



**PHILOSYS Co., Ltd.**  
28-5, Gwangwol-gil, Okgu-eup,  
Gunsan-si, Jeollabuk-do, 54172,  
Republic of Korea

**Tel** +82-63-453-1421  
**Fax** +82-63-453-1423  
**Email** help@philosys.com



**Obelis SA**  
Boulevard Général  
Wahis 53 1030  
Brussels, Belgium

**Tel** +(32) 2 732-59-54  
**Fax** +(32) 2 732-60-03  
**Email** mail@obelis.net

REF PG101-INT

IVD

# User's Guide

## Gmate<sup>®</sup>SMART



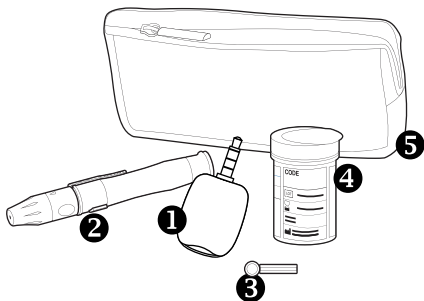
Thank you for purchasing the Gmate® SMART Blood Glucose Monitoring System.

Please read this User Guide thoroughly before operating the system as it provides important information for proper use. It is recommended that you keep this User Guide in a safe place for your future reference.

If you are using this product for the first time, it is very helpful to practice with a control solution that can replace your blood. For more information, please refer to the user's manual for Control Solution Testing (see page 52).

Package Contents	6
Before Use	7
Identifying Parts and Functions	9
General Warnings and Cautions	17
Installing the Application	25
Collecting a blood	32
Alternative Site Testing	37
Performing the Test	40
Reviewing Results	48
Control Solution Testing	52
Error Messages and Troubleshooting	59
Caring for System	63
Performance Characteristics	66
System Specifications	73
Warranty	75

# Package Contents



















1. Gmate® SMART Meter
2. Lancing Device
3. Lancets
4. Gmate® Test Strips
5. Carrying Case

## Note

- Please call your local distributor if any items are missing.
- Smartphone is not included.
- Smartphone is required to use the Gmate® SMART Glucose Monitoring System.
- Gmate® Control Solutions are available separately.

## Meaning of Symbols

-  Caution, see instructions for use
-  Single use only
-  Expiration date
-  Serial number
-  Lot number
-  In Vitro Diagnostic medical device
-  Manufacturer
-  Authorised representative
-  Symbol for temperature limitation
-  Consult instructions for use
-  Biological risks
-  Contains sufficient for <n> tests
-  Direct current
-  Separate disposal from other household waste
-  Reference number
-  This product fulfils the requirements of the European Directive 98/79/EC on in vitro diagnostic medical devices.

### *Intended Use*

- Self-testing, in-vitro blood glucose monitoring system : The Blood Glucose Monitoring System is intended for self-testing in diabetes management. It is used outside the body (in vitro diagnostic use) by layperson with diabetes at home and by healthcare professionals in clinical setting as an aid to monitor the effectiveness of diabetes control.

This meter can test the glucose levels of blood from your fingertip, Upper arm, Forearm, Hand, Thigh or Calf. However, test results from sites other than the fingertip may differ from fingertip measurements. Consult your doctor or healthcare professional before testing blood from the Upper arm, Forearm, Hand, Thigh or Calf.

- Disposable lancet : It is a single use disposable type instrument that is used for obtaining blood.
- Lancing device : A device used to collect a small amount of blood from the body. The lancet is excluded.

### *Test Principle*

The glucose test strip is coated with a reagent between two electrodes. When the reagent reacts with glucose in the blood, current is generated. This product measures the current using whole blood and displays the concentration of glucose in the blood.

# Identifying Parts and Functions

## Gmate® SMART Meter



### ***Power Indicator***

Turn on when the meter is ready to test.

### ***Test Strip Port***

Insert the Gmate® test strip electrode end.

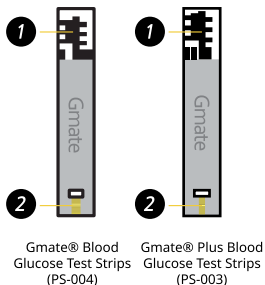
### ***Power Indicator***

Insert into your smart phone connector.



## Identifying Parts and Functions

### Gmate® Test Strip



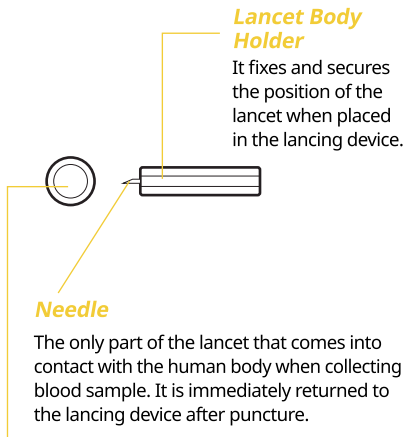
### **Electrodes**

Insert this end facing up into the test strip port of the meter.

### **Yellow Filling Window**

Apply your blood sample on the edge of this window.

