HIKARi

Digital Hand-held “Pocket” IR Brix Meter

The 7th Shibusawa Eiichi Business Grand Prize

The 30th Small and Medium Enterprise Excellent New Technology-New Product

2018 Kanto Plain 'Hatsumei' (Invention) Commendation

The Tokyo Venture Technology Awards Honorable Mention



Uses









Besides aforementioned, pâtissier chefs who uses fruits as an ingredient, gardening hobbyist that enjoys home gardening and may more can be use it.



2 ways to measure



Just touch the fruit and press the side button



Place a fruit, then just press the START button

Touch the surface of fruit

Without cutting or squeezing fruits, Brix (sugarconcentration) can be measured in one second just by placing fruits on the sample stage. There is no more wiping or washing after each measurement. A buzzer sounds and vibrates when it is done taking a measurement. (ON/OFF setting)

Total inspection is possible.

All it takes is to put it against a fruit so each individual fruits' Brix (sugar level) can be inspected. The measured fruits are intact and can then be shipped and sold after measurement.

Super lightweight that fits in your pocket

PAL-HIKARi is the world most compact nondestructive Brix meter. The button located on the lateral side of the unit makes it possible to take measurements with one hand while the fruits that are on the tree. The unit is battery powered which makes it possible to take measurements anywhere.

Fits well on the surface of a fruit

PAL-HIKARi fits well to fruit surfaces.
External light or how fruits are placed will not cause measurement discrepancies because PAL-HIKARi has a good contact with fruit surfaces regardless its shape.

Series total 540,000 unit

*PAL series

ATAGO is an established manufacture of Brix meters since 1940. For Brix (sugar level), with ATAGO's proven track of history in technology, PAL-HIKARi is developed on basis of this accomplished technology.
ATAGO products are used in 154 countries worldwide.

HIKARi

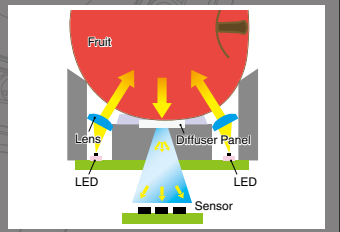
NEW NFC Function

With an NFC (Near Field Communication) function, measurements history can be accessed by simply touching a contactless IC card reader/writer connected to your smartphone or computer.

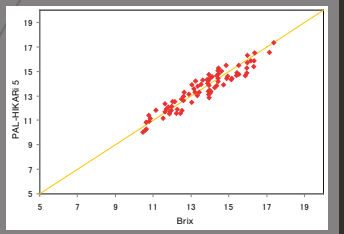
NEW ELI (External Light Interference)Function

PAL-HIKARi is equipped with ELI (External Light Interference) function that will detect when external light enters the instrument making measurement taking possible outdoors, while the fruits are growing on the tree. When the light is detected, the instrument will display 'nnn'.

PAL-HIKARi's principal measurement method



Correlation between PAL-HIKARi and Brix (sugar level)



*The graph is based on the apple scale

Offset feature

This function allows to adjust fixed numeric value to the measurement value. Please use the offset feature to match the measurement value with already owned Brix meter.





PAL-HIKARi 2 Cat.No.5452

Measurement fruit	Grapes (Recommended sample size is 15 mm or greater in diameter)
Measurement Range	Brix 10.0 to 25.0%
Resolution	Brix 0.1%
Measurement Accuracy	Brix ±1.5% *Guaranteed accuracy range:15.0 to 30.0°C *Grape varieties and measurement environment may affect accuracy.
Repeatability	Brix ±1%

Automatic Temperature Control Range	15.0 to 30.0°C *acclimate grape to ambient temperature
Ambient Temperature	15 to 35°C
International Protection Class	IP64
Power Supply	2 x AAA alkaline batteries
Dimensions and Weight	6.1(W) × 6.4(D) × 11.5(H)cm, 153g (main unit and small sample stage S only)

Cat.No.5552
IR Brix Meter × Brix Meter (Grapes)
·PAL-HIKARi 2
·PAL-0

Cat.No.5652
IR Brix Meter × Brix Acidity Meter (Grapes)
·PAL-HIKARi 2
·PAL-BX|ACID2

User Testimonials

Even grapes still on the vine are easy to measure

An acquaintance told me about PAL-HIKARi. We are using it to check whether the grapes are ready to ship and the quality when we try growing new varieties. I like how small and lightweight the PAL-HIKARi is, which makes it easy to measure grapes that are still on the vine. I'm also pleased with how reasonably priced the PAL-HIKARi is compared to devices made by other manufacturers.

Mochizuki Fruits Farm



Leading Varieties in Japan

Black Beat
Aug.



Gigantic Peak (Kyoho)
Aug.– Sept.



Pione
Aug.– Sept.



Fujiminori
Aug.– Sept.



Queen Nina
Aug.– Sept.



Shine Muscat
Aug.– Sept.



Gorby
Aug.– Sept.



Nagano Purple
Sept.– Oct.



Suiho
Sept.– Oct.





NEW Shading Cover S
Newly Shading Cover S is convenient when measuring outdoors.



PAL-HIKARi 3 MINi Cat.No.5453

Measurement fruit	①Cherry Tomatoes (Recommended sample size is 15 mm to 25 mm in diameter) ②Medium Tomatoes (Recommended sample size is 25 mm to 50 mm in diameter)
Measurement Range	Brix 3.0 to 15.0%
Resolution	Brix 0.1%
Measurement Accuracy	Brix ±1.5% *Cherry Tomatoes and Medium Tomatoes varieties and measurement environment may affect accuracy.
Repeatability	Brix ±1%

Automatic Temperature Control Range	15.0 to 35.0°C *acclimate cherry tomatoes and medium tomatoes to ambient temperature
Ambient Temperature	15 to 35°C
International Protection Class	IP64
Power Supply	2 x AAA alkaline batteries
Dimensions and Weight	6.1(W) × 6.4(D) × 11.5(H)cm, 153g (main unit and small sample stage S only)

Cat.No.5553
IR Brix Meter × Brix Meter (Cherry Tomatoes & Medium Tomatoes)
·PAL-HIKARi 3 MINi
·PAL-0

Cat.No.5653
IR Brix Meter × Brix Acidity Meter (Cherry Tomatoes & Medium Tomatoes)
·PAL-HIKARi 3 MINi
·PAL-BX|ACID3

Story

Sweet and Delicious Fruit Tomatoes

There are various types of tomatoes. More recently, sweet and juicy fruit tomatoes are gaining popularity. Fruit tomatoes, as the name suggests, have a sugar content that is comparable to fruits.
The sugar concentration (Brix) of a general tomato is about four to five, whereas the sugar concentration (Brix) of fruit tomatoes is 8 or more.
Among them, salt tomatoes from Kumamoto Prefecture that are often given as a high-quality gift, fruit tomatoes from Tokutani, Kochi Prefecture, which is said to be the birthplace of fruit tomatoes,

Prefecture are popular. The difference from ordinary tomatoes lies in the way they are grown. By adjusting the amount of watering and increasing the soil salinity, increases the sugar concentration (Brix).



