SUNFOREST

Portable Non-destructive Fruit Quality Meter H-100 series

User's manual

Ver. 1.2.1

H-100C

H-100F

Before using the product, make sure to read the user's manual correctly. After reading the manual, make sure to place it where the user can easily find it. Product warranty is included in the user's manual.

Precautions for safety

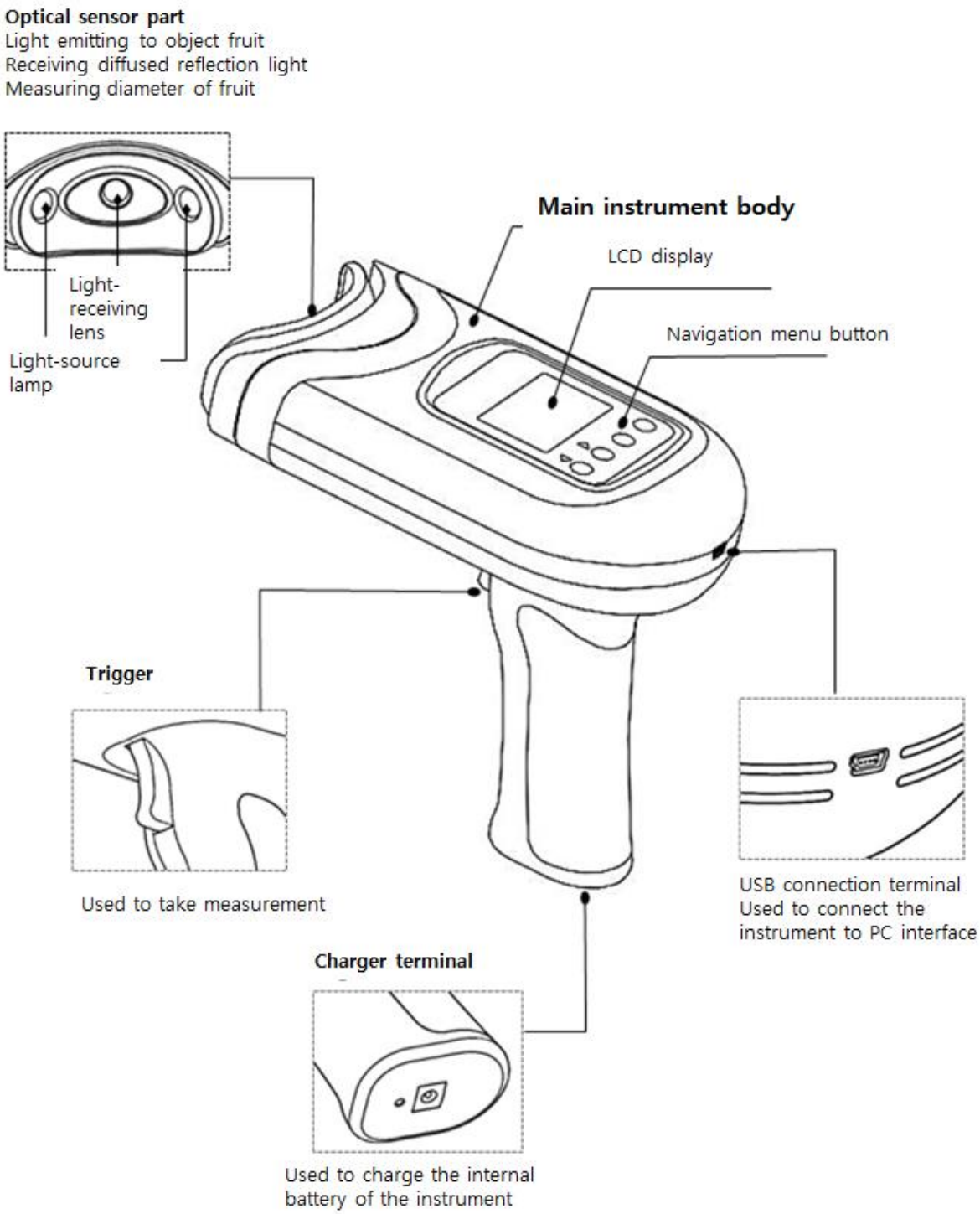
To safely and correctly use the product as well as prevent accidents and risks, the user must take the following precautions for safety.

 Caution Physical injury or damage on product may occur when the user doesn't comply with the directions.

