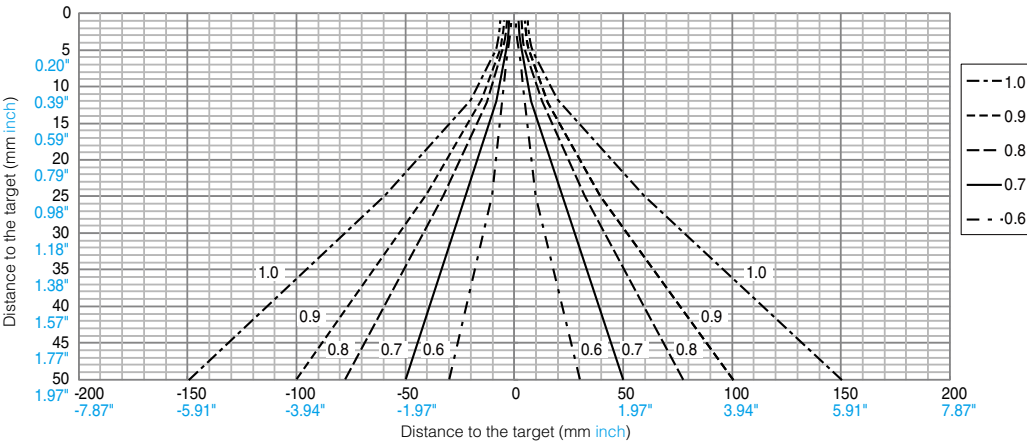
SK-300 measuring area (Typical example)



The reference distance in high-precision mode is 25 mm 0.98", and that in wide range mode is 100 mm 3.94".
When the sensor head cannot be installed at the reference distance, correct the measured value by using the [Distance setting] function.

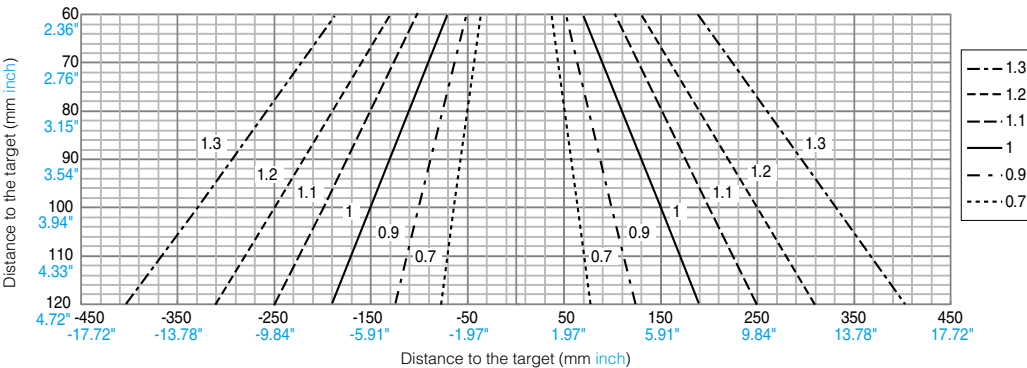
SK-300 area scaling correction table

High-precision mode



Using the correction table
Select the closest correction value (0.6 to 1.0) to the intersection point of [Measurement area (mm inch)] and [Distance to the target] in [Area scaling] function.

Wide-range mode



Using the correction table
Select the closest correction value (0.7 to 1.3) to the intersection point of [Measurement area (mm inch)] and [Distance to the target] in [Area scaling] function.

Examples of Introducing the Static Elimination Traceability System

Example 1

Remote management of anti-static measures on multiple workbenches in overseas factories from the head office