### Lancet

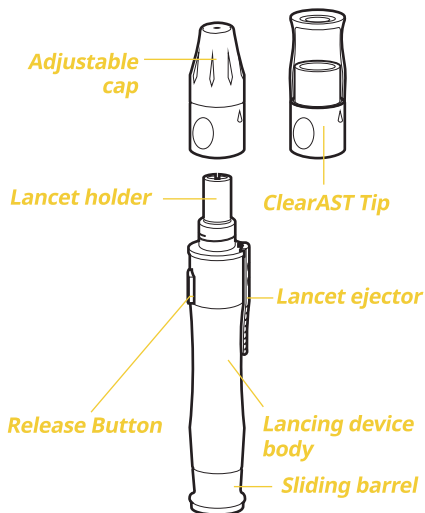


### **Lancet Cap**

It protects the needle part of the lancet, prevents contact with foreign matter and unintentional puncture. After placing the lancet to the lancing device, remove the cap by twisting it.

## Identifying Parts and Functions

### Lancing device



### ***Adjustable cap***

It adjusts the depth of puncture of the lancet.

### ***Lancet holder***

It's the part that being attached to the lancing device.

### ***Release button***

It's the button that release the lancet.

### ***Lancet ejector***

It's the part that eject the used lancet.

### ***Sliding barrel***

It's the part that need to be pulled out to prepare the lancing device to be ready for puncture.

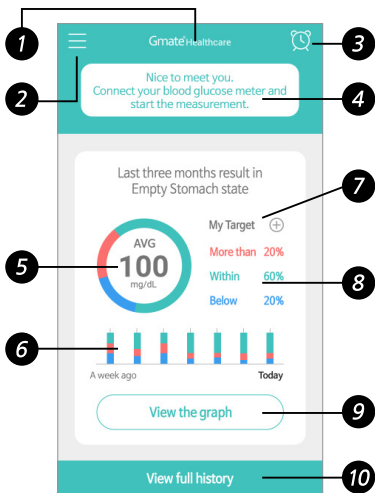
### ***Clear AST cap***

It's a transparent AST cap that is used when blood sampling is done in other area than the fingertips.

\* Clear AST cap is an optional accessory. Please contact your local distributor for availability.

Lancing device vary and is subjected to change without notice.

# Identifying Parts and Functions



## 1. Title

Application logo image.

## 2. Menu

Go to the Settings menu.

## 3. Alarm

Go to Alarm Settings.

### 4. *Guide area*

- If there is no measured value, a measurement guide message is displayed.
- If a measured value is present, the latest measured value is displayed.
- If the number of test strips is less than 15, the number of remaining test strips and the shopping mall button will be displayed.

### 5. *Pie graph*

- The center shows the total average of last three months result in empty stomach state.
- Based on the recent three months result in empty stomach state, the percentage that goes above, within, or below the personal adjustment goal is displayed.

### 6. *Bar graph*

- Based on each day's measurements, the percentage corresponding to the personal control target range is displayed.
- The height of the bar graph shows the total average value of the measurements for that day.

### 7. *Personal adjustment goal*

Go to the personal adjustment goal setting screen.

## Identifying Parts and Functions

### **8. Goal Value**

The ratio is displayed above, within, and below, based on the last three months's measured values.

### **9. View the graph**

Go to the graph view screen.

### **10. View full history**

Go to the full history view screen.

# General Warnings and Caution

## *Precautions when using blood glucose measurement system*

- Since this product is for self-diagnosis or self-monitoring, it is not used for diagnosis of diabetes without the help of a doctor.
- This product is for in vitro diagnostic use only.
- Blood glucose test strips used for testing newborn and pregnant women blood specimens are not validated.
- Be aware of sudden temperature changes. If there is a sudden change in temperature, wait at room temperature for 30 minutes before measuring.
- Do not drop the meter or apply strong impacts.
- Do not disassemble, repair, or modify.
- If any abnormality is found, stop the operation of the device immediately, and request for an inspection from the manufacturer.
- This product should be used with the test strip and control solution manufactured by Philosys.



## General Warnings and Caution

- This product should be measured using only whole blood of capillary blood. Do not use serum, plasma, arterial blood or venous blood sample.
- Before using this product, please read this manual carefully to ensure safe and accurate measurements.
- This product contains small measuring instruments which can be dangerous if swallowed.
- Keep the meter out of the reach of children. If a child swallows a battery or small part, seek immediate medical attention and consult a physician immediately.
- This product is not waterproof and should not be wiped with water or wet hands.
- Do not wipe this product with thinner or abrasive.
- The test strip should be stored in a cool, dry place at 2 °C ~ 32 °C.
- The test strip should be stored away from direct sunlight or heat.

## General Warnings and Caution

- After taking a test strip out from the storage container, close the storage container lid immediately.
- Do not drop the blood sample directly on the surface of the test strip.
- The blood is sucked in automatically when you put the collected blood at the end of the test strip.
- Do not press or bend the test strip with force. This can result in inaccurate measurement results due to the blood does not enter the test strip in a suitable amount.
- Do not use damaged or re-use test strip. The test strip is disposable.
- Keep the test strip in its original container. Do not keep it mixed with test strip in other containers.
- Do not cut or deform the test strips.
- Patients with renal dialysis may be affected by blood glucose measurement. Please use the product after consultation with your doctor.

## General Warnings and Caution

- Take the test strip out of the container and use it within 3 minutes. If the test strip is exposed to air for a long time, incorrect measurement results may occur.
- Use all the test strips within 3 months after opening the test strip container lid.
- Do not use a test strip that is expired. Incorrect measurement results may occur.
- Touch the test strip with clean and dry hands to perform the blood glucose measurement.
- Patients with immunoglobulin treatment may be affected by blood glucose measurement. Please use the product after consultation with your doctor.