Leading Varieties in Japan

tomato berry



puchipuyo tomatoes



Aiko mini tomatoes



Yellow aiko tomatoes



Lemon tomatoes



yellow grape tomatoes



Cherry snowball tomatoes



Black tomatoes



carol tomatoes





NEW **Shading Cover R**
The sensor fits perfectly on the outer surface of fruits.



PAL-HIKARi 5 Cat.No.5455

Measurement fruit	Apple	
Measurement Range	Brix	10.0 to 18.0%
Resolution	Brix	0.1%
Measurement Accuracy	Brix	±1% *Apple varieties and measurement environment may affect accuracy.
Repeatability	Brix	±0.5%

Automatic Temperature Control Range	5.0 to 35.0°C *Acclimate apple to ambient temperature
Ambient Temperature	5 to 35°C
International Protection Class	IP64
Power Supply	2 x AAA alkaline batteries
Dimensions and Weight	6.1(W) × 4.4(D) × 11.5(H)cm, 120g (Main Unit only)

Cat.No.5555
IR Brix Meter × Brix Meter (Apple)
·PAL-HIKARi 5
·PAL-0

Cat.No.5655
IR Brix Meter × Brix Acidity Meter (Apple)
·PAL-HIKARi 5
·PAL-BX|ACID5

Story

1,200,000 yen apple ?!

The focus of attention, “Esashi Apple” is the top brand selected by JA (Japan Agricultural Co-operatives) Esashi from among apples grown in unique environment of Esashi region of Okushu city in Iwate prefecture in characteristic regional soil, climate, dwarfing technique, and keeping them unbagged.

After selective selection process, only those with the right color, size, shape and sugar level are allowed to be called “Esashi Apple”. From the entire harvest, only 1% is selected as the special of the top grade.

In recent years, the auctioned price of the special selection grade is the fall’s biggest news. A box of 10kg special selection grade was sold during auctioned for 1,200,000 yen. The cost of an apple was 43,000 yen.

Esashi apple is proudly locally made over 40 years. Following the example of Esashi apple, many unique savory brands are beginning to appear Japan.

The most expensive variety apple brand was “Sun Fuji.”



Story

“Fuji” and “Sun Fuji” ?

Originating in Fujisaki machi, a town located in Aomori prefecture, “Fuji apple” is grown worldwide with highest global production in the world. “Sun Fuji” and “Fuji” are thought as a different variety from each other but is both “Fuji apple.”

Matured “Fuji” is enclosed in brown paper bags to keep insect pests from getting to them before harvesting. Its distinctive characteristics are thin skin and vibrant color.

On the other hand, “Sun Fuji” is not bagged and is exposed to sunlight for a long duration of time. The color may not be quite as good but its sugar level is very high.

“Sun Fuji” branching from “Fuji” was branded to have sweet flavor while “Fuji” was branded for its pretty reddish color. From this branding, one variety of apple made it possible to satisfy different market needs such as “good color and storability” and “naturally distinct sweetness.”



Leading Varieties in Japan

- Natsu Midori — Jul.– Aug.
- Sansa — Aug.– Sept.
- Tsugaru — Aug.– Sept.
- Akibae — Sept.– Oct.
- Jonathan — Oct.
- Shinano Gold — Oct.– Nov.
- Sun Mutsu — Oct.– Jan.
- Sun Fuji and Fuji — Oct.– Jan.
- Mutsu — Nov.– Jan.



NEW **Shading Cover R**
The sensor fits perfectly on the outer surface of fruits.



PAL-HIKARi 10 Cat.No.5460

Measurement fruit	Peach	
Measurement Range	Brix	8.0 to 20.0%
Resolution	Brix	0.1%
Measurement Accuracy	Brix	±1.5% *Peach varieties and measurement environment may affect accuracy.
Repeatability	Brix	±1%

Automatic Temperature Control Range	5.0 to 35.0°C *Acclimate peach to ambient temperature
Ambient Temperature	5 to 35°C
International Protection Class	IP64
Power Supply	2 x AAA alkaline batteries
Dimensions and Weight	6.1(W) × 4.4(D) × 11.5(H)cm, 120g (Main Unit only)

Cat.No.5560
IR Brix Meter × Brix Meter (Peach)
·PAL-HIKARi 10
·PAL-0

Story

Guinness World Records World's Sweetest Peach



Well known producers of the peaches are located in Yamanashi, Fukushima, Nagano prefectures in Japan. "World's highest Brix peach" recorded in Guinness World Records can be found in Kishiwada city, Osaka prefecture. During the Guinness World Records challenge, the average peaches measured 22.2 Brix for "Masahime" produced by Maruya Farm in Kishiwadashi Kanechikachou.

General Brix level of peaches are about 10 to 12, so its surprising sweetness is nearly double the regular peaches. Kanechikachou has always been a famous place of peaches since ancient times but its nationwide awareness is low. It gained media publicity as a result of this Guinness World Records registration.
The challenge to Guinness World Records was a long hard work that lasted three years, but by the effort of President Takahiro Matsumoto of "Maruya Farm", "Kanechika's peach" was able to push its brand power.

Peach of "Maruya Farm" is also selling on the internet, but is a very popular item that "sold out" in 15 minutes from the start of reservation.

Leading Varieties in Japan

Ryumonwase
Jun.

Hikawahakuhou
Jun.– Jul.

Hakuhou
Jun.– Aug.

Shimozuhakutou
Jul.– Aug.

Natsukko
Aug.

Akatsuki
Aug.

Kawanakajimahakutou
Aug.– Sept.

Sachiakane
Aug.– Sept.

Yuzora
Sept.