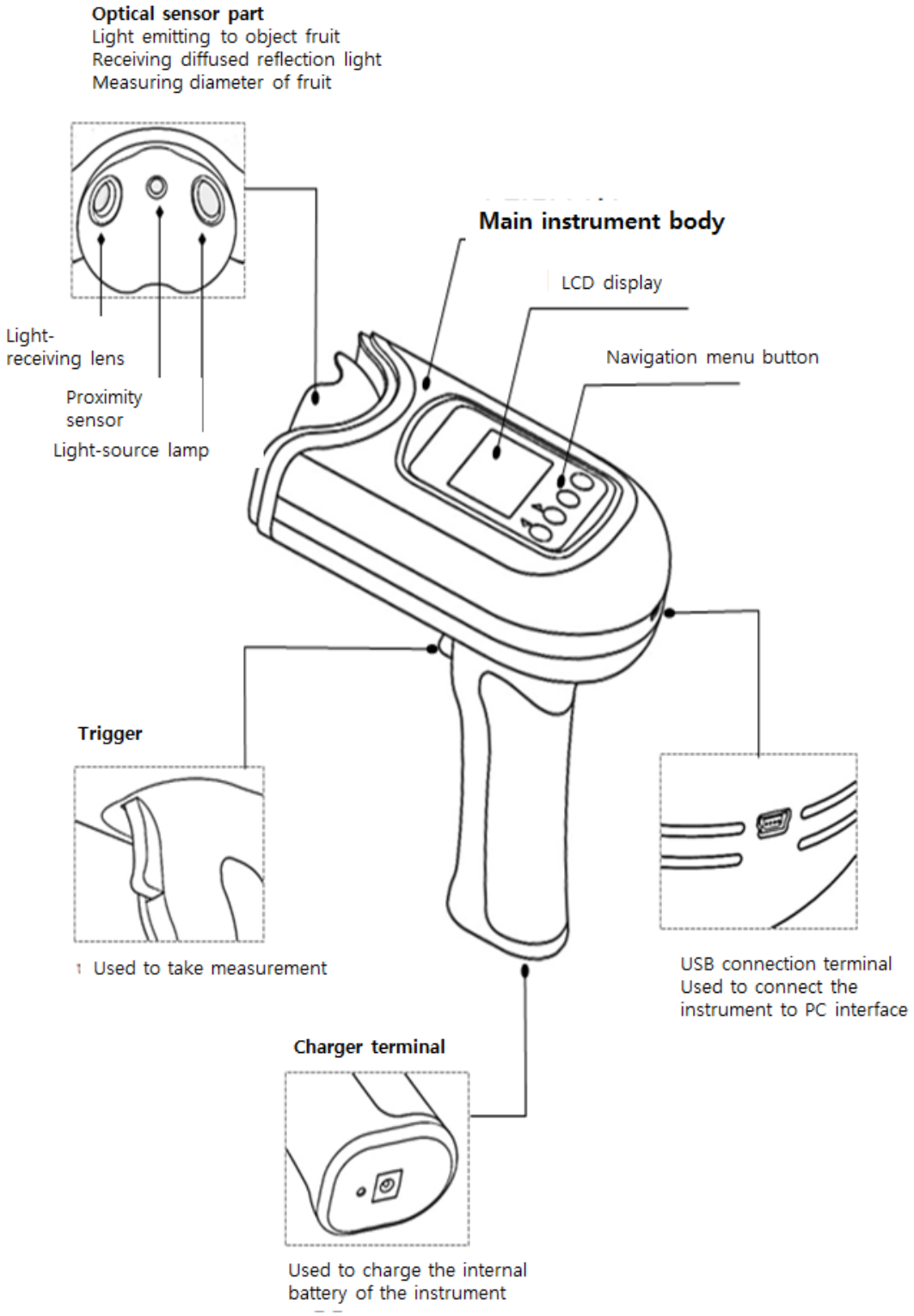
1. The product is a measurement instrument made of very precise optical components. Dropping the product or exposing it to impacts may damage the product or cause malfunctioning.
2. In case the product is damaged by unauthorized disassembling or exposure to impacts, free repair service will not be given. Keep the serial number of the product and inform to service representative for technical assistance if any required.
3. Dusts or impurities on the optical components of the measurement part may increase the error of measurement. Check if the measurement part is dirty, and clean it before use.
4. To clean the optical components of the measurement part, moist a cotton swab with the alcohol provided and air-dry before use.
5. Before measurement, remove the impurities (dusts, pesticides, fertilizers, etc.) and moist on the surface of the fruit.
6. To clean the main body of the product, use smooth and dry cloth. Never use chemical solvents such as benzene or thinner.
7. When the product is wet, do not put it in a heating instrument (heater, microwave oven, etc.) to dry it. When water gets into the product, contact the A/S center immediately and follow the directions given.
8. Using chargers other than the one given with the product may reduce the life of the battery or even cause fire. Make sure that the charger terminal on the bottom of the product handle doesn't contact with water or products with electric current flowing.
9. Impacting the LCD with sharp objects may cause scratches, cracks or malfunctioning.
10. Do not use the product in dusty environment, or places with excessive temperature or humidity.
11. When the product is not in use for a long time, be sure to fully charge the product, remove dusts or impurities on the measurement part, put it in the storage case and keep it inside a cool and dry indoor area.
12. When malfunctioning or abnormalities occur, do not try to solve the problem by yourself. Instead, contact the A/S center and follow the directions given.

Contents

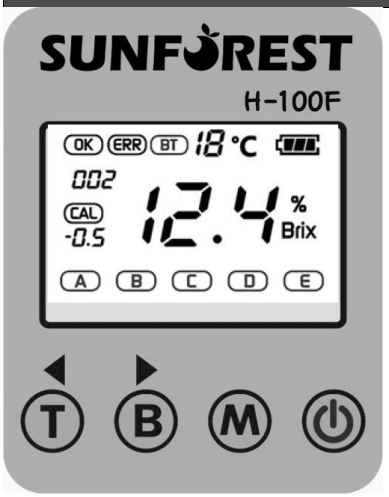
Description of H-100F



Description of H-100C



Name and function : Buttons



■ Description on navigation menu buttons

Ⓣ To be used to adjust calibration value (to be decreased by -0.1 scale)

Ⓑ To be used to adjust calibration value (to be increased by +0.1 scale)
Also used to activate Bluetooth interface with smartphone app.
(Smartphone gets download of data from the instrument by Bluetooth interface)
This key is also used to display Dry Matter ad Chlorophyll where applicable.

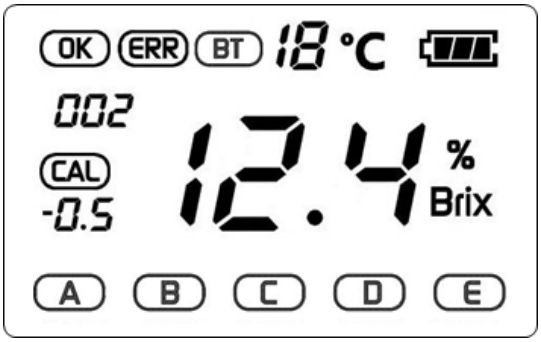
Ⓜ **MODE** Used to setup measuring conditions
(Deviation adjustment, Selection of Calibration Model, Display of saved measurements)

⏻ **ON/OFF** Used to turn on/off the instrument

◀ ▶ **DOWN/UP** Used to adjust deviation value.
This key is also used to navigate backward or forward over measurement data saved in the instrument.