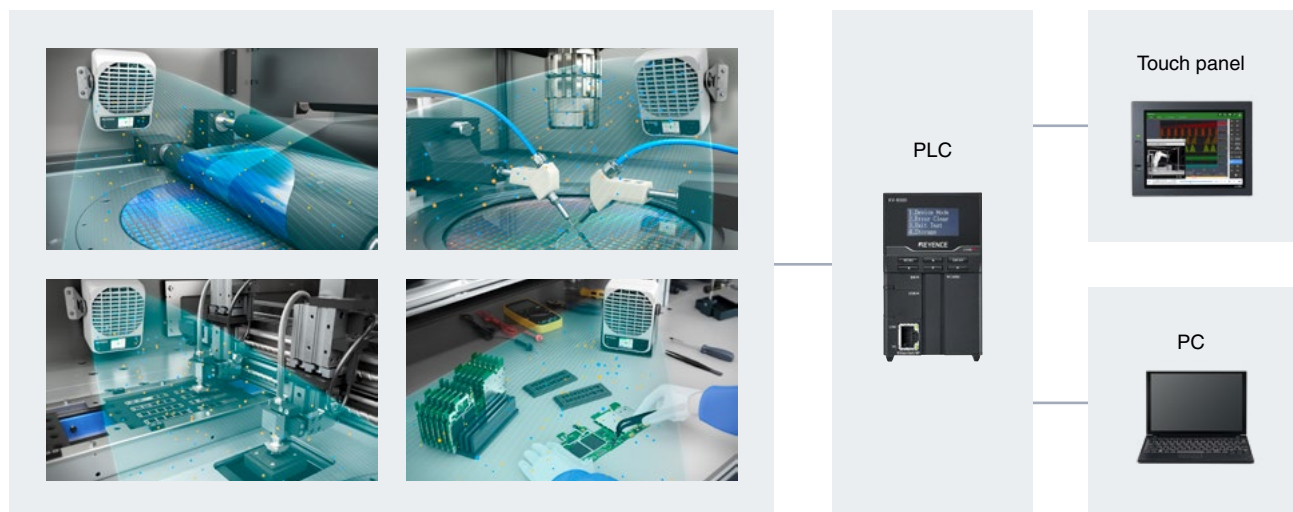
[Examples of Products]

- 1 to 100 SJ-F700 Multi Sensing Ionizers - SJ-Manager Management Support Software (downloaded from website for free)
- 1 to 100 SJ-FB01 Feedback Sensors

100 SJ-F700 Multi Sensing Ionizers can be managed with a single PC using the management support software that can be downloaded from the website for free. This enables remote monitoring of anti-static measures not only in head office factories but also overseas and affiliate factories, enabling the detection of risks in advance and predictive maintenance. Data is not lost when communication conditions are poor because the main unit has in-built memory.

Example 2

Management of bulk control of ionizers in facilities for processes with demanding requirements



[Examples of Products]

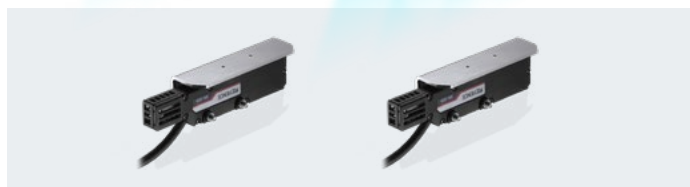
- 4 SJ-F700 Multi Sensing Ionizers - KV-8000

Enables control with automatic notifications of starting and stopping static elimination, as well as the ability to control changes in air flow level affecting performance and instructions for cleaning the static elimination probe. In addition to advanced control that could not be performed with an ON/OFF contact, it is also easy to obtain numerical data such as ion amount, ion balance, temperature and humidity.

Example 3

Bulk status management of installed ionizers

SJ-Q



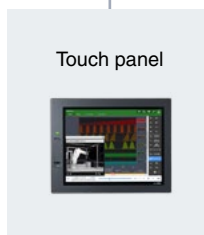
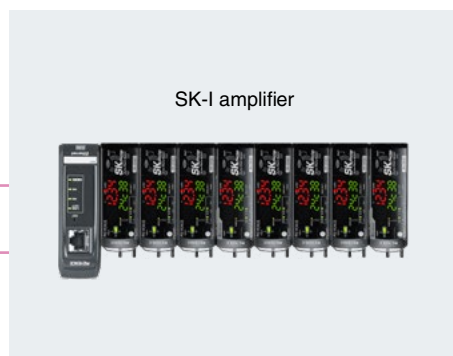
SJ-LF

SJ-LM

SJ-LMT



SK



[Examples of Products]

- 2 SJ-Q108 units - 1 SJ-L005F unit - 1 SJ-L005M unit - 1 SJ-L005MT+SJ-LM1+OP-88415 set
- 5 SK-300+SK-3000+OP-87934 sets - 1 SK-300+SK-3000+DL-EP1 set - 1 KV-8000 unit

All models in the SJ Series are equipped with alarms and ion level alarm functions. By wiring these signals to the PLC, it is possible to perform centralized monitoring of unforeseen issues and ionizer performance deterioration. In quality-related applications such as contamination by foreign matter and ESD, it will be necessary in many industries to perform management by constantly checking numbers such as the electrostatic charge of the work surface and the ion balance to avoid risks.

