



Intelligent Sensor Technology, Inc.

Taste Sensing System

# TS-6000A

of our patented lipid/polymer membranes



ES France - Département Bio-tests & Industries  
127 rue de Buzenval BP 26 - 92380 Garches



Tél. 01 47 95 99 90



e-mail : [bio@es-france.com](mailto:bio@es-france.com)  
Site Web : [www.es-france.com](http://www.es-france.com)

# Taste Sensor

Our Taste Sensing System, developed in collaboration with Professor Kiyoshi Toko of Kyushu University, is the world's first practical electronic tongue to detect differences in taste that cannot be detected by conventional chemical analysis.

The taste sensor is composed of an artificial lipid membrane that mimics the biological taste receptor mechanism to easily quantify the overall taste of foods, beverages, and pharmaceuticals. A unique "aftertaste" measurement can also express "richness" and "sharpness," which cannot be measured by conventional analyzers.

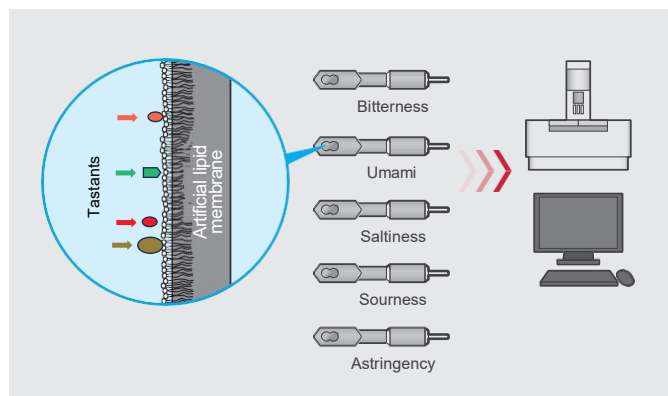
The system has wide applications, such as in product development, marketing, sales, quality control, and complaint handling.



## Response Mechanism

### ■ Taste receptor membrane

Insent's e-tongue is a biomimetic technology inspired by the structure and function of biological membranes. A single biological taste receptor can capture the same taste attribute, such as bitterness, for multiple chemicals. Our patented lipid/polymer membrane generates a voltage that changes according to the interaction with a specific taste attribute. The membrane response characteristics are adjusted by changing the types of lipid and plasticizing agents as well as the ratio of multiple lipid types with selective responses to specific tastes (e.g., separate membranes that each respond specifically to bitterness, astringency, etc.).

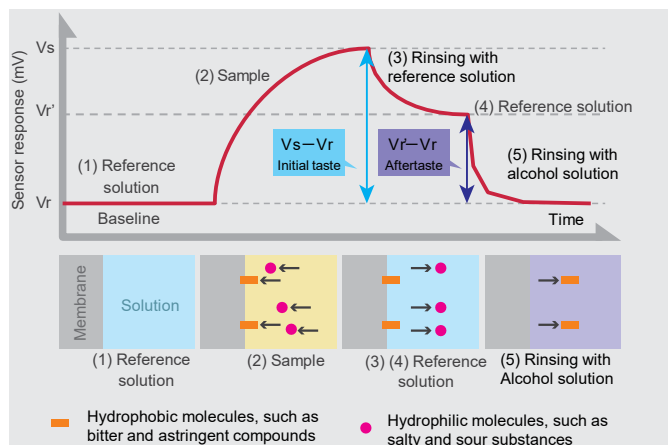


### ■ Evaluates initial and aftertastes using unique measurement method

Both initial taste and aftertaste can be captured from molecules adsorbed on the membranes.

**Initial taste:** Saltiness, sourness, umami, bitterness, astringency and sweetness

**Aftertaste:** Umami, bitterness and astringency



### ■ Measurement

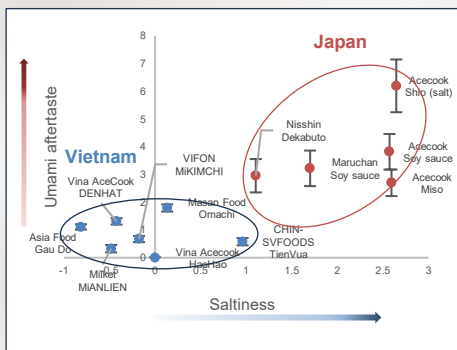
The potential difference between the reference solution and the sample solution is measured as the first taste. After a short sensor washing, the potential difference when the reference solution is measured again is measured as the aftertaste.



