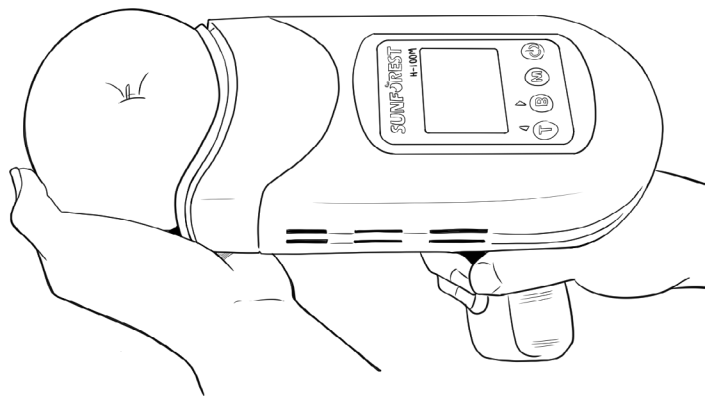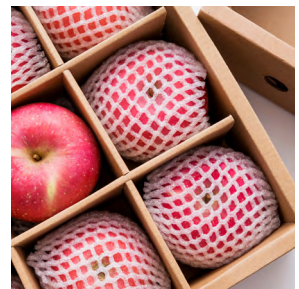(주)해아림
SUNFOREST

Portable
Non-Destructive
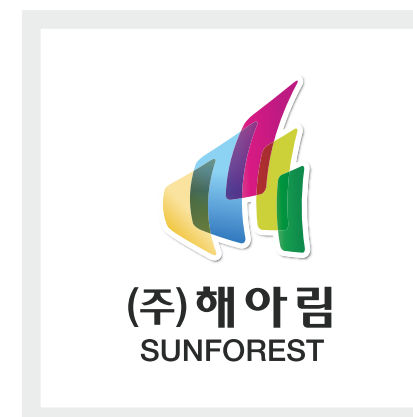# Fruit Quality Meter

SUNFOREST
H-100 SERIES

From grower to fresh market
A useful tool determining produce quality at every application

SUNF☀REST

A beautiful world made of light Sunforest is with you

Light, Technology with Nature & Human

SUNFOREST, a Korean developer specialized in NIR spectroscopy technology, is known as one of the leading company in the field of non-destructive and Chemometric-based measurement instrument for agriculture industry. Previously, SUNFOREST was the supplier of NIR spectroscopy sensors for non-destructive sorting systems to domestic market.

Now, SUNFOREST is emerged as a market leader of portable NIR spectrometers that non-destructively measuring fruit's internal quality. Applications of NIR spectroscopy are widely expanding in agricultural areas, and SUNFOREST makes pioneering developments in this nondestructive quality meter business.

SUNFOREST provides superior product service based on optical sensingand ICT convergence technology and explores spectroscopic instruments in agriculture industry.

The company is now trying to secure the first mover advantage and wish to be the foremost specialist in the field of nondestructive quality analyzer.SUNFOREST will do own best effort to satisfy client's requirement and always welcome to meet new business opportunities with great passion.

SUNFOREST's Core Technology

- ICT Convergence Technology
- Spectroscopy Analysis & Optical Sensing
- Optical Packaging & Integration
- Chemometric Based Analysis Algorithm

ABOUT US

SUNFOREST H-100 Series

The SUNFOREST H-100 series is a range of field portable NIR spectrometer that can non-destructively measure internal quality of fruits such as Brix, Dry Matter, Moisture, Browning, etc.

The H-100 series can be widely used from orchard to fresh market as a useful tool determining produce quality at every application. It could provide very simple and rapid bulk testing, helping growers to determine when to harvest on orchard and also allowing supply chains to carry out import inspections.