Name and function : LCD display

■ Description on LCD display



LCD display may be hardly seen under direct sunlight. Use it with sunlight protection.

To save battery consumption, LCD display and power of the instrument are automatically turned off when the instrument is not used for a set period of time.

Measurement data to be displayed on LCD are Brix and temperature.

Dry Matter and Chlorophyll index are selectively displayed by clicking Ⓑ. Other index such as created date, fruit type, coloring are supposed to be seen on smartphone or PC interface.

OK indicates the instrument is operating normally

ERR indicates there is an error in operation of the instrument

BT indicates Bluetooth function is on operation

18 °C indicates instrument's environment temperature

indicates the status of battery charging

: Enough : Short : Empty (Charging is required when the empty image blinks)

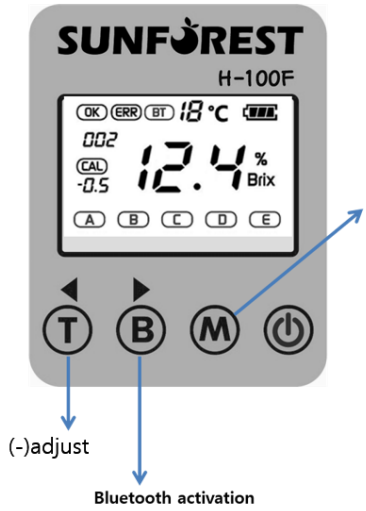
002 indicates the stock number of measurements

CAL -0.5 indicates the adjusted deviation value (Unit: Brix)

(A) (B) (C) (D) (E) indicates the selection of calibration model
(Only the selected model is to be displayed on the screen)

12.4 % Brix indicates the measured value of Brix (or Dry Matter and Chlorophyll to be optionally displayed, as the case may be).

Display for Brix, DM, G.I (Chlorophyll_Maturity Index) and Browning level



Main mode key

(1) Short pressing
1st pressing → DM
2nd pressing → Chlorophyll
3rd pressing → Browning level
4th pressing → back to main mode(Brix display)

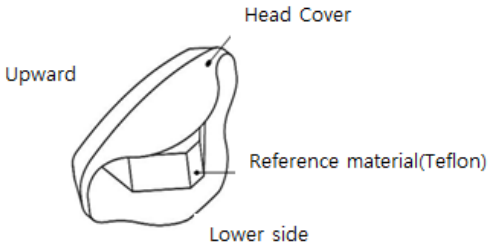
*** if relevant model not uploaded into the device, it'll be displayed as "0.0".**

(2) Long pressing (goes to Setup mode)
1st pressing → to adjust offset
2nd pressing → to select model (A,B,C,D,E)
3rd pressing → to display saved readings

Name and function : Accessories

■ Head-cover of the instrument

1. The head-cover is used to protect optical sensors of the instrument.
2. It also works as a reference material providing a standard value (zero set) to the instrument when initialized and standardized.
3. When using it, be sure to get upward and lower side correctly placed.



If the reference material (white Teflon) included in the head-cover is polluted, accuracy of measurement may deteriorate. Do not touch it with bare hands, and keep it clean without

impurities.

■ Power charger

1. To charge the battery of the instrument.
2. Rated power input: AC 90~264V, 57-63Hz. Rated power output: DC12V 1.5A

Keep the charger free from moist or heat. If the charger is not in use for a long time, pull the power plug out.

■ mini-USB cable

It is used to interface the instrument with PC.

■ USB memory (4GB)

1. User's manual and PC program included in USB.
2. O/S support: Windows 10, 8, 7, XP, Vista,,

■ Cleaning kit

1. It contains stuffs necessary for cleaning the optical components of the instrument.
2. Cloth enclosed is used to clean LCD and the control buttons of the main body.
3. Soaked in alcohol, the cotton swab is used to clean optical components of the sensor part.

■ User's manual

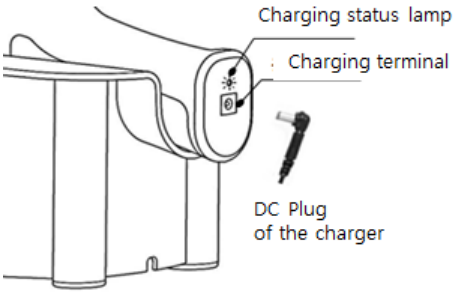
1. Keep the user's manual in the storage case.
2. For the latest version of User's manual, you may refer to service representative.
3. Keep the product warranty included in the user's manual.

■ Storage case

1. Keep the instrument and accessories with the storage case.
2. When the instrument is not in use for a long time, clean it thoroughly and put it inside the storage case, and keep it in a cool dry indoor area.
3. Keep the serial no. on the label for further service reference.

How to use the instrument

■ Battery charging



1. Fully charge the battery when the image blinks on the LCD, or when storing the instrument for a long time without use, or when the instrument initially used for the first time.
2. Plug in the AC100~240V plug of the charger first, and then connect the DC 12V plug with the charger terminal on the bottom of the handle.
3. While charging, the charging LED turns red. When fully charged, the LED turns green.
4. The recommended charging time is about 4 hours. However, when the instrument being used for the first time or when charging after excessive use, extend its charging time to longer than 5 hours.
5. It is normal to feel warm around the handle part during battery charging.
6. The instrument includes a protective circuit against surcharge, so the battery won't be damaged

even when the charging time exceeds extraordinary over time.

7. It is recommended to place the instrument on the desktop [Scan continued] g battery charging.

Using a charger other than provided genuine charger may diminish battery life or cause electrical damage to the instrument. Keep the charger terminal away from water or electricity-flowing object.

When the charging LED lamp blinks or turned off, check if DC plug of the charger is properly connected to the charging terminal.