### *Precautions when using blood glucose test strip*

- This test strip should only be used for in vitro diagnostics.
- This test strip should only be used with our approved Gmate® Blood Glucose Meter.
- For accurate measurement of the test strip electrode, the sample should be measured using only whole blood of fresh capillary blood. If measurements are made using serum, plasma, arterial or venous blood specimens, incorrect measurement results may occur.
- The blood glucose test using this system cannot replace medical care at the medical institution. It is just trying to help diagnosis and treatment when consulting a doctor by providing blood glucose information.
- Be careful of sudden temperature changes. If there is a sudden change in temperature, wait at room temperature for 30 minutes before measuring.

## General Warnings and Caution

- Blood glucose test strips used for testing newborn and pregnant women blood specimens are not validated.
- If the blood sample exceeds 20 ~ 60% of the hematocrit range, the measurement value is not correct. Please contact your doctor or specialist.
- The test strip should be used within 3 months after opening the container lid.
- Conditions of use: Temperature 10-32°C, Relative Humidity 90% or less, Altitude 3,048m.
- The test strip is disposable. Do not re-use.

### *Precautions when using the lancet*

- For user's safety, when attaching a lancet into the lancing device, connect the lancet without removing the lancet's protective cover (lancet cap). Immediately before installing the lancing device's lid, remove the lancet cap.
- Do not use products that have damaged or no protective cap.
- The lancet is a disposable, sterilized product, so reuse and re-sterilization are prohibited. Do not apply excessive force to the product during use.
- Be sure to only press the button on the lancing device to obtain blood sample. Be careful not to make any mistakes or other damage due to careless use of the button.

## General Warnings and Caution

### *Precautions when using the lancing device*

- A non-standard lancet cannot be used with this lancing device, so be sure to use the appropriate lancet.
- Use only for specified purpose, and do not use it for other purposes.
- If there is any problem in storing and using, please inform the manufacturer as solution and follow up measures will be provided.

# Installing the Application

The Gmate® SMART Blood Glucose Monitoring System should be used with the Gmate® Healthcare application.

The Gmate® Healthcare application is free and can be downloaded from the App Store or the Play Store.



You can download the Gmate® Healthcare App by scanning the QR code.



For Android

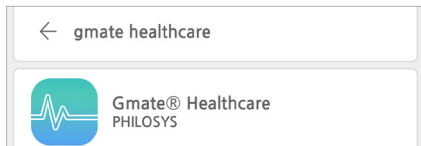


For iPhone



## Installing the Application

To download the application to your smartphone, select the App Store or Play Store icon and enter “Gmate healthcare” in the search box on the screen.



### STEP 1

If you have downloaded the application, select “Register” after starting the app and proceed with the registration process.

\* It is possible to measure blood glucose without having to register. However, user setting and data management are difficult.

### STEP 2

After checking the terms and conditions, check the agreement. Then enter the email and password you will use to sign in.

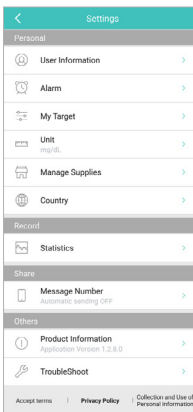
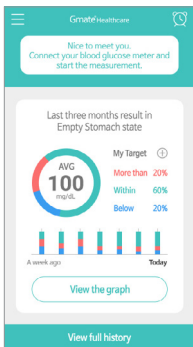
### STEP 3

Enter your name / birth year / height / weight (optional) to complete your membership.

# Installing the Application

## Application settings

If you select the “☰” icon from the main screen, you can go to the setting screen. Personal settings, recording, sharing, and other settings are available.




# Installing the Application

## 1. Personal settings



**User Information:** You can view and edit information entered by the user (name / age / height / weight). You can also change the password that you set when registering. If you forget the password you set, you can also use the registered e-mail to issue a temporary password. Logout and unsubscribe are also available on this page.



**Measurement Time Setting Notification:** You can set notifications for before breakfast / after breakfast / before lunch / after lunch / before dinner / after dinner / before bed / other. If you need to set time and use initialization, you can reset it by selecting "  " button.



**Target Adjustment Setting:** You can set and control the "Target Adjustment" for Empty Stomach/Before Meal/After Meal/Before bed/Others.

## Installing the Application



**Unit Setting:** You can set height / weight unit. If you cannot change the Unit of blood glucose Measurement (UoM) in your device, it means that the local distributor has fixed it as default unit. Please contact the local distributor, if you have any inquiries regarding UoM.



**Consumables management:** It is possible to manage the number of test strips and lancets. You can set it by scrolling the number to the left or right or by entering the number directly.



**Country setting:** You can set your country.

## 2. Recording



**Statistics:** You can see the total number of measurements and mean blood glucose values for your blood glucose data. You can view the latest holistic result of 7, 14, 30, 60, 90 days.

## 3. Sharing



**Text message sending:** If automatic transmission is set, the result is automatically sent to the desired mobile number after the measurement is completed.

\*This feature is only applicable to Android devices.

## 4. Other settings



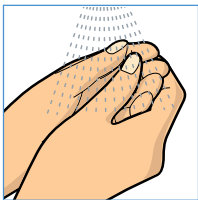
**Product Information:** You can check the application version and smartphone firmware version and model.



**Troubleshoot:** Gmate® SMART is a glucose meter which is being used by connecting to your smartphone, but may have problems depending on your smartphone settings. Please check if you have problems with blood glucose measurement. See page 59 for the list of problems and their solutions that are difficult to identify.