H-100C
Mandarin, Kiwifruit, Avocado, Plum, Potato, Corn, Tomato

H-100F
Apple, Pear, Peach, Persimmon, Mango, Citrus, Grape

H-100M
Mini-watermelon, Melon

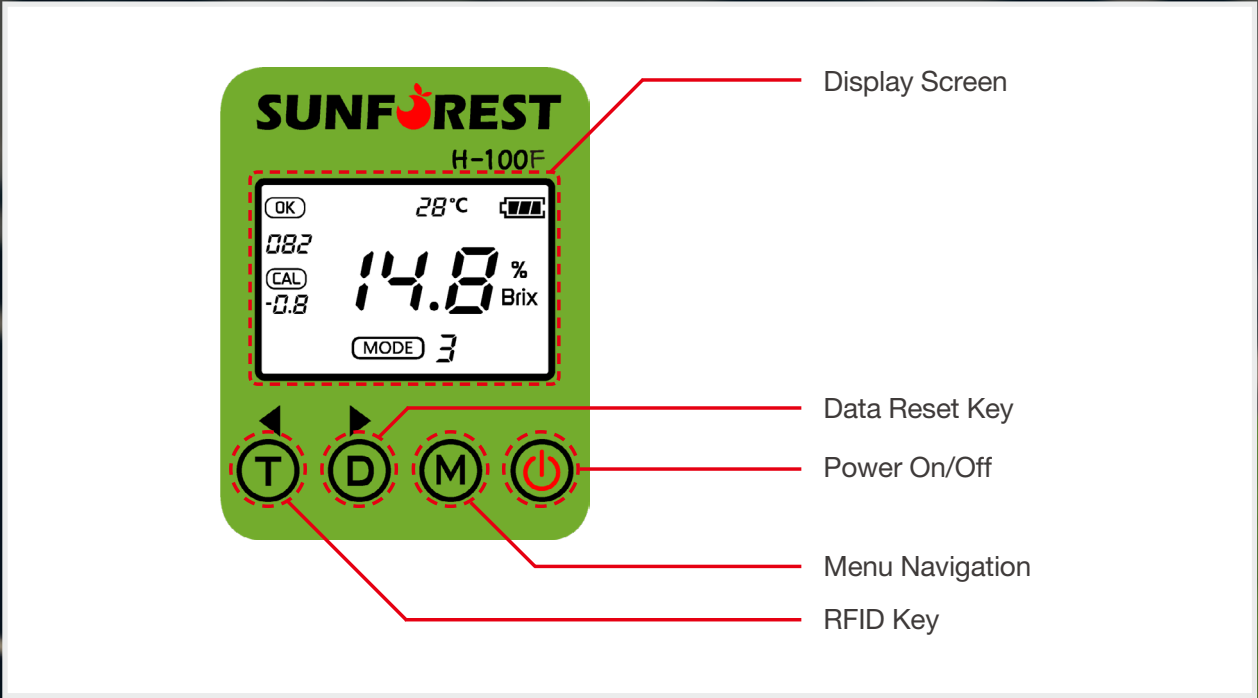# Device Description

Device Body

Body
(H-100F)

- Front Panel
- USB port
- Trigger
- Hand Grip
- Power

Header
(H-100F)

- NIR Spectrometer Sensor
- Lamp
- Lamp

Safety Cap
(White Teflon)