PAL-HIKARi 12 Cat.No.5462

Measurement fruit	Asian Pear	
Measurement Range	Brix	10.0 to 16.0%
Resolution	Brix	0.1%
Measurement Accuracy	Brix	±1% *Asian Pear varieties and measurement environment may affect accuracy.
Repeatability	Brix	±0.5%

Automatic Temperature Control Range	5.0 to 35.0°C *Acclimate asian pear to ambient temperature
Ambient Temperature	5 to 35°C
International Protection Class	IP64
Power Supply	2 x AAA alkaline batteries
Dimensions and Weight	6.1(W) × 4.4(D) × 11.5(H)cm, 120g (Main Unit only)

Cat.No.5562
IR Brix Meter × Brix Meter (Asian Pear)
·PAL-HIKARi 12
·PAL-0

Cat.No.5662
IR Brix Meter × Brix Acidity Meter (Asian Pear)
·PAL-HIKARi 12
·PAL-BX|ACID12

Story

Already available during Yayoi period

Amongst all the fruits grown in Japan, Asian pears have a long history with a recorded history of its consumption during the Yayoi period (300BC-300AD). Asian pears are one of the fruits popular in Japan since long ago, such poem in which "pears" have been included among the oldest existing collection of Japanese poetry,"Manyoushu." It features a distinctive texture, with sweetness and juiciness. There are many varieties and with more than 150 kinds of varieties the sweet variety are known as Shintakanashi. Its Brix measures about 12 but because it is not very tart, the sweetness tastes even stronger.



Shintakanashi is also called "Jumbo Nashi" (jumbo pear) each weighing 600g to 1kg. Larger ones can even weigh about 1.5kg. Compared to the other Asian pears, this is almost 2 to 3 times larger than the regular Asian pears. Its large size and appearance, it is a popular variety fro gifts. Popularity as a gift is not limited to Japan alone, there is a demand for gifts in Mid-Autumn Festival in Taiwan, and it is one of the brand pears exported overseas. The fact it is not as tart as other pears, and its good appearance wins popularity among other domestic pears.

Leading Varieties in Japan

Kousui
Jul.– Sept.



Nijusseiki
Aug.– Oct.



Housui
Sept.



Niitaka
Sept.



Nansui
Sept.– Nov.



Akizuki
Oct.– Nov.



Nikkori
Oct.– Nov.



Okusankichinashi
Oct.– Nov.



Shinkou
Oct.– Nov.







PAL-HIKARi 16 Cat.No.5466

Measurement fruit	Cherry (Recommended sample size is 15 mm or greater in diameter)	Automatic Temperature Control Range	10.0 to 35.0°C *acclimate cherry to ambient temperature
Measurement Range	Brix 12.0 to 26.0%	Ambient Temperature	10 to 35°C
Resolution	Brix 0.1%	International Protection Class	IP64
Measurement Accuracy	Brix ±1.5% *Cherry varieties and measurement environment may affect accuracy.	Power Supply	2 x AAA alkaline batteries
		Dimensions and Weight	6.1(W) × 6.4(D) × 11.5(H)cm, 153g (main unit and small sample stage S only)
Repeatability	Brix ±1%		

Cat.No.5566
IR Brix Meter × Brix Meter (Cherry)
·PAL-HIKARi 16
·PAL-0

Cat.No.5666
IR Brix Meter × Brix Acidity Meter (Cherry)
·PAL-HIKARi 16
·PAL-BX|ACID16

User Testimonials

Know the Brix (sugar concentration) by Placing it

Harada Farm is a pick your own cherry farm that off ers Takasago, Seikou nishiki, Sato nishiki, Benishuhou, and Napoleoncherries. They decided to off er PAL-HIKARi 16 (cherry) to their customers to experience the sweetness beyond their tongue and enjoy seeing Brix (sugar concentration) numerically display.
Harada Farm likes how Brix (sugar concentration) can be measured by placing a PAL-HIKARi against a cherry.



Leading Varieties in Japan

Koukanishiki cherries
May–Jun.

Rinaka tomato tomatoes
May–Jun.

Aiko mini tomatoes
May–Jul.

Yellow aiko tomatoes
Jun.

First tomatoes
Jun.–Jul.

Lemon tomatoes
Jun.–Jul.

Cherry snowball tomatoes
Jun.–Jul.

Black tomatoes
Jun.–Jul.

Amela tomatoes
Jul.





PAL-HIKARi 4 Cat.No.5454

Measurement fruit	Strawberry (Recommended sample size is 15 mm or greater in diameter)	Automatic Temperature Control Range	5.0 to 30.0°C *acclimate strawberry to ambient temperature
Measurement Range	Brix 4 to 21%	Ambient Temperature	10 to 35°C
Resolution	Brix 0.1%	International Protection Class	IP64
Measurement Accuracy	Brix ±1.5% *Strawberry varieties and measurement environment may affect accuracy.	Power Supply	2 x AAA alkaline batteries
		Dimensions and Weight	6.1(W) × 6.4(D) × 11.5(H)cm, 153g (main unit and small sample stage S only)
Repeatability	Brix ±1%		

Cat.No.5554
IR Brix Meter × Brix Meter (Strawberry)
·PAL-HIKARi 4
·PAL-0

Cat.No.5654
IR Brix Meter × Brix Acidity Meter (Strawberry)
·PAL-HIKARi 4
·PAL-BX|ACID 4

User Testimonials

Managing the condition of Strawberry



Strawberry farmer Sonoe Mori, moved to Hokkaido when her husband was transferred due to work. Since she had an interest in agriculture, she took advantage of the city's farming support system and started growing strawberries. She had seen Atago's refractometer when she had her training as a farmer, and when she saw the PAL-HIKARi non-destructive brix meter for strawberry in the advertisement on the Internet, she immediately purchased it."She has trouble with starwberries having ""white shoulder"" which causes the color not to be as red.

Not only cheking the sweetness of the strawberry, but she is daily checking if the plants itself is having no problems. To make a specifc brand in strawberry, not only how the instrument looks, she is highly supporting our PAL-HIKARi that can measure brix% without needing to cut fruits. In addition, she also praising our brix/acidity meter which can measure the sweetness and sourness with one device."

Green Thumb Greenhouse

Leading Varieties in Japan

- Beni hoppe — Dec.–May.
- Tochiotome — Feb.–Apr.
- Amaou — Jan.–Mar.
- Hi no Shizuku — Dec.–Apr.
- Akihime — Dec.–May.
- Sky berry — Dec.–May.
- Shinku no Misuzu — Dec.–May.
- Awayuki — Dec.–Apr.
- Yukiusagi — Dec.–May.