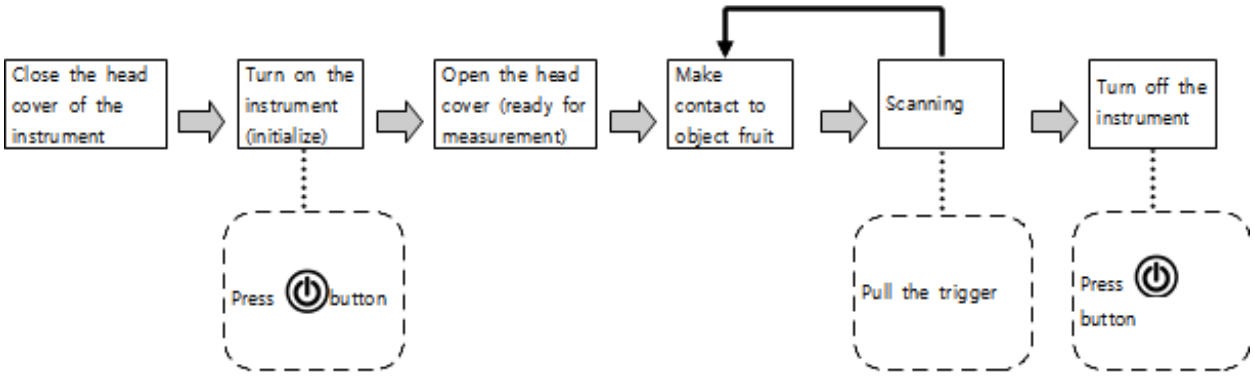
■ Instrument Turn on and off

1. To turn on the instrument, press ⏻ shortly.
2. To turn off the instrument, press ⏻ for longer than 1 second.

When abnormal operation occurred during the use or if not able to turn on the instrument, try to charge the instrument for about 30 minutes. Then, try to operate or turn on the instrument again. If the problem continues, please contact authorized service representative.

For saving the battery and safety purpose, the instrument will be automatically turned off when remaining battery capacity is running down.

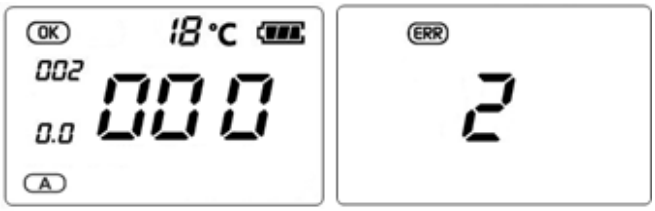
■ Measurement procedure



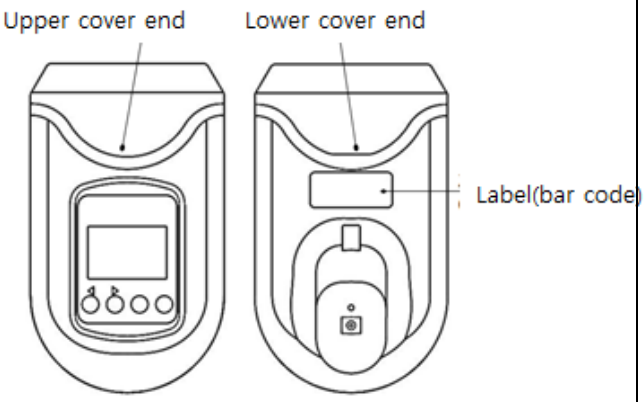
■ Initializing the instrument

1. Initializing process is conducted to diagnose the condition of the instrument and to scan the reference material of the head cover, so that the instrument is set to zero(standard) and ready to measure object fruit. Initialization of the instrument is automatically conducted when the power is turned on.

2. Before conducting initialization, firmly close the head-cover to the optical sensor part. When closing the head-cover, be sure to get the upper and lower parts correctly placed.
3. During initialization, make sure that the head cover to the measure part doesn't move.
4. Press ⏻ button, and then the LCD screen will show sequentially shifting number "5-4-3-2-1" while initialized. Initialization takes about 5 seconds and ends with a 'beep' sound.
5. When initialization completed successfully, the LCD screen will show OK and turn into home navigation menu. When initialized, data displayed on the home menu shows the most recently used parameter, stock number and measurement value shows as 000. In case the initialization improperly completed, an error code (ERR + 2) will appear.
6. In case ERR appears, see the troubleshooting or checkup methods described in this user's manual and follow the instructions, or contact a service representative for checkup.



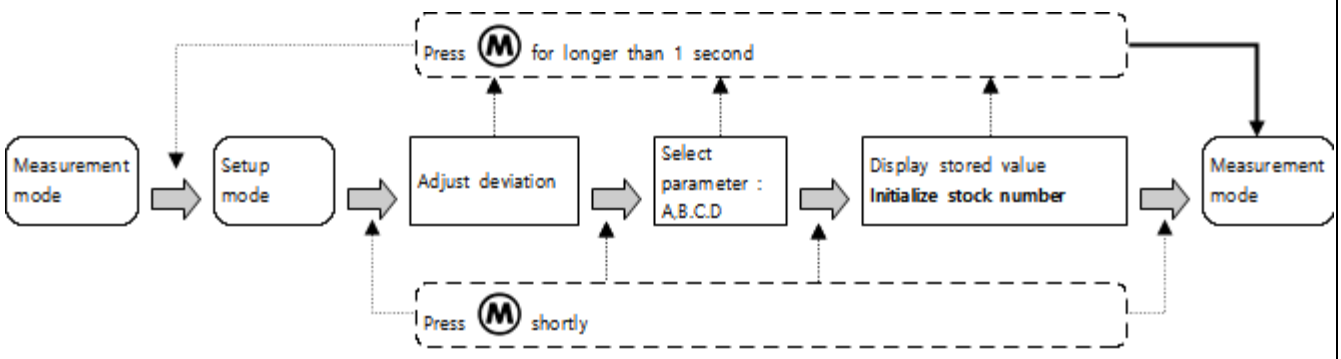
Normal Initial screen Error message code



■ How to set up measuring condition

1. Measurement mode and Setup mode

The instrument changes from Measurement mode to Setup mode, when Ⓜ button is pressed down for longer than 1 second.
In the setup mode, user can set up measuring conditions (adjustment of measurement deviation, selection of calibration model) and find past measurement data and initialize stock number to zero.