SUNFOREST

Front Panel

- Display Screen
- Data Reset Key
- Power On/Off
- Menu Navigation
- RFID Key

Display Screen

- Normal Operation
- No. of Meter Readings
- Offset Adjust
- Temperature (Internal)
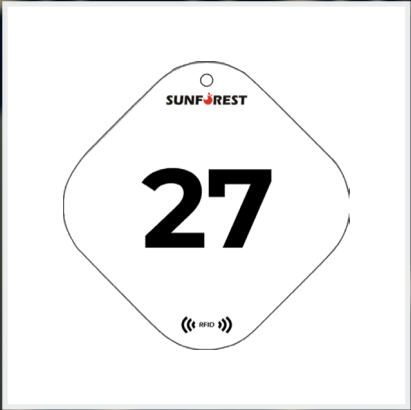- Battery Level
- Measurement Value
- Mode Options
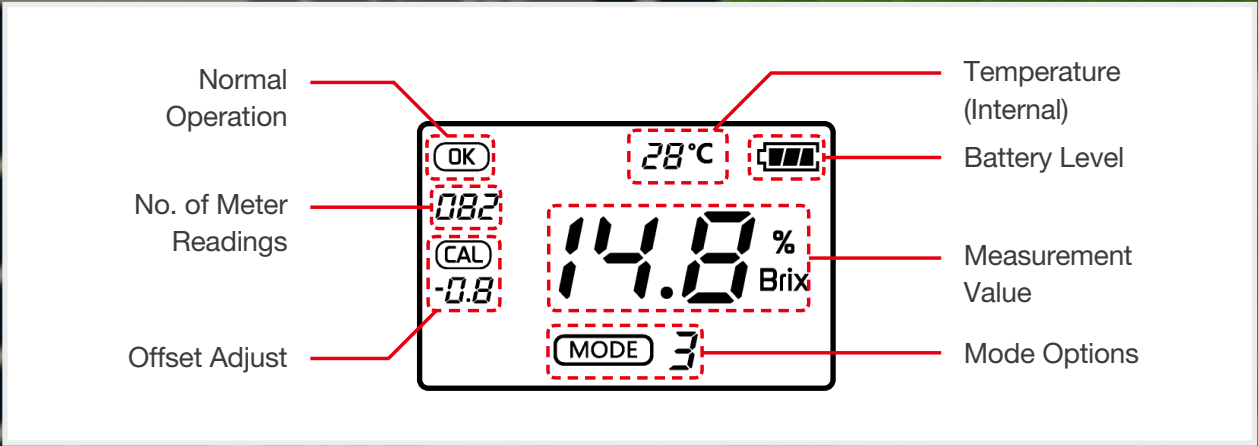
RFID Tag by Option

Accessory

Sunshield Rubber

SUNFOREST H-100C / H-100F / H-100M

Specifications

Model No.	SUNFOREST H-100C/F/M
Sensor Type	Enhanced CMOS Spectrometer (640-1050nm)
Spectral Resolution	20nm (FWHM) max.
Spectral Sample Size	2.3nm
Light Source	Halogen lamp
Measurement	SSC(Brix), Dry Matter, Moisture, etc
Measurement Speed	~2.0 sec.
Data Interface	USB C-type / Bluetooth 4.0 BLE (Smartphone)
Display	TN LCD (45x30mm)
Battery Life	3000+ measurements
Battery & Power Source	Rechargeable Li-Ion Battery 3500mA, 12VDC/1.5A
Operating Environment Temp.	5~45℃, 85% RH (Fruit temp. 5~30℃)
Measurement & Weight	110x192x172mm(WxLxH), 440g
Other Supplies	Compatible with RFID tag Smartphone App (Android and iOS) CE, FCC certified

※ Specifications are subject to change without prior notice

Features

- Up to 1,000 scans
- A reference tile to ensure ongoing accuracy
- Ability to analyse spectra for in-depth statistical analysis
- Bluetooth pairing to mobile device for better result visualization

- RFID tag scanner
- Stores up to 5 models
- Temperature compensation
- Effective at rejecting scans with light interference

Potential Uses

Growers/Orchard
Pre-harvest Ripeness Judgment

Pack House
Quality grading and sorting

Supply Chain/Retailer
Import inspection

Agriculture Institute
Pre-harvest evaluation / Harvesting quality report

Seed Company
Growth quality monitoring / Harvesting quality inspection for breeding

User Testimonials

Hani Orchard, a Zespri Kiwifruit Grower in New Zealand

"The SUNFOREST H-100C is a must-have management tool for kiwifruit growers and packhouses. No more paying for multiple destructive tests to see how your crop is progressing. Accurate tests are completed in seconds on the spot."