PAL-HIKARi 7 Cat.No.5457

Measurement fruit	Blueberry	
Measurement Range	Brix	8.0 to 20.0%
Resolution	Brix	0.1%
Measurement Accuracy	Brix	±2.0% *Blueberry varieties and measurement environment may affect accuracy.
Repeatability	Brix	±1%

Automatic Temperature Control Range	10.0 to 30.0°C *Acclimate blueberry to ambient temperature
Ambient Temperature	10 to 30°C
International Protection Class	IP64
Power Supply	2 x AAA alkaline batteries
Dimensions and Weight	6.1(W) × 6.4(D) × 11.5(H)cm, 153g (Main Unit only)

Cat.No.5557
IR Brix Meter × Brix Meter (Blueberry)
·PAL-HIKARi 7
·PAL-0

Cat.No.5657
IR Brix Meter × Brix Acidity Meter (Blueberry)
·PAL-HIKARi 7
·PAL-BX|ACID7

Story

The very first Blueberry in Japan

"Blueberries came to Japan in 1952 when Ministry of Agriculture, Forestry and Fisheries brought Northern High Bush blueberries from USA.""Rabbiteye Blueberry which is adaptable to warm area came to Japan in 1962, and started cultivating in 1968 by Mr.Hayao Shimamura who lives in Kodaira city."
"This became the start of ecomonic cultivation and the first blueberry farm ""Shimamura Blueberry Farm"" was established.""Highbush Bluebberries came to Japan in 1971, and started to produced in Gunma, Niigata, Yamanashi, and Miyagi which is a cool area and suitable for cultivation."
Nowadays, not only fruits but also jams and cakes are starting to appear in stores, and it is gaining recognition as a functional food.



Leading Varieties in Japan

- Eureka — Jun.
- Bunus — Jun.–Jul.
- Earlyblue — Jun.
- Florida Rose — Jul.–Aug.
- Baldwin — Jul.–Aug.
- Nui — Jun.
- Aliceblue — Jul.
- Pink Lemonade — Jun.–Jul.
- Summit — Jun.–Jul.



NEW **Shading Cover R**
The sensor fits perfectly on the outer surface of fruits.



PAL-HIKARi 8 Cat.No.5458

Measurement fruit	Kiwi	
Measurement Range	Brix	11.0 to 20.0%
Resolution	Brix	0.1%
Measurement Accuracy	Brix	±1.5% *Kiwi varieties and measurement environment may affect accuracy.
Repeatability	Brix	±1%

Automatic Temperature Control Range	5.0 to 35.0°C *Acclimate kiwi to ambient temperature
Ambient Temperature	5 to 35°C
International Protection Class	IP64
Power Supply	2 x AAA alkaline batteries
Dimensions and Weight	6.1(W) × 4.4(D) × 11.5(H)cm, 120g (Main Unit only)

Cat.No.5558
IR Brix Meter × Brix Meter (Kiwi)
·PAL-HIKARi 8
·PAL-0

Cat.No.5658
IR Brix Meter × Brix Acidity Meter (Kiwi)
·PAL-HIKARi 8
·PAL-BX|ACID8

Story

Which would you choose, gold or green?

There are two types of kiwi: green kiwi, which is green, and gold kiwi, which is yellow."Green kiwi has a 15% brix, while gold kiwi has 18% brix.
Gold kiwi is characterized by its sweetness."Gold kiwi is developed to suit Japanese taste for sweetness and is said to have beauty effects such as brightening and for beautiful skin due to its high vitamin C and E.Meanwhile, green kiwi is popular for its refreshing taste with a good balance of sweetness and sourness. Not only that , but it is also popular because it contains twice as much dietary fiber as gold kiwi, it provides nutrients that modern people tend to lack.



Leading Varieties in Japan

Tokyo Gold
Oct.–Nov.



Kouryoku
Oct.–Nov.



Hayward
Nov.



Yellow Joy
Oct.–Nov.



Sanryoku
Oct.–Nov.



Sanuki Gold
Oct.



Apple Kiwi
Oct.



Sanuki Angel Suite
Oct.



Zespri Ruby Red
Apr.–May.







PAL-HIKARi 15 Cat.No.5465

Measurement fruit	Mango	
Measurement Range	Brix	10.0 to 22.0%
Resolution	Brix	0.1%
Measurement Accuracy	Brix	±1.5% *Mango varieties and measurement environment may affect accuracy.
Repeatability	Brix	±1%

Automatic Temperature Control Range	10.0 to 35.0°C *Acclimate mango to ambient temperature
Ambient Temperature	10 to 35°C
International Protection Class	IP64
Power Supply	2 x AAA alkaline batteries
Dimensions and Weight	6.1(W) × .4(D) × 11.5(H)cm, 120g (Main Unit only)

Cat.No.5565
IR Brix Meter × Brix Meter (Mango)
·PAL-HIKARi 15
·PAL-0

Cat.No.5665
IR Brix Meter × Brix Acidity Meter (Mango)
·PAL-HIKARi 15
·PAL-BX|ACID15

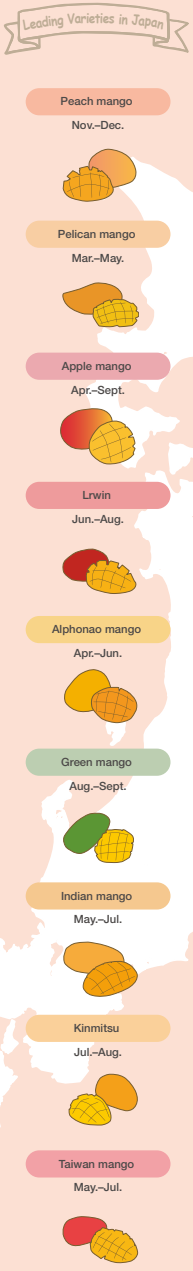
User Testimonials

Mangoes with a stable sweetness, not a "certain amount of sweetness"

We sort and grading, box, and ship the fruit ourselves.Up until now, I have eaten a lot of mangoes during sorting and grading. The first thing we do is to try the mango when the color is a little different, the shape is a little different,and when the texture is different. By trying a lot of mango there are times when we do not have to have a meal because we are full with eating a lot of mango.But thanks to this experience, I know how sweet the mango can be.However, I do know that this is a way of estimating the certain level of sweetness.By using the HIKARi series, not a certain llevel of seetness, but a stable sweetness of mango can always be provided to customers.