2. Correction of measurement deviation (offset adjustment)

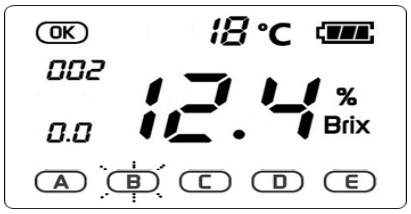
With this function, user can adjust deviation between the value measured by the instrument(nondestructive method) and the reference value obtained from squeezed juice. In the measurement mode, press Ⓜ for longer than 1 second, then CAL will appear and 0.0 blinks.

By pressing ◀ or ▶, set the correction level of deviation as preferred.

Press Ⓜ for longer than 1 second to finish this process and return to the measurement mode.

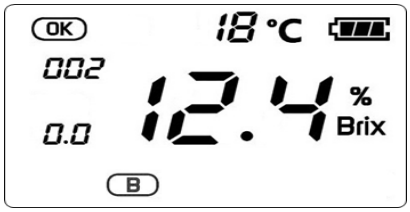
You may use this function, in case there is a constantly-flat-deviation between nondestructively measured value and reference value (actual value reading by refractometer)

3. Selection of calibration model (parameters A,B,C,D,E)



The instrument can provide multiple calibration models for measuring different object fruits. In the setup mode, press Ⓜ shortly to select the desired calibration model among A B C D E..

Keep short-pressing Ⓜ to move on to desired model blinking. When reached to desired model blinking, press Ⓜ for longer than 1 second to confirm the model selected and return to the measurement mode. When a new model selected, the instrument automatically goes power off.

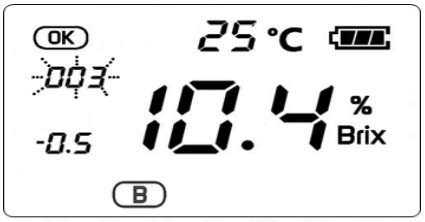


Turn on the instrument, then LCD will show the new model selected.

⚠ After the selection of a new calibration model, the instrument automatically turns off and user turns on the instrument for initialization.

4. Displaying saved measurements and initializing stock number

The instrument can save up to 1,000 readings (0~999). In the setup mode, press Ⓜ shortly then stock number will blink (for example 003). Then, select the preferred stock number by pressing ◀ ▶. For the number selected, the measured value will be displayed. Press Ⓜ shortly to return to the home menu.

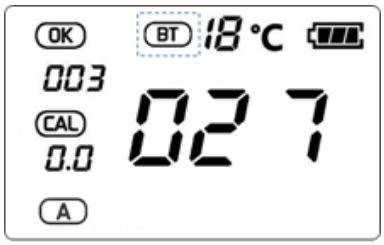


Meanwhile, if pressing down Ⓜ for longer than 1 second when the number blinks (in this case 003), all the saved measurements will be deleted and the stock number will be initialized to 000. The measurements will also be displayed as 0, and the instrument will return to the home menu.

Smartphone interface via Bluetooth

1. User can get download of smarphone app. program at Google Play Store for interfacing with H-100 instrument.
2. User can display instrument's data onto smartphone app. via Bluetooth connection.
3. For more information about the installation and usage of smartphone app., refer to the Program guide separately provided in the USB memory included in the product package.
4. To activate Bluetooth function, press Ⓑ longer than 1 second. Then, BT mark will be appeared on the LCD which means Bluetooth activated. User should utilize smartphone app. after Bluetooth pairing between smartphone and the instrument.
5. BT display on LCD screen goes off when there is no connection made from smartphone in 3 minutes. Press Ⓑ again or trigger for longer than 1 second to disable bluetooth function.

⚠ Generally Bluetooth operation consumes considerable battery power. It is recommended to put Bluetooth function disabled if not used.