## Applications

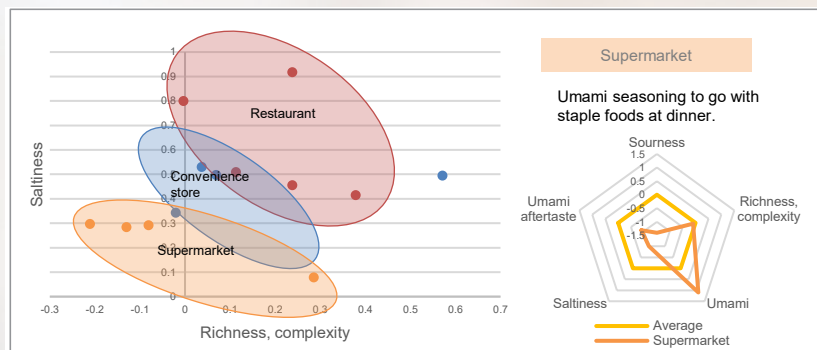
No. 1 in both market share and sales of e-tongues in Japan, with more than 600 units in use worldwide by various businesses.

### Marketing



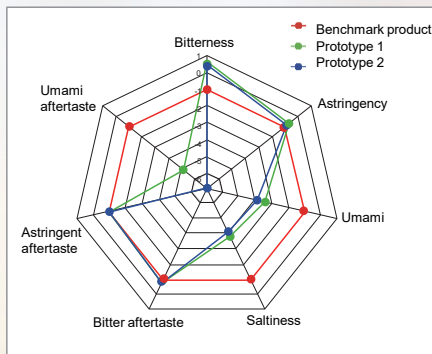
Market analysis of foreign and Japanese ramen soups

### Sales



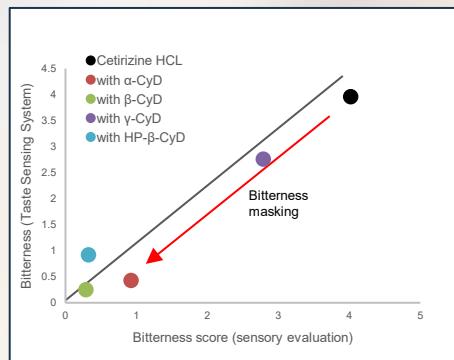
Comparison of fried chicken by retail sector

### R&D (food)



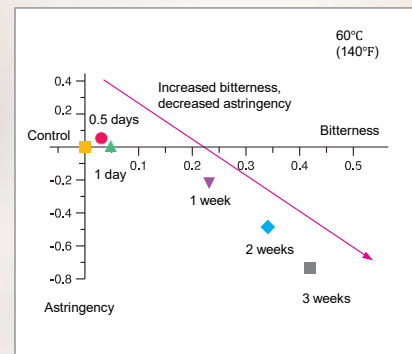
Comparison of dressing prototypes

### R&D (pharmaceuticals)



Bitterness suppression by cyclodextrin

### Quality control



Tea aging due to thermal degradation

## Industries using our instruments

Food manufacturers (seasonings, processed foods, alcoholic beverages, frozen foods, processed meat and seafood products, confectioneries, etc.), retail and wholesale companies, restaurant chains, container and packaging manufacturers, universities and high schools, public testing and research institutes, contract analysis organizations, pharmaceutical manufacturers, etc.

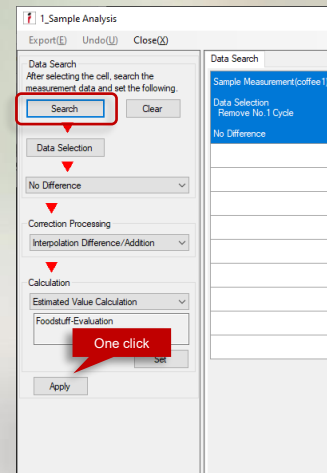
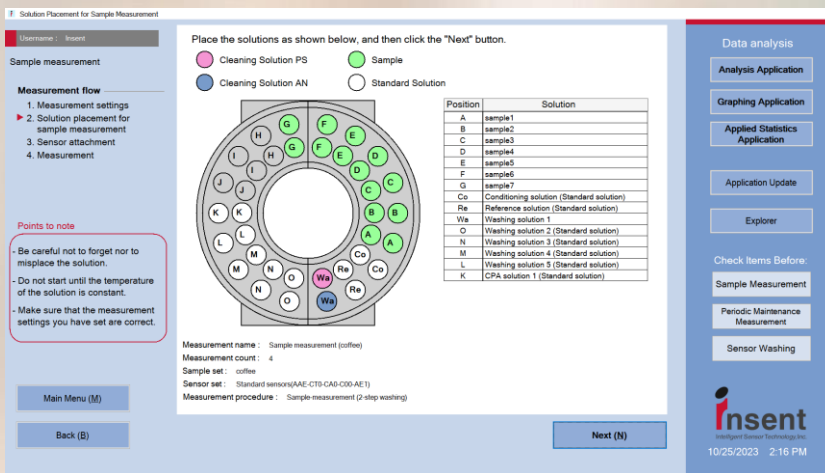