Tokiwa Farm









PAL-HIKARi 18 Cat.No.5468

Measurement fruit	Prune	
Measurement Range	Brix	11.0 to 29.0%
Resolution	Brix	0.1%
Measurement Accuracy	Brix	±1.5% *Prune varieties and measurement environment may affect accuracy.
Repeatability	Brix	±1%

Automatic Temperature Control Range	10.0 to 35.0°C *Acclimate prune to ambient temperature
Ambient Temperature	10 to 35°C
International Protection Class	IP64
Power Supply	2 x AAA alkaline batteries
Dimensions and Weight	6.1(W) × 4.4(D) × 11.5(H)cm, 120g (Main Unit only)

Cat.No.5568
IR Brix Meter × Brix Meter (Prune)
·PAL-HIKARi 18
·PAL-0

Story

What prunes are you eating?

Prune refers to Western plum.Unlike Japanese plum, it is not as sour.Other than eating it fresh, Prune tends to be sold as dried fruits or jam."In stores, it is not specifed what kind of prunes it is, but there are different kinds of prunes in the market."

One of the famous prunes in Japan is "Sun prune" which are small and very sweet.The sweetness is about 18% brix with a well balanced of sourness which brings out the sweetness.

"There is a prune in Japan ""sugar"" which existed from the ancient times, and had a 14-15% brix.

It is popular for its well balanced sweetness and sourness."

There are many other types of prunes in the market. Why not try finding the one you like?



Leading Varieties in Japan

Robed surgeon
Aug.–Sept.



Stanley
Aug.–Sept.



Sun purune
Sept.–Oct.



Baylor
Sept.–Oct.



President
Oct.



Purple eye
Sept.



Early river
Jul.–Aug.



Aurumn cute
Sept.–Oct.



Tresiddy
Aug.





NEW **Shading Cover R**
The sensor fits perfectly on the outer surface of fruits.



PAL-HIKARi 19 Cat.No.5469

Measurement fruit	Persimmon		Automatic Temperature Control Range	5.0 to 30.0°C *Acclimate persimmon to ambient temperature
Measurement Range	Brix	12.0 to 20.0%	Ambient Temperature	5 to 30°C
Resolution	Brix	0.1%	International Protection Class	IP64
Measurement Accuracy	Brix	±1.5% *Persimmon varieties and measurement environment may affect accuracy.	Power Supply	2 x AAA alkaline batteries
Repeatability	Brix	±1%	Dimensions and Weight	6.1(W) × 4.4(D) × 11.5(H)cm, 120g (Main Unit only)

Cat.No.5569
IR Brix Meter × Brix Meter (Persimmon)
·PAL-HIKARi 19
·PAL-0

Story

Rich in Vitamin C and good for hangover

"Persimmons is a seasonal fruit in Autumn. Sweet persimmon has 16%, while astringent persimmons has brix 20% which is more sweet, but is hidden due to the astringency." Persimmons have one of the highest levels of vitamin C among fruits, and the tannins contained in persimmons are said to suppress the harmful effects of alcohol and help prevent and alleviate hangovers.



Leading Varieties in Japan

- Shinshugaki — Oct.
- Fuyugaki — Nov.–Dec.
- Jiro — Oct.–Nov.
- Aiahuho — Oct.–Nov.
- Kanshu — Oct.–Nov.
- Kishu — Oct.
- Youhougaki — Oct.–Dec.
- Neo suite — Oct.
- Kitarou — Oct.





PAL-HIKARi 30 Cat.No.5480

Measurement fruit	Melon (Recommended sample size is 12 cm or greater in diameter)
Measurement Range	10-20mm from surface Brix % :7.0 ~ 16.0% CoreBrix % :7.0 ~ 21.0%
Resolution	Brix 0.1%
Measurement Accuracy	10-20mm from surface Brix :±2.0 *Melon varieties and measurement environment may affect accuracy.
Repeatability	Brix ±1%

Automatic Temperature Control Range	10.0 to 40.0°C *Acclimate melon to ambient temperature
Ambient Temperature	10 to 40°C
International Protection Class	IP64
Power Supply	2 x AAA alkaline batteries
Dimensions and Weight	6.1(W) × 6.4(D) × 11.5(H)cm, 153g (Main Unit only)

Cat.No.5580
IR Brix Meter × Brix Meter (Melon)
·PAL-HIKARi 30
·PAL-0

User Testimonials

Measurements can be taken without damaging the melon.

There has been expectations for non-destructive brix meters. The biggest advantage is that brix% can be measured without cutting the fruits."For melon, there is a srict condition that the brix should be higher than 14%. Due to the strict condition, the sweetness of melon has to be checked."Until now, melon with a slow growth are being chosen to cut and check the sweetness."A non-destructive brix meter is useful due it measures thesweetness while no cutting required in the melon."

Hokkaido Asahi melon



Leading Varieties in Japan

- Quincy Melon — Apr.~Jul.
- Muskmelon — Jun.~Sept.
- Andes melon — May.~Jul.
- Nangoku green — May.~Jul.
- Asahi melon — May.~Oct.
- Earls melon — May.~Oct.
- Sour sweet — May.~Jun.
- Orenge heart — May.~Jun.
- Shinhouro — Jul.





PAL-HIKARi 32 Cat.No.5482

Measurement fruit	Watermelon(Recommended sample size is 20 to 25cm in diameter.)	
Measurement Range	Brix	5.0 to 18.0%
Resolution	Brix	0.1%
Measurement Accuracy	Brix	±2.0% *Watermelon varieties and measurement environment may affect accuracy.
Repeatability	Brix	±1%

Automatic Temperature Control Range	10.0 to 40.0°C *Acclimate watermelon to ambient temperature
Ambient Temperature	10 to 40°C
International Protection Class	IP64
Power Supply	2 x AAA alkaline batteries
Dimensions and Weight	6.1(W) × 4.4(D) × 11.5(H)cm, 120g (Main Unit only)

Cat.No.5582
IR Brix Meter × Brix Meter (Watermelon)
·PAL-HIKARi 32
·PAL-0

Story

Adding salt makes the watermelon sweeter?!