From the Eurofins' report on New Zealand Avocado Grower's Journal (Avoscene Dec.2020)

The SUNFOREST H-100C could be used by growers and industry technical reps to independently and non-destructively monitor NZ 'Hass' avocado dry matter on-orchard throughout the season. It could replace existing destructive monitoring. This could allow growers and packhouses to determine when to submit samples for maturity clearance testing. It may also be used for independent research / investigation of trials involving fruit quality.

Shine-muscat grower in Kimcheon Korea

"The SUNFOREST H-100F is very useful to determine Brix level of shine-muscat grape, fast and consistently. This device became an essential tool to grape growers as we could decide right timing to harvest."

SUNFOREST H-100C

Kiwifruit DM/Brix Meter

SUNFOREST H-100C : Kiwifruit

Object Fruit	Kiwifruit (Gold, Hayward)
Quality Metrics	Dry Matter, Brix
Measurement Accuracy	Dry Matter : ±1.0% Brix : ±1.0%
Repeatability	Dry Matter : ±0.5% Brix : ±0.5%

The H-100C comes with a demonstration model.
Model performance may vary across variety, temperature, and seasonal change.

Applications

- Tracking / Monitoring of DM/Brix throughout the season
- Investigations on effect of location and orientation of fruit on tree
- DM/Brix variability in tree location on orchard (spatial) or trees with different age or health
- Which orchard management methods may affect DM/Brix on an orchard
- Pre-maturity clearance screening
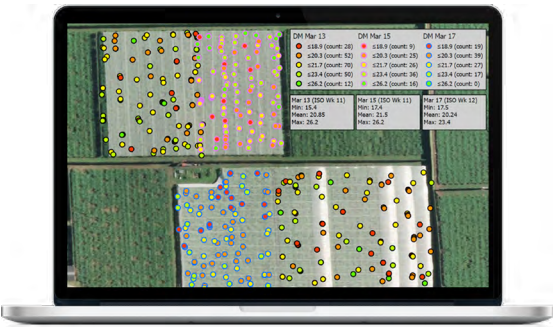
GPS-it Mobile App

Interfaced with H-100C via Bluetooth, Landkind Mobile App displays measurement data to smartphone and into cloud storage. Visualized measurement data presented on orchard map indicates DM values along the path of samplings.

(Landkind App is applicable in New Zealand only.)

⌂ **www.landkind.com**

Kiwifruit Photo Story

SUNFOREST H-100C

Avocado DM Meter

SUNFOREST H-100C : Avocado

Object Fruit	Hass avocado
Quality Metrics	Dry Matter
Measurement Accuracy	Dry Matter : ±1.0%
Repeatability	Dry Matter : ±0.5%

The H-100C comes with a demonstration model.
Model performance may vary across variety, temperature, and seasonal change.

Applications

- Tracking / Monitoring of Dry Matter throughout the season
- Investigations on effect of location and orientation of fruit on tree
- Dry Matter variability in tree location on orchard (spatial) or trees with different age or health
- Which orchard management methods may affect Dry Matter on an orchard
- Pre-maturity clearance screening

GPS-it Mobile App

Interfaced with H-100C via Bluetooth, Landkind Mobile App displays measurement data to smartphone and into cloud storage. Visualized measurement data presented on orchard map indicates DM values along the path of samplings.

(Landkind App is applicable in New Zealand only.)

⌂ **www.landkind.com**

Avocado Photo Story
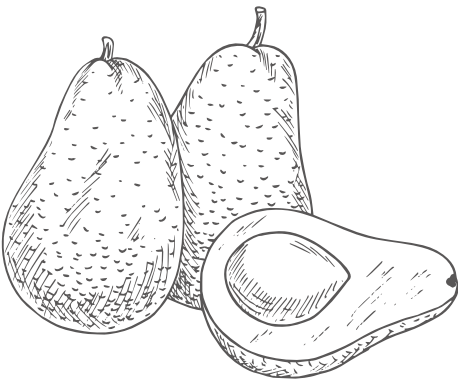
SUNFOREST H-100C

Mandarin Brix Meter

Story

Non-destructively measures brix level of mandarin and accurately predict harvest timing. The H-100C became a must-have management tool for citrus grower in Jeju island in Korea.