Bluetooth activated

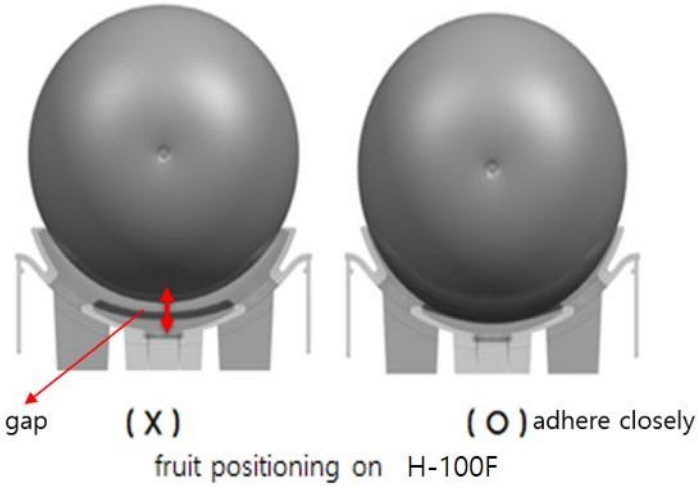
H-100F/H-100C

■ Zero set process by White Teflon built in the head-cover

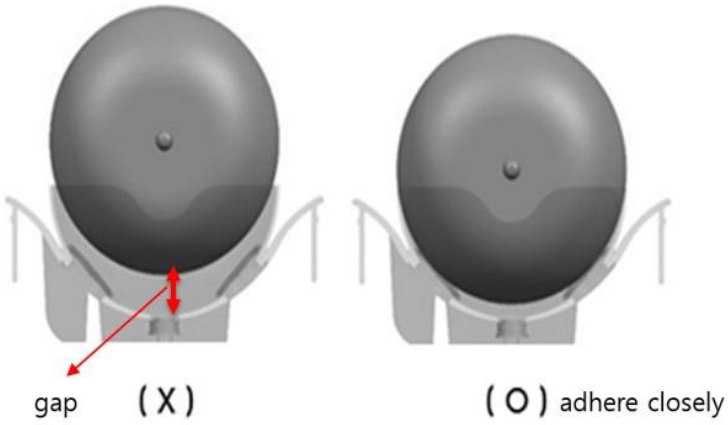
1. To measure the internal quality of the fruit, the reference material (White Teflon) must be scanned first (zero set process).
2. When the power turns on, the instrument automatically scans the reference material (White Teflon) during its initialization procedure.
3. User may have to scan the reference material manually, when there is a change in the measurement model or when outside measurement conditions (temperature, etc) are altered drastically.
4. To scan the reference material, close the head-cover to the instrument, and press ⏻ button for rebooting (power off and on).
5. Make sure that the head-cover (White Teflon) does not move out from the instrument until the initialization completed.

■ How to place the fruit with the instrument

1. Before taking a measurement, clean the object fruit thoroughly if its surface is excessively dirty or dusty.
2. As shown in the picture below, grab the fruit and smoothly push it to the instrument, so that the center part of the fruit adheres closely to inside rubber shield.
3. Press the trigger and keep applying a steady force to the fruit for about 2 seconds (until the "beep - beep" sound ends). Make sure that the fruit doesn't move during scanning.
4. The instrument structure has been designed to fit into a standard size of object fruit.
5. Hence measuring a fruit smaller than standard size, there may be a possibility that superfluous light may leak into the optical sensor. In that case, try to move the measuring position and to avoid such leakage during the measurement or user may have to wear a black glove to cover up a possible light-leak.

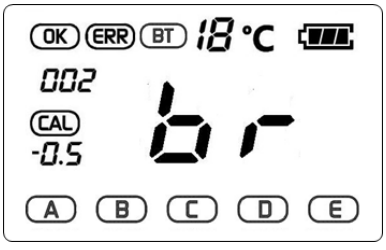


fruit positioning on H-100F



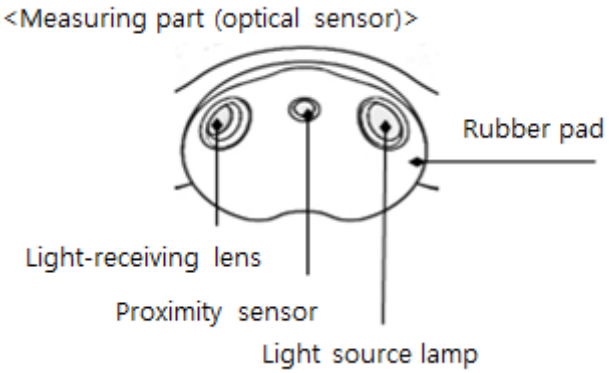
fruit positioning or H-100C

6. When a browning detected, in case of apple and pear application, a couple of beep sound occurs and displays " **br** " on the LCD screen.



■ Cleaning

1. The optical part of the instrument must be kept clean using the cotton swab or smooth cloth included in the cleaning kit provided in the product package.
2. To clean the instrument body and LCD display, wipe softly with a smooth cloth.
3. To clean light-receiving lens, proximity sensor and light source lamp, take a cotton swab soaked with alcohol and wipe softly.

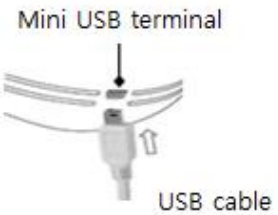


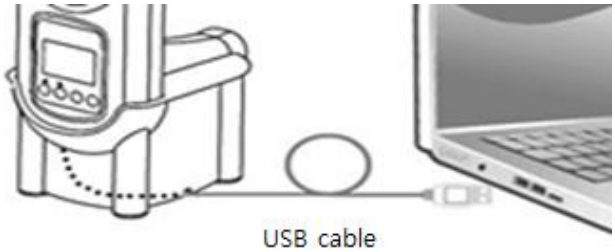
4. When measuring part is excessively dirty, take off the rubber pad from the instrument head, so to clean it thoroughly.
5. The rubber pad can be separated from the main body and washed in water. After washing it, dry it under a shade. When attaching the rubber head to the main body again, make sure it firmly inserts into the rubber hole of the body.

When cleaning the measuring part, do not apply excessive force on the optical component. Detaching/attaching the rubber head must follow the cleaning procedure instructed by authorized service representative.

■ PC interface

1. An exclusive PC program (Admin Program) is included in provided USB memory.
2. The PC program is used to read the data stored in the instrument and save them as a csv file, and is also used to renew or upload calibration model into the instrument.
3. To utilize the exclusive PC program, refer to user's manual included in USB memory.
4. First, connect the USB cable to USB terminal on the back of the instrument. Then, using the connection hole of the stand and groove on the bottom, connect the USB cable and place the instrument on the stand.
5. Connect USB cable to PC.





■ Diagnosis of the instrument and Troubleshooting

The following is a brief description on how to diagnose and deal with various abnormal situations that may occur while using the instrument. To resolve abnormalities swiftly, please read and check the followings before making malfunctioning reports to the A/S center or visiting service representative.

1. When power doesn't turn on

The power may not be turned on when the battery is empty or the instrument has been automatically turned off during the use due to low battery. Charge the instrument for more than 30 minutes and try to turn on again. If it is turned on, charge sufficiently and then use the instrument as usual.

2. When the instrument is used beyond normal operation temperature

In case the instrument is used out of standard operating condition (temperature : 5℃~35℃, humidity : 85%RH), the measurement value may slightly deviate from the guaranteed accuracy due to a reason that the spectrometer sensor built in the instrument is influenced by temperature. When the instrument is placed out of standard operating condition, the temperature indicator on LCD display will be blinking. It is recommendable to use the instrument within standard temperature range for accuracy assurance.