"Many people have probably tried the idea of ``adding salt to watermelon makes it sweeter.''"Adding salt to watermelon makes it sweeter is not because the ingredients have changed, but because it make the watermelon taste sweeter.

This phenomenon tends to occur when one taste is strong while the other taste is weak.For watermelon, ``simultaneous contrast'' occurs by tasting the sweet and salt at the same time.

The balance between watermelon and salt is important for simultaneous contrast, so the more salt you add, does not mean that the watermelon will taste sweeter.

Be careful not to use too much salt.



Leading Varieties in Japan

Natu makura
May.–Jun.



Eikan
May.–Jun.



Kansen
Jun.



Natsu makura black
May.–Jun.



Kanyu
May.–Aug.



Daikinboshi
May.–Jul.



Hoshikirara
Jul.–Aug.



Natsusouseki
Jul.–Aug.



Akatsuki
Jul.–Aug.





NEW **Shading Cover L**
The sensor fits perfectly on the outer surface of fruits.



PAL-HIKARi 33 MINi Cat.No.5483

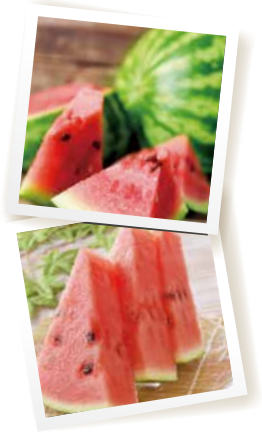
Measurement fruit	Mini watermelon(Recommended sample size is 13 to 16cm in diameter.)	Automatic Temperature Control Range	10.0 to 40.0°C *Acclimate Watermelon to ambient temperature
Measurement Range	Brix 5.0 to 18.0%	Ambient Temperature	10 to 40°C
Resolution	Brix 0.1%	International Protection Class	IP64
Measurement Accuracy	Brix ±2.0% *Watermelon varieties and measurement environment may affect accuracy.	Power Supply	2 x AAA alkaline batteries
Repeatability	Brix ±1%	Dimensions and Weight	6.1(W) × 4.4(D) × 11.5(H)cm, 120g (Main Unit only)

Cat.No.5583
IR Brix Meter × Brix Meter (Watermelon)
·PAL-HIKARi 33 MINi
·PAL-0

Story

Small watermelon contains 1.5 times more lycopene than tomato.

Watermelon is known for its refreshing sweetness and is eaten in the summer.Small watermelon contains 1.5 times more lycopene than tomato.
Lycopene has a strong antioxidant effect, improves blood flow, and promotes skin turnover, so it is said to improve lifestyle-related diseases and beautify the skin.
Watermelon not only reminds you the seasonal feeling, but it also contains a lot of nutrients to help you survive the hot summer.



Leading Varieties in Japan

Hitorijime
Jul.–Aug.



Kurotemari
May.–Jun.



Itsutsuboshi
Jul.–Aug.



Kurokodama
Jul.–Aug.



Gold komachi
May.–Jun.



Tawara komachi
Mar.–May.



Sweet kids
May.–Jul.



Madder Ball
May.–Jun.



Beni kodama
May.–Jul.





NEW **Cushion RS Triple (2 sets)**
The sensor fits perfectly on the outer surface of fruits.



PAL-HIKARi 51 Cat.No.8551

Measurement fruit	Corn	
Measurement Range	Brix	9.0 to 20.0%
Resolution	Brix	0.1%
Measurement Accuracy	Brix	±2% *Corn varieties and measurement environment may affect accuracy.
Repeatability	Brix	±1%

Automatic Temperature Control Range	20.0 to 35.0°C *Acclimate corn to ambient temperature
Ambient Temperature	20 to 35°C
International Protection Class	IP64
Power Supply	2 x AAA alkaline batteries
Dimensions and Weight	6.1(W) × 6.4(D) × 11.5(H)cm, 153g (Main Unit only)

Cat.No.8651
IR Brix Meter × Brix Meter (Corn)
·PAL-HIKARi 51
·PAL-0

Story

Light the pot and go pick it.

The average sweetness of corn has been rising over the past few years as sweeter varieties of corns are developed one after another, and it is not rare for a corn to have over 16-17% brix.There are corn which is over 20% brix and is higher than fruits.
There is a saying, ``Light the pot and go harvest it.'' Corn has the highest brix% when freshly harvested, and the sugar content decreases as time passes.Also, by heating it without peeling it, the sweetness is concentrated and it does not become watery. With this simple twist, you can enjoy even more delicious corn.



Leading Varieties in Japan

Mierucorn
Jun.–Jul.

Sunny shokora
Jun.–Sept.

Gold rush
May.–Jul.

Roishi corn
Jul.–Sept.

Young corn
May.–Jun.

Pure white
Aug.–Sept.

Peter corn
Jun.–Sept.

Kankanmusume
May.–Jul.

Kuromochi
Jul.–Sept.





PAL-HIKARi 53 Cat.No.8553

Measurement fruit	Tomatoes	
Measurement Range	Brix	2.0 to 11.0%
Resolution	Brix	0.1%
Measurement Accuracy	Brix	±1.5% *Tomatoes varieties and measurement environment may affect accuracy.
Repeatability	Brix	±1%

Automatic Temperature Control Range	15.0 to 35.0°C *Acclimate tomatoes to ambient temperature
Ambient Temperature	15 to 35°C
International Protection Class	IP64
Power Supply	2 x AAA alkaline batteries
Dimensions and Weight	6.1(W) × 4.4(D) × 11.5(H)cm, 120g (Main Unit only)

Cat.No.8653
IR Brix Meter × Brix Meter (Tomatoes)
·PAL-HIKARi 53
·PAL-0

Cat.No.8753
IR Brix Meter × Brix Acidity Meter (Tomatoes)
·PAL-HIKARi 53
·PAL-BX|ACID 53

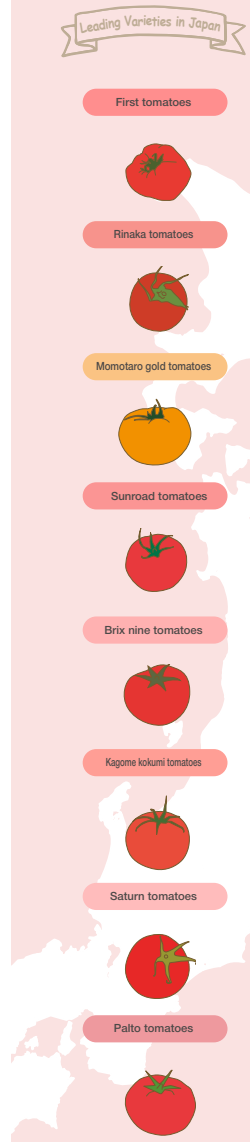
Story

Nostalgic taste first tomato

"There are large tomato which weighs more than 100g, and one of the famous tomato are ""Momotaro"" and ""Rinka409"".""Recently, cherry tomatoes are increasing it popularity due to it can be eaten without cutting, and has exceeded the market value than large tomatoes."However, recently, the popularity of ``First Tomato,'' a large tomato that was widely distributed before Momotaro was developed, has been reviving.