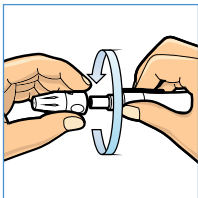
# Collecting a blood

## Blood Sampling



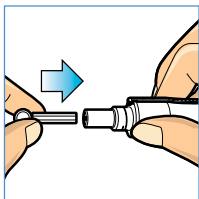
### STEP 1

Wash your hands with warm water to increase blood circulation into the fingers. Then dry your hands completely.



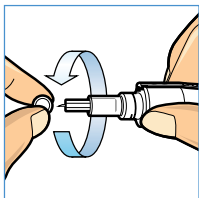
### STEP 2

Unscrew the adjustable cap.



### **STEP 3**

Insert a new sterile lancet into the lancet holder and fix it in firmly.

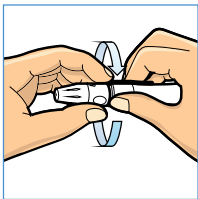


### **STEP 4**

Hold the lancet and the lancing device together in one hand and twist off the protective cap with the other hand.

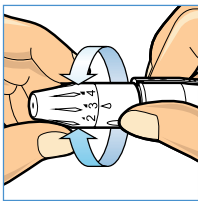


## Collecting a blood



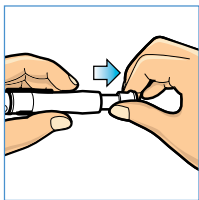
### STEP 5

Place the adjustable cap back on the lancing device.



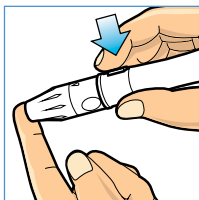
### STEP 6

Set your desired depth level by twisting the adjustable cap. The smaller numbers are for shallower puncture that is more suitable for softer skin while bigger numbers are for deeper puncture that is more suitable for thicker or calloused skin.



### **STEP 7**

Draw the sliding barrel to cock the lancing device.



### **STEP 8**

Hold the lancing device against the desired finger area. Then press the release button to collect a blood sample.

## Collecting a blood

### STEP 9

After the blood glucose measurement is completed, open the cap of the lancing device and remove the used lancet. The lancet must be discarded in an appropriated container according to your local regulations. It's also recommended to put the lancet protective cap back on the used lancet before disposal.

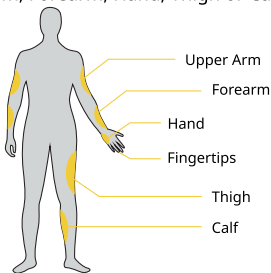
To reduce the risk of infection, follow these steps:

- Wash the blood collection area thoroughly before collection.
- Do not use the lancing device and the lancet with others.
- The lancet is disposable. Always use a new lancet.
- Keep the meter and the lancing device clean.

# Alternative Site Testing

## Alternative Site Testing

This meter can test the glucose levels of blood from your fingertip, Upper arm, Forearm, Hand, Thigh or Calf. However, test results from sites other than the fingertip may differ from fingertip measurements. Consult your doctor or health-care professional before testing blood from the Upper arm, Forearm, Hand, Thigh or Calf.



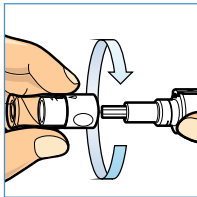
Use blood from	If you are going to test
Fingertip, Upper arm, Forearm, Hand, Thigh, Calf	<ul style="list-style-type: none"><li>* Before meals</li><li>* Two hours or more after meals</li><li>* Two hours or more after exercise</li></ul>
Fingertip	<ul style="list-style-type: none"><li>* When there is the possibility of your blood glucose levels changing rapidly (e.g. after meals or exercise)</li><li>* When experiencing symptoms of hypoglycemia such as perspiration, cold seats, a floating sensation or trembling</li><li>* When immediate testing is needed for suspected hypoglycemia</li><li>* When in poor physical condition, such as with a head cold, etc.</li></ul>

## Alternative Site Testing

### *Caution*

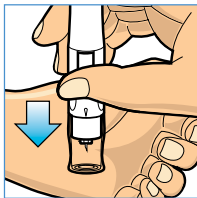
- Please consult with a specialist before taking alternative site measurements.
- Avoid moles, veins, bones, and tendons.
- Do not take alternate site testing if you think your blood glucose level will change drastically within two hours of exercise, within two hours of insulin administration, or within two hours of a meal.
- Do not take alternate site testing if hypoglycemia is suspected or hypoglycemia is not noticeable.
- Do not use an alternative site testing to calibrate a continuous glucose monitoring system.
- Do not use an alternative site testing to calculate insulin doses.
- Finger blood sampling can detect hypoglycemia more quickly than alternative site testing.

*Alternative site blood sampling is different from finger blood sampling.*



### STEP 1

After inserting a new sterile lancet firmly into the lancet carrier, place the clear AST cap on top.



### STEP 2

Hold the lancing device against the site you have chosen to lance. Avoid moles, veins, bones, and tendons. Press and hold the lancing device on the spot for a few seconds. Then press the release button to collect a blood sample. Observe through the clear cap to see if sufficient amount of blood sample is visible. If the blood volume is insufficient, massage the area gently.