Lineup/Options

I Hand-held type



Main unit
SK-H050

I Options for hand-held type



Ionizer monitoring unit
SK-H055

Storage case
OP-87931

Carrying case
OP-87928

Wrist strap
OP-87929

Neck strap
OP-87930

Ground wire for
hand-held type
OP-87926

Ground wire
for ion monitoring unit
OP-87927

The ground wires are supplied
with the main unit.
They may also be purchased
separately if lost or damaged.

I In-line type



Sensor head
SK-300



Amplifier unit (main)
SK-3000



Amplifier unit (expansion)
SK-3050



Ion balance monitoring unit
OP-87934

Sensor head connection cable

OP-87056 2 m 6.6' cable
OP-87057 5 m 16.4' cable
OP-87058 10 m 32.8' cable
OP-87059 20 m 65.6' cable

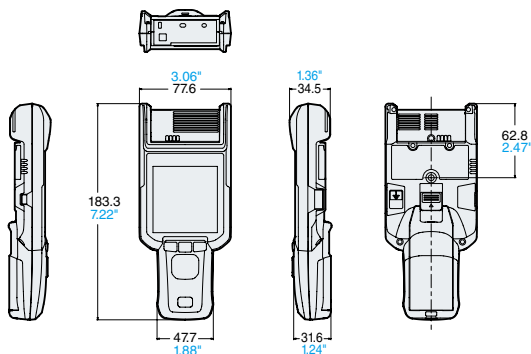
L-shaped sensor head
connection cable

OP-87660 2 m 6.6' cable
OP-87661 5 m 16.4' cable
OP-87662 10 m 32.8' cable
OP-87663 20 m 65.6' cable

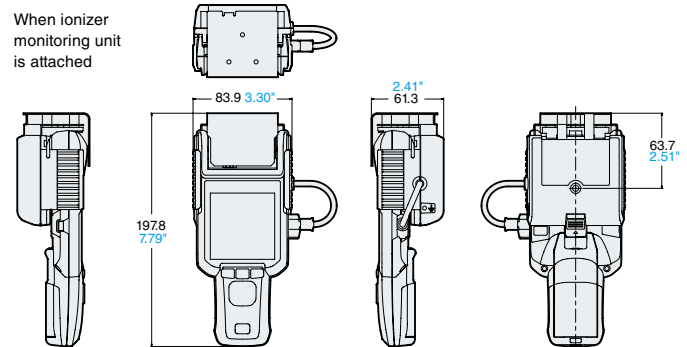
Dimensions

Unit: mm inch

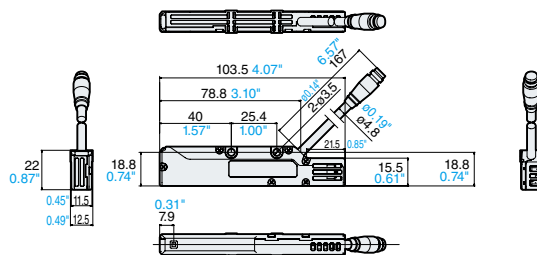
SK-H050



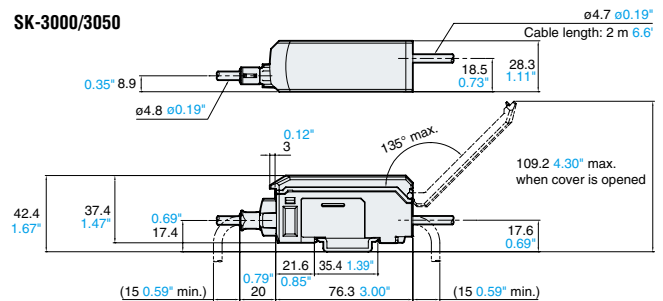
When ionizer
monitoring unit
is attached