"The brix% of a regular tomato are 4-6% brix, while it is 8-9% brix whihch higher and has a balanced flavor of sweetness and slight sourness."Because there is little jelly-like part and the pulp is firm, it is perfect not only for eating is fresh, but also for sandwich.





IR Brix Meter × Brix Meter

Light x Refraction
from outside, from inside, good flavor



A combo set that includes PAL-HIKARi, a non-destructive IR Brix Meter that can measure the sugar content just by being pressed against the fruit, and a Brix meter that can measure the sugar content of squeezed fruit juice is now available.
Special scales are available for each fruit. Choose the appropriate combo set.

Cat.No.	Part Name
5552	IR Brix Meter × Brix Meter (Grapes) PAL-HIKARi 2 + PAL-0
5553	IR Brix Meter × Brix Meter (Cherry Tomatoes & Medium Tomatoes) PAL-HIKARi 3 MINi + PAL-0
5555	IR Brix Meter × Brix Meter (Apple) PAL-HIKARi 5 + PAL-0
5560	IR Brix Meter × Brix Meter (Peach) PAL-HIKARi 10 + PAL-0
5562	IR Brix Meter × Brix Meter (Asian Pear) PAL-HIKARi 12 + PAL-0
5566	IR Brix Meter × Brix Meter (Cherry) PAL-HIKARi 16 + PAL-0
5554	IR Brix Meter × Brix Meter (Strawberry) PAL-HIKARi 4 + PAL-0
5557	IR Brix Meter × Brix Meter (Blueberry) PAL-HIKARi 7 + PAL-0
5558	IR Brix Meter × Brix Meter (Kiwi) PAL-HIKARi 8 + PAL-0

Cat.No.	Part Name
5565	IR Brix Meter × Brix Meter (Mango) PAL-HIKARi 15 + PAL-0
5568	IR Brix Meter × Brix Meter (Prune) PAL-HIKARi 18 + PAL-0
5569	IR Brix Meter × Brix Meter (persimmon) PAL-HIKARi 19 + PAL-0
5580	IR Brix Meter × Brix Meter (Melon) PAL-HIKARi 30 + PAL-0
5582	IR Brix Meter × Brix Meter (Watermelon) PAL-HIKARi 32 + PAL-0
5583	IR Brix Meter × Brix Meter (Mini watermelon) PAL-HIKARi 33 MINi + PAL-0
8651	IR Brix Meter × Brix Meter (Corn) PAL-HIKARi 51 + PAL-0
8653	IR Brix Meter × Brix Meter (Tomatoes) PAL-HIKARi 53 + PAL-0

PAL-0 Specifications

PAL-0 is not sold separately. PAL-0 is only available for IR Brix Meter x Brix Meter combo set.

Measurement Range	Brix Temperature	0.0 to 33.0% 10 to 100°C
Resolution	Brix Temperature	0.1% 0.1°C
Measurement Accuracy	Brix Temperature	±0.2% ±1°C
Automatic Temperature Control Range	10 to 100°C	

Ambient Temperature	10 to 40°C
International Protection Class	IP65
Power Supply	2 x AAA alkaline batteries
Dimensions and Weight	5.5(W) ×3.1(D) ×10.9(H)cm, 100g (Main Unit only)

IR Brix Meter × Brix-Acidity Meter

Acidity x Brix
good sourness, good sweetness, perfect flavor



A combo set that includes PAL-HIKARi, a non-destructive IR Brix Meter that can measure the sugar content just by being pressed against the fruit, and PAL-BX|ACID, a Brix-acidity meter that can measure the sugar content of squeezed fruit juice is now available.
Special scales are available for each fruit. Choose the appropriate combo set.

Cat.No.	Part Name
5652	IR Brix Meter × Brix Acidity Meter (Grapes) PAL-HIKARi 2 + PAL-BX|ACID2
5653	IR Brix Meter x Brix Acidity Meter (Cherry Tomatoes & Medium Tomatoes) PAL-HIKARi 3 MINi + PAL-BX|ACID3
5655	IR Brix Meter × Brix Acidity Meter (Apple) PAL-HIKARi 5 + PAL-BX|ACID5
5662	IR Brix Meter × Brix Acidity Meter (Asian Pear) PAL-HIKARi 12 + PAL-BX|ACID12
5654	IR Brix Meter × Brix Acidity Meter (Strawberry) PAL-HIKARi 4 + PAL-BX|ACID4

Cat.No.	Part Name
5657	IR Brix Meter × Brix Acidity Meter (Blueberry) PAL-HIKARi 7 + PAL-BX|ACID7
5658	IR Brix Meter × Brix Acidity Meter (Kiwi) PAL-HIKARi 8 + PAL-BX|ACID8
5665	IR Brix Meter × Brix Acidity Meter (Mango) PAL-HIKARi 15 + PAL-BX|ACID15
5666	IR Brix Meter × Brix Acidity Meter (Cherry) PAL-HIKARi 16 + PAL-BX|ACID16
8753	IR Brix Meter × Brix Acidity Meter (Tomatoes) PAL-HIKARi 53 + PAL-BX|ACID3

Contents

Part Name	Quantity
Digital scale	1
100 mL Beaker (PMP)	1
1 mL Measuring spoon	1

Pocket Brix-Acidity Meter Specifications

Measurement Range

PAL-BX|ACID2	Brix: 0.0 to 90.0%, Acid: 0.10 to 4.00%
PAL-BX|ACID3	Brix: 0.0 to 90.0%, Acid: 0.10 to 3.00%
PAL-BX|ACID5	Brix: 0.0 to 90.0%, Acid: 0.10 to 4.00%
PAL-BX|ACID12	Brix: 0.0 to 90.0%, Acid: 0.05 to 2.00%
PAL-BX|ACID4	Brix: 0.0 to 90.0%, Acid: 0.10 to 3.50%

PAL-BX|ACID7	Brix: 0.0 ~ 90.0%, Acid: 0.10 to 4.00%
PAL-BX|ACID8	Brix: 0.0 ~ 90.0%, Acid: 0.10 to 3.00%
PAL-BX|ACID15	Brix: 0.0 ~ 90.0%, Acid: 0.10 to 4.00%
PAL-BX|ACID16	Brix: 0.0 ~ 90.0%, Acid: 0.10 to 3.00%

For more specification information, contact ATAGO.