# Performing the Test

## *Preparation before Test*

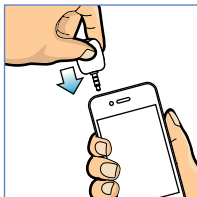
- Stabilize the user's condition before measurement and make the measurement in the correct state.
- Make sure that the connection between the smartphone and the meter is good.
- Make sure that the temperature of the measurement environment is 10-32°C.
- Make sure that the blood glucose test strip has not expired.
- Wash your hands thoroughly with soap and warm water and dry them well.

### Performing the Test



#### STEP 1

Touch the Gmate® Healthcare icon on your smartphone to launch the application. If you have not installed the Gmate® Healthcare application, please install the application first.



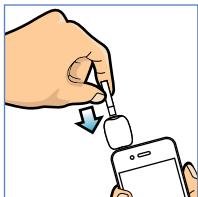
#### STEP 2

Plug the Gmate® SMART meter into your headphone jack. You may see a volume control dialogue box appears on screen. Make sure the headphone volume maximize for Gmate® SMART meter getting enough power. The light of Gmate® SMART is on and "Insert Strip" is displayed.

- The location of the external connector headphone jack may differ depending on the smartphone model. So please refer to the smartphone user manual.



## Performing the Test

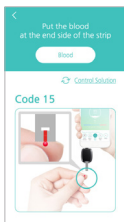


### STEP 3

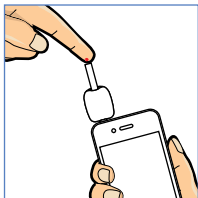
When the message “Insert the Electrode part of the strip in the glucometer” is displayed, hold the electrode of the test strip up and insert the electrode part into the test strip port of the meter. Slide the test strip until it is no longer inserted.

### STEP 4

On the screen, you will see “Put the blood at the end side of the strip”. This indicates that you are ready to measure. Check that the code number displayed on the meter matches the code number of the strip vial. If the two code numbers are different, remove the test strip and insert it again. If the two code numbers are still different, insert a new test strip. If the code number differs even when a new test strip is inserted, please contact the customer service office.



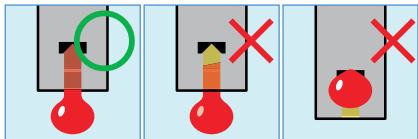
## Performing the Test



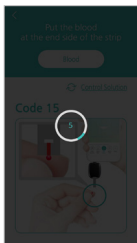
### STEP 5

Collect a blood sample using the lancing device and then bring the blood sample to the Yellow Filling Window. The yellow window will automatically draw your blood.

- The blood sample volume must be at least 0.5 microliter.
- The meter may not start the test if there is not enough blood sample on the test strip.



## Performing the Test



### STEP 6

The test will take 5 seconds to complete.

### STEP 7

The meter will display your blood glucose result on the screen.








- Repeat the test if your test result is displayed as one of the following:
  - Below 50 mg/dL (2.8 mmol/L)
  - Above 250 mg/dL (13.9 mmol/L)
- "HIGH": Your test result is above 600 mg/dL (33.3 mmol/L)
- "LOW": Your test result is below 20 mg/dL (1.1 mmol/L)

### STEP 8

You can customize your results by selecting a relevant icon (Empty Stomach, Before Meal, After Meal, Before bed, Others)

You may also type in additional comments.


Setup your testing time (essential)

				
Fasting	Pre-meal	Post meal	Before sleep	Etc.

Comment (Option)  
[Leave a comment](#)

---

### STEP 9

Remove the test strip from the meter. The test results can be saved on the smart phone by pressing the “” button.

## Performing the Test

- Used test strips and lancets may be considered biohazardous waste in your area.
- Be sure to confirm to your local regulations for proper disposal.
- If your blood glucose test results are below 50 mg/dL, above 250 mg/dL, or if "LOW" or "HIGH" is displayed on the screen, contact your healthcare professional immediately.

Blood glucose levels will vary depending on food intake, medication dosage, health, level of stress, or exercise. Consult your healthcare professional for the target range that is appropriate for you.

The expected blood glucose level is as per mentioned below.

### ■ Fasting

\* Fasting means after not having anything to eat or drink (except water) for at least 8 hours before the test.

Normal	less than 100 mg/dL (5.55 mmol/L)
Prediabetes	100 mg/dL (5.55 mmol/L) to 125 mg/dL (6.94 mmol/L)
Diabetes	126 mg/dL (7.00 mmol/L) or higher

### ■ 2 hours after a meal

Normal	less than 140 mg/dL (7.77 mmol/L)
Prediabetes	140 mg/dL (7.77 mmol/L) to 199 mg/dL 11.05 mmol/L)
Diabetes	200 mg/dL or higher (11.11 mmol/L)

\* References: <http://www.diabetes.org/diabetes-basics/diagnosis>

# Reviewing Results

## Performing the Test

The results of your measurements with the Gmate® SMART are stored on your smart- phone. Even if you do not have a Gmate® SMART meter, you can check your test results anytime, anywhere.

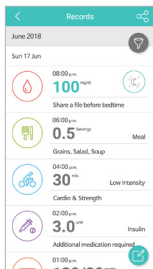
You can check the test results on the PC through the link below.

<https://gmate.philosys.com>

## STEP 1

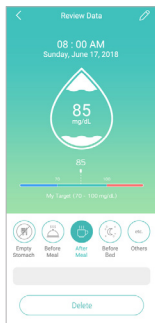
Select and run the icon for the Gmate® healthcare application installed on your smartphone.

If you select “Show all records” at the bottom of the main screen, the measurement results will be displayed as in the list. The most recent measurement is displayed at the top of the screen.