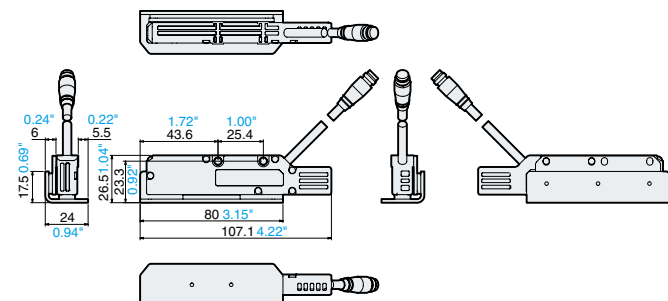
SK-300



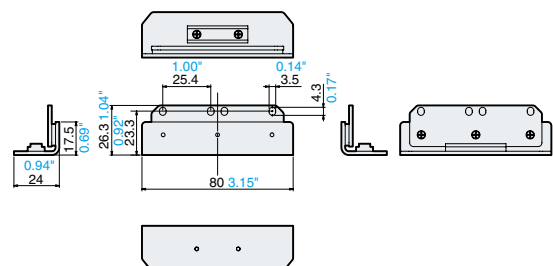
SK-3000/3050



SK-300 + OP-87934



OP-87934



Specifications

I Hand-held type

Model			SK-H050	
Charge potential measurement	Measurement mode		High-precision mode	Wide-range mode
	Measuring distance		25 mm 0.98"	100 mm 3.94"
	Measuring range		±2 kV	±50 kV *2
	Measuring accuracy *1		±10 V	±100 V
	Display resolution		0 to 999 V: 1 V, 1.00 to 9.99 kV: 0.01 kV, 10.0 kV and higher: 0.1 kV	
	Sampling cycle		Approx. 1.4 ms	
Temperature measurement	Measuring range		0 to 40°C 32°F to 104°F	
	Measuring accuracy *3		±1°C ±1.8°F	
	Display resolution		0.1°C 0.18°F	
	Sampling cycle		1 s	
Humidity measurement	Measuring range		10 to 85% RH	
	Measuring accuracy *3		±5% RH	
	Display resolution		1% RH	
	Sampling cycle		1 s	
Charge monitor function *4	Ion balance measuring mode	Ion balance measuring range		±1 kV
		Measuring accuracy *5		±10 V
		Measured voltage display resolution		1 V
	Static elimination time measuring mode	Charge voltage		±1400 V
		Static elimination time display resolution		0.1 s
		Measuring time		0 to 99 s
Laser class			Class 1 Laser Product (IEC60825-1, FDA (CDRH) Part 1040.10 *6)	
PC interface			USB 2.0 Full Speed	
Power supply	Power supply		2 AA alkaline dry-cell batteries	
	Operating time		8 hours (in charge potential measuring mode)	
Environmental resistance	Operating ambient temperature		0 to 40°C 32°F to 104°F (no freezing or condensation)	
	Operating relative humidity *7		10 to 85% RH (no condensation)	
Material			SK-H050: PC-ABS, PC, SUS/SK-H055: PC, SUS, PTFE, PVC	
Weight			SK-H050: Approx. 240 g, SK-H055: Approx. 220 g	

^{*1} Within ±100 V when using high-precision mode; within ±1 kV when using wide-range mode. In other ranges, display value has an accuracy of ±10% (display value). Values are obtained from measurements with a response time of 0.8 seconds.

^{*2} Measuring accuracy is satisfied in the range of ±30 kV. ^{*3} 25°C **77°F**, 50% RH. ^{*4} SK-H055 is required. ^{*5} Within ±100 V. In other ranges, display value has an accuracy of ±10% (display value).

^{*6} The laser classification for FDA (CDRH) is implemented based on IEC60825-1 in accordance with the requirements of Laser Notice. ^{*7} 10 to 60% RH when using SK-H055.

I In-line type sensor head

Model		SK-300	
Charging potential measurement	Measurement mode	High-accuracy mode	Wide-range mode
	Reference distance	25 mm 0.98"	100 mm 3.94"
	Measuring distance	1 to 50 mm 0.04" to 1.97"	60 to 120 mm 2.36" to 4.72"
	Measurement range ^{*1}	±2 kV	±50 kV ^{*3}
	Measurement accuracy ^{*2}	±1 V	±100 V
	Sampling cycle	Approx. 1.4 ms	
Temperature measurement	Measurement range	0 to 50°C 32 to 122°F	
	Measurement accuracy ^{*4}	±1°C ±1.8°F	
	Display resolution	0.1°C 0.18°F	
	Sampling cycle	1 s	
Humidity measurement	Measurement range	10 to 85% RH	
	Measurement accuracy ^{*4}	±5% RH	
	Display resolution	0.1% RH	
	Sampling cycle	1 s	
Ion balance measurement mode ^{*5}	Ion balance measurement range	±300 V	
	Measurement accuracy ^{*6}	±3 V	
	Display resolution	0.1 V	
Environmental resistance	Operating ambient temperature	0 to 50°C 32 to 122°F (No freezing or condensation)	
	Operating ambient humidity	85% RH or less (No condensation)	
	Pollution degree	3	
Material		Body case: PC, Metal parts: SUS, Cable: PVC	
Weight		Approx. 35 g 1.24 oz	

^{*1} If the distance to the sensing target is shorter than the reference distance, even if the conditions are within the measurable range, measurement cannot be performed up to the upper limit of the measuring range.