# More User-friendly TS-6000A

## Improved Operability

Shorter work time using easy-to-understand setup and simple screens

- Measurement setup, results, analysis, and graphing from one screen save time previously spent on separate screens
- Complete single-click analysis after selecting data
- Easy setup using tab/wizard switching in main menu



Measurement setup screen (solution placement)

Analysis completed by single click after selecting data\*  
\*Depends on analysis methods

## Simple Configuration

Space-saving installation by integrating management server and main unit functions

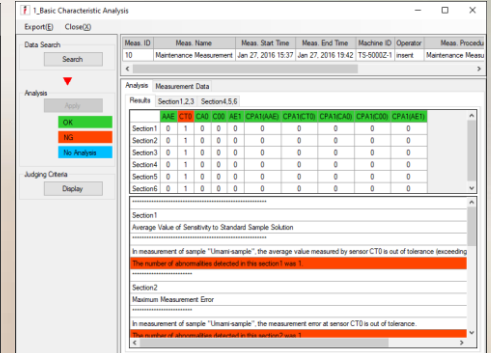
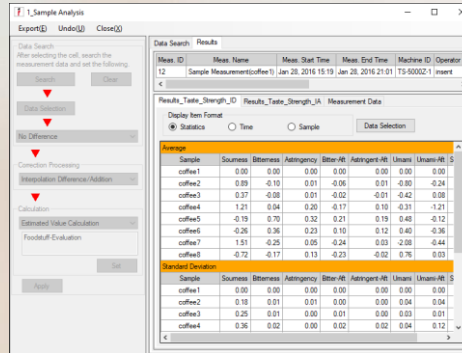
- Integrated main unit, monitor, keyboard/mouse, and barcode reader



# Various Functions

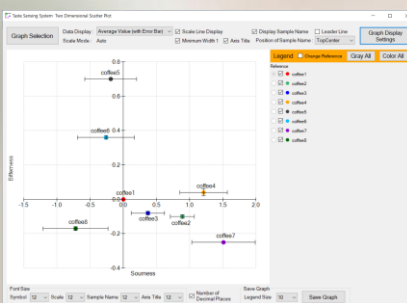
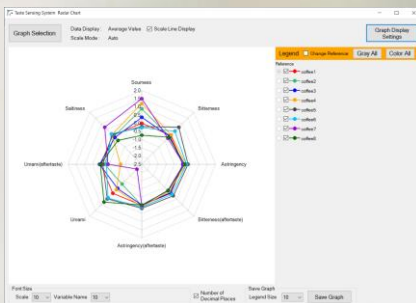
## Analysis Application

- Conversion to numerical values for each taste attribute
- Easy combination of multiple data
- Dedicated analysis function for maintenance measurement
- Report output function for analysis results



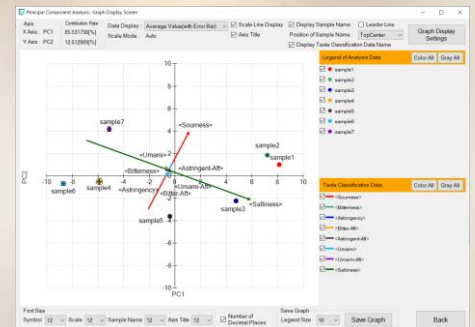
## Graphing Application

- Easily draw radar charts, two-dimensional scatter plots, and more
- Reorder, delete, and add information to samples



## Applied Statistics Application

- Includes functions for principal component analysis and multiple regression



# Reliable Support Functions

Prevent operation errors and warn when errors occur

- Monitoring camera prevents misplaced solutions and checks error causes
- Error alerts

# Improved Maintenance and Durability

- Automatic sensor history management: Predicts sensor replacement time
- Upgraded cables and components: Cut fault/service downtime