## STEP 2

Select one of the measurement results in the list to display the corresponding details.



## STEP 3

If you select "Graph view" on the main screen, it shows the average of the last week's measured values. You can also see the achievement rate and trend of personal adjustment goals.






### **STEP 4**

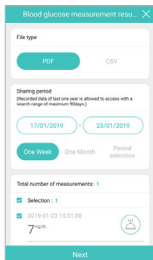
Pressing the graph view button shows the average of the whole day, Empty Stomach, Before Meal, After Meal, Before bed and Others. By scrolling left and right, you can observe the transition from past measurement to today's measurement. If you select the day in the top graph, you can also check detailed measurements for each time of the day.

## Transfer test result

The results of the test using the Gmate® SMART meter can be transmitted through the shared application installed on the smartphone such as text message and e-mail using the wireless communication function of the smartphone.

### STEP 1

Once you have selected the full history view, you can see the Share button . Press the Share button to send a single result or multiple measurement results.



### STEP 2

Shared file types can be selected as PDF / CSV, and the sharing period can be selected within 90 days from the record within 1 year. You can select or deselect data to share.

# Control Solution Testing

The Gmate® Control Solution contains an amount of glucose. It is used to ensure your meter and test strips are working properly. Control solutions are available to purchase separately. Perform a control solution test in the following instances.

- You want to practice the test process without sampling blood.
- You open a new vial of test strips.
- You suspect the meter or test strips are not working properly.
- You get repeatedly unexpected blood glucose results.
- You have dropped or damaged the meter.

## **STEP 1**

Touch the Gmate® Healthcare icon on your smartphone to launch the application. If you have not installed the Gmate® Healthcare application, please install the application first.



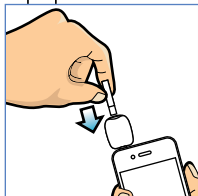
### STEP 2

Plug the Gmate® SMART meter into your headphone jack. The volume control dialogue box is displayed. Make sure the headphone volume maximize for Gmate® SMART meter getting enough power. The light of Gmate® SMART will turn on and “Insert Strip” is displayed.

- The location of the external connector headphone jack may differ depending on the smartphone model. So please refer to the smartphone user manual.


### STEP 3

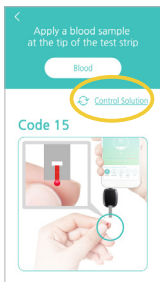
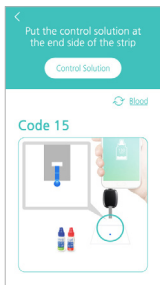
When the phrase “Insert the Electrode part of the strip in the glucometer” is displayed, hold the electrode of the test strip up and insert the electrode part into the test strip port of the meter. Slide the test strip until it is no longer inserted.



## Control Solution Testing

### STEP 4

If you want to measure the control solution, please select  Control Solution on the right screen. The control solution measurement screen is displayed.



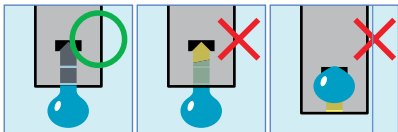
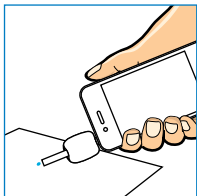
### STEP 5

On the screen, you will see "Put the control solution at the end side of the strip". This indicates that you are ready to measure your glucose. Make sure that the code number displayed

on the meter matches the code number of the strip vial. If the two code numbers are different, remove the test strip and insert it again. If the two code numbers are different, insert a new test strip. If the code number differs even when a new test strip is inserted, please contact the customer service office.

### STEP 6

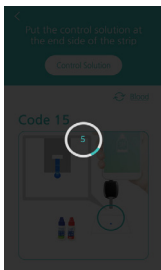
Shake the bottle of the control solution well and open the lid. Discard the first drop. Gently squeeze a sample of control solution onto a clean, flat, and hard surface and place it on the end of the test strip. Control solution will be automatically sucked into the test strip.



# Control Solution Testing

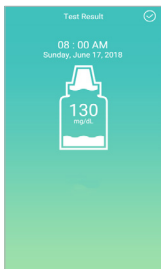
## STEP 7

The measurement will take 5 seconds. A bar graph will indicate the duration.



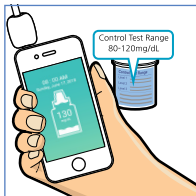
## STEP 8

The meter will display the control solution test result on the screen.



### STEP 9

Compare the result with the control solution range printed on the test strip vial. If the result is within range, your meter and test strips are proven to work properly. If not within range, repeat the control solution test.



Out-of-range results may occur due to following reasons:

- An error occurred while following the test steps.
- Usage of expired test strip, mixed with water or contaminated control solution.
- Usage of expired or damaged test strip.
- The meter has some defect.



## Control Solution Testing

### **STEP 10**

Remove the test strip from the meter.

- Used test strips and lancets may be considered biohazardous waste in your area. Make sure to follow your local regulations for proper disposal.

## Error Messages and Troubleshooting

<i>Message</i>	<b>Used Strip Error</b> Remove the used strip. Please insert a new strip.
<i>Probable cause</i>	Used test strip has been inserted.
<i>To do</i>	It's a disposable one time use test strip. This message is displayed on the screen when used test strip has been inserted in the meter. Please use a new test strip.
<i>Message</i>	<b>Recognizing Code Number</b> Code number can not be recognized. Please insert the strip again.
<i>Probable cause</i>	There is a problem in recognizing the test strip.
<i>To do</i>	There is a problem recognizing the test strip. Remove the test strip completely and try again. If the same error appears again, even if you put it in several times, please use a new test strip.