^{*2} Within ±50 V when using high-accuracy mode; within ±1 kV when using wide-range mode. In other ranges, accuracy is ±2% (display value) in high-accuracy mode, and ±10% (display value) in wide-range mode. The value for high-accuracy mode is obtained from a mean of 1024 measurements. The value for wide-range mode is obtained from a mean of 256 measurements. ^{*3} Measurement accuracy is satisfied in the range of ±30 kV.

^{*4} At 25°C **77°F** with 50% RH. ^{*5} OP-87934 is required. ^{*6} Within ±50 V. In other ranges, accuracy is ±6% (display value).

I In-line type amplifier unit

Model		SK-3000	SK-3050
Type		DIN rail mounting	
Main unit / expansion unit		Main unit	Expansion unit
Display resolution		0.1 V	
Analog voltage output*1		±5 V, 1 to 5 V, 0 to 5 V, Output impedance: 100 Ω	None
Analog current output*1		4 to 20 mA, Max. load resistance: 350 Ω	
Control input*2	Zero shift input	Switchable between non-voltage input and voltage input [Non-voltage input] ON voltage: 2 V or less, OFF current: 0.02 mA or less [Voltage input] Maximum input rating: 30 V or less, ON voltage: 7.5 V or more, OFF current: 0.05 mA or less	
	Timing input		
	Reset input		
	Bank input		
Control output *3	Judgment output	Open collector output (NPN/PNP switching, N.O./N.C. switching)	
	Alarm output	Open collector output (NPN/PNP switching, N.C.)	
Power supply	Power supply voltage*4	10 to 30 VDC (including ripple (P-P) 10% or less)	Supplied from main unit
	Power consumption (excluding load current of each output)*5	1650 mW or less (55 mA or less at 30 V)	1170 mW or less (39 mA or less at 30 V)
Environmental resistance	Operating ambient temperature	0 to 50°C 32 to 122°F (No freezing or condensation)	
	Operating ambient humidity	85% RH or less (No condensation)	
	Pollution degree	2	
Material		Body case and front cover: PC, Key top: POM, Cable: PVC	
Weight (including accessories)		Approx. 150 g 5.30 oz	Approx. 140 g 4.94 oz

^{*1} Select ±5 V, 1 to 5 V, 0 to 5 V, or 4 to 20 mA for use. ^{*2} Inputs are assigned to the four external input lines.

^{*3} NPN open collector output rating: maximum 50 mA/ch (20 mA/ch when expansion units are added), 30 V or less, residual voltage: 1 V or less (1.5 V or less when adding 6 or more expansion units, including main unit); PNP open collector output rating: maximum 50 mA/ch (20 mA/ch when expansion units are added), below power supply voltage, residual voltage: 2 V or less (2.5 V or less when adding 6 or more expansion units, including main unit)

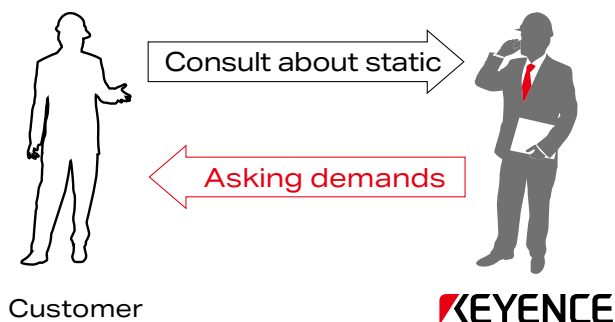
^{*4} Use 20 to 30 V as the power supply voltage when using 6 or more expansion units, including the main unit. ^{*5} When connecting 8 units for DL connection, the maximum power consumption is 11.3 W.

Free

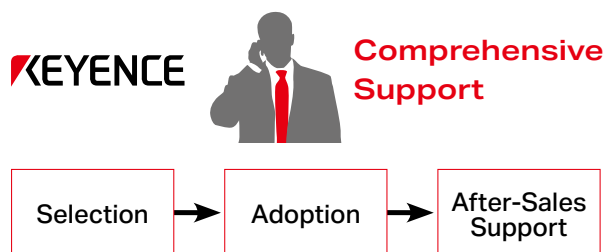
Static Consultant Service

KEYENCE provides free static consulting services, to help customers understand and solve static problems in manufacturing facilities.

1. Discovery and discussion about static issues



2. Providing solutions, feedback and making action



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