Error code number

3. When there is an abnormality during charging

In case charging status lamp is blinking or no light on, check if the charger's plug connected to charging terminal is properly inserted.

4. When ERR is shown on LCD display

When the power is turned on, the instrument diagnoses itself through initialization. The instrument also detects abnormalities during measurements, and shows ERR and an error code on LCD in case of any problem occurred. With the error code number, user may find out a countermeasure from the list below. In case of consulting with A/S center, provide the error code number to deal with the malfunctioning more swiftly.

Error code number	Error occurrence	Countermeasures
1	When initializing / when measuring reference value / when measuring Brix	Error code "1" appears, when ▭ on the LCD blinks due to lack of battery power. Charge the battery immediately.

2	When initializing / when measuring reference value	Error code "2" appears, when the head-cover of measuring part is opened or when the reference material(white Teflon) inside the cover is severely damaged. Make sure to check the condition of the cover and see if it is properly closed to the instrument, and restart booting (initialization)..
3	When measuring Brix	Error code "3" appears, when measurement value deviates out of standard range other than preset (5 ~ 25 Brix or adjustable). Make it sure if the calibration model is suitably selected for relevant fruit, and take re-measurement.
4	When measuring Brix	Error code "4" appears, when direct sun light or indoor lamps has excessively infiltrated to the measuring part through inside/outside of object fruit. Block the direct sun light or use it under protection of light incident..
5	When measuring Brix	Error code "5" appears, when the size of object fruit is either so small or too big, when the fruit is excessively rotten or damaged, when the surface is moist, or when the object fruit is improperly placed on the measuring part of instrument. Check the status of object fruit and make it sure the fruit is properly placed on the measurement part of the instrument.
10	When initializing	When error code "10" appears, the instrument can still be used to take measurement, but need to contact A/S center.
20	When initializing	When error code "20" appears, the instrument can not be used. Need to contact A/S center immediately.

For abnormalities or malfunctioning other than the above descriptions, do not take countermeasures at your discretion, but contact A/S center or service representative nearby your premises to get technical support.

Appendix: Principle of measuring the sugar contents of fruit

A nondestructive fruit quality measuring instrument predicts fruit's ingredients by using the light of NIR (Near-Infrared) wavelength band. A calibration model calculates fruit's ingredients by analyzing the wavelength of light which reflected from inside fruit. Since the conditions of fruit may differ for each type of fruit, variety of fruit, and place/time of cultivation, different calibration model should be applied accordingly. For nondestructive sugar contents measuring instrument, it is very necessary to understand the concept of calibration model and the way of deviation correction.

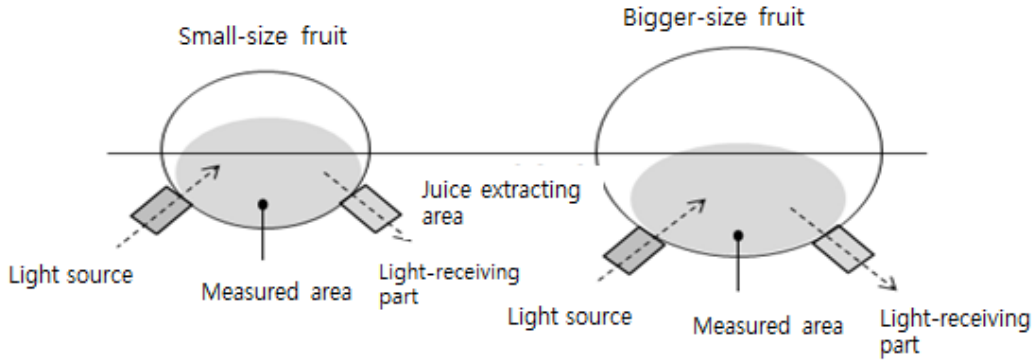
■ Difference between sugar amounts and sugar contents(Brix)

Sugar amounts or sugar (sweet-tasting ingredients) stand for the total amount of saccharose, fructose and glucose, while sugar contents (Brix) stand for the total amount of all ingredients (sugar, acidity, minerals etc) inside the juice except water. Strictly speaking, a refractometer which measures sugar contents is adjusted based on saccharose, a type of sugar. For an example, a mandarin orange (Onzhu variety for example) with 10% sugar and 1% citric acid and another mandarine orange with 10% sugar and 1.5% citric acid might be measured as 10.9 Brix and 11.3 Brix respectively using a refractometer. In other words, there may be a difference in sugar contents based on the fact that **sugar≠sugar contents**, and also by the amount of citric acid. Although the calibration model of nondestructive measuring instrument is created under the basis of measurement value of refractometer, what the reflected wavelength of light means a reaction to sugar amounts. Therefore, an error of about 0.1~0.5 Brix caused by the component of sugar and citric acid portion may affect to the standard error of nondestructive measurement values. By the way, high sugar contents value measured by refractometer does not always guarantee favorable sweetness. The quality of sweetness may be differed by the amount of citric acid in fruit.

■ Area of measurement and juice extraction

Generally, partial section inside the fruit has different value of sugar contents. Thus, to measure the average sugar contents of a single fruit, juice should be extracted from entire fruit. If juice partially extracted from a fruit, it is very inappropriate to regard its measured value as if an average value of that fruit. When juice is extracted from a relatively large area of a fruit, we can tell its sugar contents is approached to average value. As shown on the below drawing, SUNFOREST H-100 series has large area of incident light covering half or one

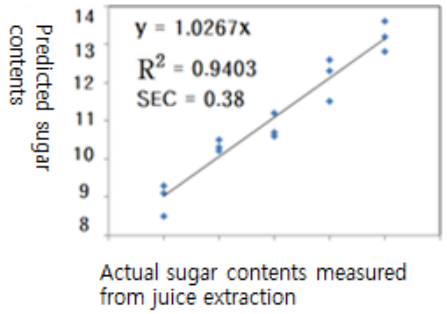
third of an entire fruit volume, which attributes to the achievement of average sugar contents value. Therefore, measuring juice using a refractometer, extracted from the same size and area measured by the SUNFOREST H-100 series instrument, shall provide more accurate comparison of sugar contents value.