## Error Messages and Troubleshooting

<i>Message</i>	<b>Error</b> Meter has problem.
<i>Probable cause</i>	A meter error has occurred.
<i>To do</i>	This is an error message when there is a problem with the meter. Try again to connect the meter, but if you still have the same error, please contact Customer Services Center.
<i>Message</i>	<b>Temperature error ( high / low )</b> Ambient temperature out of range.
<i>Probable cause</i>	Out of operating temperature range.
<i>To do</i>	This message is displayed on the screen when the ambient temperature is outside the range of temperatures the meter can be used. The operating temperature of the meter is 10-32 °C (50-89.6 °F). If this message is displayed on the screen, please put the meter and the test strip at room temperature for 20 minutes, and then start again from the beginning.

## Error Messages and Troubleshooting

<i>Message</i>	There is no response after you connect the meter to your smartphone.
<i>Probable cause</i>	The meter is defective.
<i>To do</i>	Try to reconnect. If the error message appears again, please contact your local distributor.
<i>Probable cause</i>	Gmate® SMART meter is not properly connected to the smartphone.
<i>To do</i>	Insert the meter to the end of the USB jack on your smartphone.
<i>Probable cause</i>	The meter will not connect to the smartphone with certain phone cases.
<i>To do</i>	Remove the phone case and try connecting again.

## Error Messages and Troubleshooting

<b>Message</b>	There is no response after you insert the test strip into the meter.
<b>Probable cause</b>	The test strip is not inserted properly.
<b>To do</b>	Re-insert the test strip and make sure it is placed all the way to the test strip port.
<b>Probable cause</b>	The meter or test strip is defective.
<b>To do</b>	Repeat the test with a new test strip. If the error message appears again, please contact your local distributor.
<b>Probable cause</b>	Foreign objects have entered the test strip port.
<b>To do</b>	Please contact your local distributor.
<b>Message</b>	There is no response after the blood sample is applied to the test strip.
<b>Probable cause</b>	Applied blood volume is too low.
<b>To do</b>	After inserting a new test strip, repeat the test with enough blood volume.
<b>Probable cause</b>	The meter or test strip is defective.
<b>To do</b>	Repeat the test with a new test strip. If the error message appears again, please contact your local distributor.

# Caring for System

## **How to store after use**

- Do not store the Blood Glucose Monitoring System near water.
- Store the Blood Glucose Monitoring System in a place where temperature, humidity, etc. are not adversely affected.
- Do not expose the Blood Glucose Monitoring System to direct sunlight for a long time.
- Be careful not to let any foreign materials such as dirt and blood and water to the test strip port.
- Do not store the Blood Glucose Monitoring System in the chemical storage area or gas generating place.

## **How to store (Gmate® SMART)**

- Store the meter in a cool and dry place at room temperature.
- Storage condition: Temperature -20 to 50 °C, RH 90% or less.
- Operating condition: Temperature 10 to 32 °C, RH 90% or less.
- Store the meter in a well-ventilated place.

## **How to store (Gmate® Test Strip)**

- Storage condition: Temperature 2 to 32 °C, RH 90% or less.
- Operating condition: Temperature 10 to 32 °C, RH 90% or less.
- Please be sure to close the vial after use.

### ***Expiration date (Gmate® Test Strip)***

- Unopened: 24 months from date of manufacture.
- Opened: 3 months from the date of first opening.

### ***Be sure to check the expiration date of the test strip and the control solution.***

- Test strips and control solution have expiration dates printed on their vials. When you first open the test strip or control solution vial, please record the open date in the space provided on the label. All test strips and control solutions are valid for no more than three (3) months after the first opening.
- Do not use the test strip and the control solution that passed the expiration date or 3 months after the first opening. The test result may be inaccurate.
- Do not use the test strip with damaged packaging or opened lid that have been stored for a long time. If the test strip is used, an error message may be displayed on the screen or incorrect test results may be obtained.

### *Cleaning the meter*

- With a soft cloth dampened with water and mild detergent, gently wipe the exterior of your meter. Do not use alcohol or other solvents to clean. Do not get any liquids, dirt, or other foreign objects through the test strip port.

### *Cleaning the lancing device*

- Wipe the exterior of the lancing device using a soft cloth dampened with water and mild soap. Wash the adjustable cap and clear AST cap with water and mild soap. Do not immerse the lancing device in liquid.



# Performance Characteristics

## Clinical accuracy

*(Gmate® Blood Glucose Test Strips (PS-004))*

**System accuracy result for glucose concentrations < 100 mg/dL(5.5 mmol/L)**

within $\pm 5$ mg/dL (0.27 mmol/L)	within $\pm 10$ mg/dL (0.55 mmol/L)	within $\pm 15$ mg/dL (0.83 mmol/L)
173 / 189 (92%)	189 / 189 (100%)	189 / 189 (100%)

**System accuracy result for glucose concentrations  $\geq 100$  mg/dL(5.5 mmol/L)**

within $\pm 5\%$	within $\pm 10\%$	within $\pm 15\%$
376 / 411 (91%)	410 / 411 (99.7%)	411 / 411 (100%)