Brix-Acidity Meter

PAL-BX|ACID series



Sweet and Sour ～ Balance is the Key ～

Sweetness of fruit is often used for evaluating quality. Unfortunately, sweetness does not always mean that the fruit is tasty. Delicious fruits have the proper proportion of tartness and sweetness. Brix-Acid ratio indicates the maturation levels of fruits. Brix-Acid ratio is displayed by pressing a single button (R button), No need for complicated and troublesome calculations.

Common Specifications

Measurement accuracy	Brix*1	±2.0%
	Acid *1	±0.10% (Acid 0.10 to 1.00%) Relative precision ±10% (Acid 1.01% or more)
Resolution	Brix*1	0.1%
	Acid	0.01%
	Sugar/Acid ratio*1	0.00 (0.00 to 9.99) 00.00 (10.00 to 99.99) 000.0 (100 or more)

*1 "Brix" and "Brix-Acid Ratio" scales are available only on Brix-Acidity Meters.
*2 Except PAL™-BX|ACID12 and PAL™-Easy ACID12.

Automatic temperature compensation range	Brix	10.0 to 100.0°C
	Acid	10.0 to 40.0°C
Power supply	2×AAA alkaline batteries	
International protection class	IP65 Water resistant	
Dimensions and weight	5.5×3.1×10.9cm, 100g (main unit only)	

Optional Accessories

Part No.	Part Name
RE-130004	Brix-Acidity Meter Citric Acid Solution 0.04% 10mL
RE-39450	Digital scale for dilution
RE-39004	Beaker 100mL (PMP)
RE-39005	Measuring Spoon 1mL

pH Meter

PAL-pH



Drop and don´t break. Feel safe and reliable.

In conventional pH meters the glass electrode has a protrusion-like shape and is easily broken requiring delicate handling.The PAL-pH succeeded in developing a durable glass electrode that can withstand large loads. In various fields as well as food production sites, the risk of contamination and injuries can be reduced and used daily without hesitation. Also, the electrode does not require a storage solution.

PAL-pH Specifications

Measurement range	pH	0.00 ～ 14.00%
Resolution	pH	0.01
Measurement accuracy	pH	± 0.10%
Calibration		Calibration at 3 points at 4.01, 6.86, 9.18. Calibration at 3 points at 4.01, 7.00, 10.01.
Temperature compensation	10.0 to 40.0°C	

Sample volume	At least 0.6mL
International protection class	IP65 Water resistant
Dimensions and weight	5.5×3.1×10.9cm, 100g (main unit only)

Optional Accessories

Part No.	Part Name
RE-99210	pH Meter Solution pH4.01 500mL
RE-99211	pH Meter Solution pH6.86 500mL
RE-99212	pH Meter Solution pH7.00 500mL
RE-99213	pH Meter Solution pH9.18 500mL

Part No.	Part Name
RE-99214	pH Meter Solution pH10.01 500mL
RE-99230	pH Meter Solution Set pH4.01/pH6.86/pH9.18 10mL
RE-99231	pH Meter Solution Set pH4.01/pH7.00/pH10.01 10mL

*Warranty period for these solutions is 10 months.

Q Does fruit need to be prepared?

A No need to cut, strain, or squeeze fruit.

Q Does skin color affect measurement? (Red and green apple)

A Color does not affect.

Q What to look out for when storing.

A Make sure to dry the cushion well. Take out batteries when planning to not to use for a long duration of time.

Q Battery life?

A About 1,100 times (AAA alkaline batteries x 2).

Q Can measurement be taken for fruits during its growth?

A Measurement can be taken while the fruit is on the tree. Carefully place the cushion on the fruit not to let it fall off the branch.

Q Measuring the same fruit, the value is different.

A Brix level of fruit differs depending on such factor as exposure to sunlight and area of the fruit. This unit measures the area where the sample stage is placed against. *Please reference " When measurement value does not seem to be correct..."

Q What fruit can be measured?

A PAL-HIKARi is a fruit specific instrument with model for each fruit.

Q How do you calibrate?

A PAL-HIKARi is designed to require no calibration. (Equipped with offset feature. Please reference pg.3.)

Q I would like to measure the sugar content of processed products such as jams.

A Packaged sets products are available that comes with pocket Brix meter (PAL-0) and pocket Brix-acidity meter.

When measurement value does not seem to be correct...

POINT External light interference

Avoid light from entering the sample stage. Light entering the sample stage will cause measurement error and cause greater margin of error.

POINT Effect of contact between the sample stage and fruit

Properly place the sample stage of PAL-HIKARi against a fruit. Improper contact will allow external light to enter.

POINT Effect of fruit temperature

Be sure to take measurement after allowing the sample fruit to acclimate to PAL-HIKARi.
*Place them under same condition for a period of time.

POINT Effect of water droplet, soiled area,and condition of the fruit

Avoid fruit's surface with water droplets or soiled area. Correct measurements cannot be achieved for soft and spotty fruits caused by elapsed time since harvesting.

NO MEASURE™ NO SafeLIFE

Bringing measurement devices that provides safety and peace of mind in various industries.

「Organized Beauty」 GOOD DESIGN

2S Arrangement

Meetings are held to promptly decide on troublesome, useless, and inefficient things.

2S Tidiness

There is an in-house term "Make Even To Right Angles".

Future planning



Optional Accessories

Part No.	Part Name
RE-39415	PAL-HIKARi Silicone Cover
RE-39008	Spare silicon cushion S (2pieces)
RE-39009	Shading Cover S

Part No.	Part Name
RE-39011	Shading Cover R
RE-39012	Cushion RS (3 sets)
RE-39016	Shading Cover L

All ATAGO products are designed and manufactured in Japan.

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HACCP GMP GLP
ATAGO products comply with HACCP,GMP, and GLP system standards.

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