SUNFOREST H-100C : Mandarin

Object Fruit	Mandarin, Korean Citrus
Quality Metrics	Brix
Measurement Accuracy	Brix : ±0.5%
Repeatability	Brix : ±0.5%

The H-100C comes with a demonstration model.
Model performance may vary across fruit variety, temperature, and seasonal change.

SUNFOREST H-100C

Tomato Brix Meter

Story

Non-destructively measures brix level of tomato and accurately predict harvest timing. The H-100C is being used by seed producer in Netherlands.

SUNFOREST H-100C : Tomato

Object Fruit	Tomato
Quality Metrics	Brix
Measurement Accuracy	Brix : ±0.5%
Repeatability	Brix : ±0.5%

The H-100C comes with a demonstration model.
Model performance may vary across variety, temperature, and seasonal change.

SUNFOREST H-100C

Corn Moisture Meter

Story

Non-destructively measures moisture level of corn kernel and accurately predicts harvest timing. Moisture content is the key quality indicator in field corn industry. Currently the H-100C is widely used by seed producers in various countries.

SUNFOREST H-100C : Corn

Object Fruit	Field Corn, Sweet Corn
Quality Metrics	Moisture
Measurement Accuracy	Moisture : ±4.0%
Repeatability	Moisture : ±2.0%

The H-100C comes with a demonstration model.
Model performance may vary across variety, temperature, and seasonal change.

SUNFOREST H-100F

Apple Brix/DM/Browning Meter

Story

The H-100F fast and non-destructively measures brix and dry matter of apple, and even detects browning defect. It can help growers to harvest at the most accurate time with quality assessment.

▶ YouTube   www.youtube.com/watch?v=Y2TAoj1xUjw

SUNFOREST H-100F : Apple

Object Fruit	Apple
Quality Metrics	Brix, Dry Matter, Browning
Measurement Accuracy	Brix : ±0.5% Dry Matter : ±0.5%
Repeatability	Brix : ±0.5% Dry Matter : ±0.5%

The H-100F comes with a demonstration model.
Model performance may vary across variety, temperature, and seasonal change.

SUNFOREST H-100F

Peach Brix Meter

Story

The H-100F fast and non-destructively measures brix of peach. The Spanish premium peach brand – Melocoton de Calanda uses H-100F to sort out quality grade of the fruits and guarantees minimum sweetness of 12Brix for their genuine black label.

SUNFOREST H-100F : Peach

Object Fruit	Hard and soft type peach
Quality Metrics	Brix
Measurement Accuracy	Brix : ±0.5%
Repeatability	Brix : ±0.5%

The H-100F comes with a demonstration model.
Model performance may vary across variety, temperature, and seasonal change.

SUNFOREST H-100F

Mango Brix/DM Meter

Story

As a climacteric fruit. mango can be harvested when fully matured and artificially ripened later through out storage and transportation time. To determine ideal harvest time is a challenge to grower. The H-100F helps to remove guesswork and accurately redict harvest timing.

SUNFOREST H-100F : Mango

Object Fruit	Various mango variety
Quality Metrics	Brix, Dry Matter
Measurement Accuracy	Brix : ±0.5% Dry Matter : ±0.5%
Repeatability	Brix : ±0.5% Dry Matter : ±0.5%

The H-100F comes with a demonstration model.
Model performance may vary across variety, temperature, and seasonal change.

SUNFOREST H-100F

Pear Brix Meter

Story

The H-100F fast and non-destructively measures brix of pear. Shingo produced in Korea is regarded as one of the best taste pear in the world. H-100F involves quality assessment of Shingo when harvested.

SUNFOREST H-100F : Pear

Object Fruit	Shingo and other variety
Quality Metrics	Brix, Dry Matter
Measurement Accuracy	Brix : ±0.5% Dry Matter : ±0.5%
Repeatability	Brix : ±0.5% Dry Matter : ±0.5%

The H-100F comes with a demonstration model.
Model performance may vary across variety, temperature, and seasonal change.