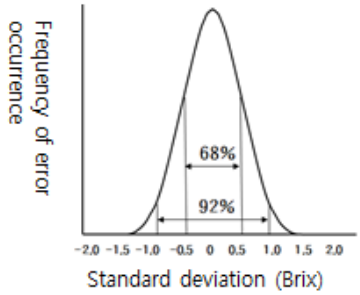


■ Correlation coefficient and standard error of the calibration model

The predicting performance of a nondestructive measuring instrument can be evaluated by correlation coefficient((**R^2**) and standard error(**SEC**) of the calibration model.

The correlation coefficient indicates the level of co-relationship between the sugar contents predicted by calibration model and actual sugar contents of extracted juice measured by refractometer. Bigger the correlation coefficient of the calibration model, better the definiteness between high sugar contents and low sugar contents. Thus we can tell the calibration model with bigger correlation coefficient is better optimized to object fruit. The standard error is the statistic distribution of error range between sugar contents predicted by calibration model and actual sugar contents measured from the juice extracted. A standard deviation of 0.5 Brix means that among the total number of measurement, about 68% can predict the sugar contents within the error range of ±0.5 Brix. Thus, in some cases, a measurement error may have larger value than 0.5 Brix. **To create a calibration model with good correlation coefficient and useful standard error, it is recommendable to make models collected from various range of sugar contents and considerable number of fruit samples.** The correlation coefficient and standard error should be made to be suitable for desired purposes of instrument use ; make decision of harvesting time or selection of favorable fruit at post-harvest

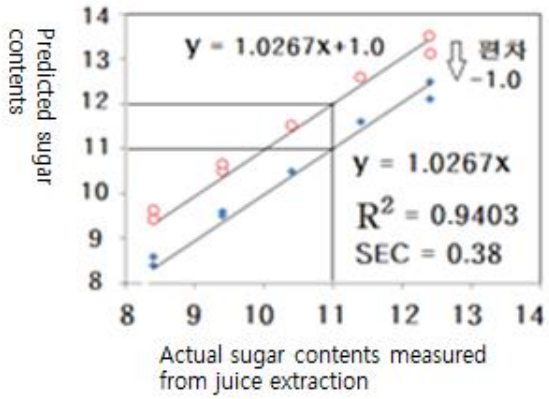




And the calibration model should be created in consideration of the varieties of fruit and area/time of cultivation.

■ Correction of calibration model for sugar contents deviation

When measuring fruits that have differences in the variety of fruit, area/time of cultivation, environment temperature, and so on, if the same calibration model applied to the instrument, predicted sugar contents value may have a deviation comparing with actual value measured from juice extraction. Before the first use of the instrument for measuring a certain fruit, it is recommended to do deviation correction first adjusting to the value of actual sugar contents measured from juice extraction.



Though SUNFOREST H-100 has built in auto-correction function for temperature compensation, the measured value may has still a deviation due to different environment temperature and time of cultivation. Therefore, it would be better to have a deviation correction for calibration model before using the instrument at a new environment. Required number of samples to be used for deviation correction are over 3 pieces at least collected at each range of sugar contents i.e. low, medium, and high level. Also the average value to be applied should be born out of more than 3 times of measurement by H-100 instrument.

■ Creation of a new calibration model

Under severe differences in the variety of fruit and area/time of cultivation, existing calibration model may not be simply adjusted by deviation correction and would be no longer suitable for a new environment. In this case, a new calibration model must be newly created by the user program provided by USB memory included in H-100 product package.

With the user program provided, the user can create their own calibration model without complicated procedure. For the creation of calibration model, refer to the user manual included in USB memory.

Specification of product

■ Specifications

item	Descriptions	Remarks
Name of product	Nondestructive portable sugar contents measuring instrument	
model	H-100F / H-100C	H-100F (apple, pear, peach, and orange) H-100C (mandarin, kiwifruit)
Method of measurement	Semi-transmittance diffused reflection light	Spectral analysis of Near-Infrared
Measuring items	Brix (mandatory) Dry Matter, Chlorophyll (optionally supported)	
Measurement range	5 ~ 30 Brix % (sugar contents)	adjustable
Time for measurement	2.0 seconds	subject to type of object fruit
Number of measurement	Up to 1,000 readings can be saved in the device	Based on fully charged battery
Accuracy of measurement	Correlation coefficient R^2 : above 0.85, Standard Error (SEC) : less ±0.5 (Brix)	based on optimized calibration model (subject to object fruit and measuring items)
Way of correction	Correcting slope and deviation	adjustable by a scale of 0.1 Brix
Interface	USB 2.0 (mini USB for PC) Bluetooth 4.0 (for smartphone) - Only support LE mode	
Operating environment	5℃~35℃, 85 %RH	Guaranteed accuracy for spectrometer operation
Battery	Lithium ion battery (2,600mAh)	Charger DC 12V/1.5A
Display method	TN LCD	Screen size: 45x30mm
Information of main body	112×160×173mm, 420g/460g, ABS resin	Including battery

* specifications are subject to change without prior notice.

■ Package

Article	Number	Unit
instrument	1	ea
Head cover for light source & scanner	1	ea
Charger	1	ea
mini USB cable	1	User's manual, UT-5000 manager program, USB driver
USB memory (4GB)	1	Ea
Cleaning kit (Alcohol, cotton swab, cloth)	1	set
User's manual	1	in USB
Storage case	1	ea
Strap for storage case	1	ea

(주)해아림
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FCC Compliance Statement

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to correct the interference by one of the following measures:

• Reorient or relocate the receiving antenna.

• Increase the separation between the equipment and receiver.

• Connect the equipment into an outlet on a circuit different from which the receiver is connected. • Consult the dealer or an experienced radio/TV technician for help.

FCC Caution

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.