## Specifications

Taste Sensing System TS-6000A	Number of samples	10
	Required sample volume	70 ml (min. 35 ml depends on sample properties)
	Dimensions (W x D x H)	470 mm x 540 mm x 550 mm
	Mass	28 kg
	CPU	Intel Core i5 or higher
	OS	Windows 10 IOT
	Storage media	SSD (128 GB or more)
	Camera, LED lighting	Fitted as standard
Applications	Measurement, Analysis, Graphing, and Applied Statistics	
DBMS	PostgreSQL	
Monitor	I/F	HDMI
	Resolution	1920 x 1080
Keyboard/ mouse	I/F	USB (wireless)
	Battery	Keyboard: AAA battery, mouse: AA battery
QR code reader	I/F	USB (wireless)
	Charging	USB (dedicated cable)
Taste sensor	Response mechanism	Membrane potential measurement (potentiometric measurement)
	Sensor type	Artificial lipid/polymer membrane
	Measurement object	Drinks, solids, drugs, etc. (solids require prior dissolution)
Reference electrode	Liquid junction	Ceramic single junction
	Pin plug type	Inner and outer sensor attachments
Sensor head	Inside: 4 taste sensor channels, 1 reference electrode channel Outside: 4 taste sensor channels, 1 reference electrode channel, 1 temperature sensor channel	

## Optional Extras



### ■ Compact Monitor

Matching installation space



### ■ Server

For centralized data management



### ■ Instrument cover

Dust and air conditioning protection

Contact us or your local distributor for more information.



# Consumables

## ■ Sensor related

Taste sensors (8 types)  
Reference electrodes (4 types)  
Temperature sensor  
Sensor head (1 set)



## ■ Solutions, containers

Solution	Standard solution (2 liters) Washing solution (2 types) Internal solution Preconditioning solution for reference electrode
Container	Standard solutions (6 types) Disposable measurement containers
Other	Filters for sample preparation (3 types)



### Q.1 Can solids, fats and oils be measured?

With pretreatment, solids, fats and oils can be evaluated. Products such as prepared foods, olive oil, sesame oil, etc., have been evaluated. Please contact us for more details on pretreatment.

### Q.2 Can the results of multiple measurements be combined?

Data can be combined by measuring the same control sample for data combination at each measurement. Data can be easily combined using the Analysis Application.

### Q.3 What is initial taste and aftertaste?

The "initial taste" is defined as "the taste of the food when it is put in the mouth" and the "aftertaste" is defined as "the taste that continues after swallowing the food."

Evaluation of aftertaste is particularly difficult even for sensory evaluation, but Insent's taste sensor can quantify aftertaste as well.

### Q.4 Can the sensor be used repeatedly?

Yes, sensors (with some exceptions) can be used repeatedly. The number of times depends on the type of sample and number of samples. The sensitivity of sensors can be checked using dedicated standard solutions to confirm when a sensor should be replaced.

### Q.5 Can taste be evaluated only by measuring with taste sensors?

Since each sensor has selectivity for each taste, there is no need to prepare calibration curves in advance.

### Q.6 How long does measurement take?

It takes about 40 minutes per sample (about 10 minutes per cycle x 4 cycles). The Taste Sensing System requires a minimum of two samples for relative comparison.

### Q.7 Can I try the instrument before installation?

Please contact us for a preliminary sample test. We will work with you to resolve any concerns or issues you may have.

### Q.8 Are there any training courses?

Paid training is available online, at our office, or at your company's office.



---

## Your local distributor

---

Address

TEL:  
FAX:  
Email:  
URL:

Contact Insent

<https://www.insentjp.com/>



# insent

---

## Intelligent Sensor Technology, Inc.

---

5-1-1 Onna, Atsugi City, Kanagawa Pref.  
243-0032 Japan

TEL: +81 46-296-6609  
FAX: +81 46-225-7933  
Email: [info@insentjp.com](mailto:info@insentjp.com)

- When taking this product overseas, it may be necessary to obtain export permission or service transaction permission from the Japanese government in accordance with the provisions of foreign exchange and foreign trade control laws. Please be sure to contact our sales representative.
- Please note that the specifications and outer package are subject to change without notice due to product improvement.
- No part of this catalog may be reproduced in any form or by any means without



ES France - Département Bio-tests & Industries  
127 rue de Buzenval BP 26 - 92380 Garches



Tél. 01 47 95 99 90



e-mail : [bio@es-france.com](mailto:bio@es-france.com)  
Site Web : [www.es-france.com](http://www.es-france.com)