SUNFOREST H-100F

Persimmon Brix Meter

Story

The H-100F fast and non-destructively measures brix of persimmon. It can help growers to harvest at the most accurate time with quality assessment.

SUNFOREST H-100F : Persimmon

Object Fruit	Persimmon (Korean variety)
Quality Metrics	Brix
Measurement Accuracy	Brix : ±0.5%
Repeatability	Brix : ±0.5%

The H-100F comes with a demonstration model.
Model performance may vary across variety, temperature, and seasonal change.

SUNFOREST H-100F

Shine-Muscat Brix Meter

Story

Non-destructively measures brix level of Shine-muscat grape and accurately predict harvest timing. The H-100F became a must-have management tool for Shine-muscat grower in Korea.

SUNFOREST H-100F : Grape

Object Fruit	Shine-muscat, Campbell, Kyoho
Quality Metrics	Brix
Measurement Accuracy	Brix : ±0.7%
Repeatability	Brix : ±0.5%

The H-100F comes with a demonstration model.
Model performance may vary across variety, temperature, and seasonal change.

SUNFOREST H-100M

Melon/Mini-watermelon Brix Meter

Story

Non-destructively measures brix level of melon and accurately predict harvest timing. No more paying for destructive tests to see how your fruit is progressing. It's been launched on a trial basis in Korea domestica market first, and is now expanding its availability throughout multiple countries where model building test goes on.


SUNFOREST H-100M : Melon/Mini-watermelon

Object Fruit	Amarillo, Piel de Sapo, Cantaloupe, Galia, Charentais, Mini-watermelon
Quality Metrics	Brix
Measurement Accuracy	Brix : ±1.0%
Repeatability	Brix : ±0.7%

The H-100M comes with a demonstration model.
Model performance may vary across variety, temperature, and seasonal change.

Pocket-Type
Brix Meter

SUNFOREST
P-100 SERIES
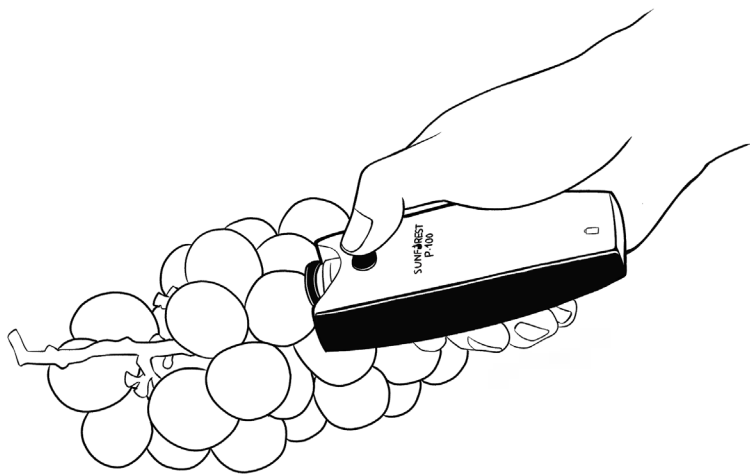
Pocket-Type Brix Meter

Story

The P-100 brix meter is a pocket-type NIR device specialized for small fruits and can be a useful tool for users from orchard to fresh market. The series range is being expanded further for various commodities.

SUNFOREST P-100 : Small Fruits

Object Fruit	Strawberry, Cherry, Blueberry, Cherry-tomato, Grape
Quality Metrics	Brix
Measurement Accuracy	Brix : ±1.0%
Repeatability	Brix : ±0.7%

The P-100 comes with a demonstration model and an App.
Model performance may vary across variety, temperature, and seasonal change.

NIR Spectrometer

PORTABLE NON-DESTRUCTIVE FRUIT QUALITY METER

SUNFOREST

H-100 SERIES

Preharvest Ripeness Judgment & Postharvest Quality Inspection

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