## Measurement precision

### Measurement repeatability

Mean glucose	Standard deviation	Coefficient of variation(%)
48 mg/dL (2.66 mmol/L)	2.3 mg/dL (0.12 mmol/L)	4.7
100 mg/dL (5.55 mmol/L)	3.2 mg/dL (0.17 mmol/L)	3.2
138 mg/dL (7.66 mmol/L)	4.6 mg/dL (0.25 mmol/L)	3.3
233 mg/dL (12.94 mmol/L)	7.5 mg/dL (0.41 mmol/L)	3.2
365 mg/dL (20.27 mmol/L)	8.7 mg/dL (0.48 mmol/L)	2.4

## Intermediate measurement precision

Mean glucose	Standard deviation	Coefficient of variation(%)
48 mg/dL (2.66 mmol/L)	1.9 mg/dL (0.10 mmol/L)	4.0
107 mg/dL (5.94 mmol/L)	3.9 mg/dL (0.21 mmol/L)	3.6
337 mg/dL (18.72 mmol/L)	7.9 mg/dL (0.43mmol/L)	2.4

## User performance evaluation

The blood glucose values of finger capillary blood samples measured by 100 lay persons are shown below.

	Glucose concentration <100mg/dL (0.55 mmol/L)	Glucose concentration ≥100mg/dL (0.55 mmol/L)
Within ±15 mg/dL (0.83 mmol/L)	600 / 600 (100%)	/
Within ±15 %		

# Performance Characteristics

## Interference

The effect of various interfering substances was evaluated in whole blood samples on glucose measurements.

<b>Interference</b>	<b>lower limit (mg/dL)</b>	<b>Upper limit (mg/dL)</b>
Acetaminophen	5	20
Bilirubin	10	40
Ascorbate	0.75	3
Uric acid	5	20
Maltose	50	200
Galactose	250	1000
Urea	125	500
L-DOPA	1	4
Methyl-DOPA	0.625	2.5
Dopamine	3.25	13
Ibuprofen	10	40
Salicylic acid	12.5	50
Tolbutamide	25	100
EDTA	50	200
Pralidoxime Iodide(PAM)	5	20
Cholesterol	125	500
Caffeine	12.5	50
Fructose	12.5	50
Lactose	12.5	50

## Performance Characteristics

Lipoic acid	12.5	50
Sucrose	12.5	50
Hemoglobin	5	20
Triglyceride	750	3000
Creatinine	7.5	30
Gentisic acid	12.5	50
Tolazamide	50	200
Glutathione	3.07	12.3
Sodium	787.5	3150
Heparin	0.53	2.14
Icodextrin	125	500
Xylose	15	60

- Glucose concentration interval : 50, 100, 250, 300 mg/dL
- The 'upper limit' shown in this table is the concentration of interference checked by the test.
- Interference that is not listed in this table may affect the results.
- Patients who are undergoing pharmacotherapy may yield false results. Please contact your doctor before use.

# Performance Characteristics

## Clinical accuracy

*(Gmate® Plus Blood Glucose Test Strips (PS-003))*

**System accuracy result for glucose concentrations < 100 mg/dL(5.5 mmol/L)**

within $\pm 5$ mg/dL (0.27 mmol/L)	within $\pm 10$ mg/dL (0.55 mmol/L)	within $\pm 15$ mg/dL (0.83 mmol/L)
113 / 150 (75.3%)	150 / 150 (100%)	150 / 150 (100%)

**System accuracy result for glucose concentrations  $\geq 100$  mg/dL(5.5 mmol/L)**

within $\pm 5\%$	within $\pm 10\%$	within $\pm 15\%$
223 / 450 (49.5%)	431 / 450 (95.8%)	450 / 450 (100%)

## Measurement precision

### Measurement repeatability

Mean glucose	Standard deviation	Coefficient of variation(%)
43 mg/dL (2.38 mmol/L)	3.3 mg/dL (0.18 mmol/L)	7.6
91 mg/dL (5.05 mmol/L)	3.1 mg/dL (0.16 mmol/L)	3.4
126 mg/dL (7.00 mmol/L)	3.8 mg/dL (0.21 mmol/L)	3.0
204 mg/dL (11.33 mmol/L)	5.9 mg/dL (0.32 mmol/L)	2.9
329 mg/dL (18.27 mmol/L)	9.4 mg/dL (0.52 mmol/L)	2.9

## Intermediate measurement precision

Mean glucose	Standard deviation	Coefficient of variation(%)
39 mg/dL (2.16 mmol/L)	3.3 mg/dL (0.18 mmol/L)	8.4
122 mg/dL (6.77 mmol/L)	3.8 mg/dL (0.21 mmol/L)	3.1
311 mg/dL (17.27 mmol/L)	8.9 mg/dL (0.49 mmol/L)	2.9

## User performance evaluation

The blood glucose values of finger capillary blood samples measured by 100 lay persons are shown below.

	Glucose concentration <100mg/dL (0.55 mmol/L)	Glucose concentration ≥100mg/dL (0.55 mmol/L)
Within ±15 mg/dL (0.83 mmol/L)	600 / 600 (100%)	
Within ±15 %		600 / 600 (100%)

# Performance Characteristics


## Interference

The effect of various interfering substances was evaluated in whole blood samples on glucose measurements.

Interference	lower limit (mg/dL)	Upper limit (mg/dL)
Acetaminophen	5	20
Ascorbic acid	0.75	3
Bilirubin	5	40
Cholesterol	62.5	500
Creatinine	0.5	10
Dopamine	2.5	20
EDTA	25	200
Galactose	1.56	15
Gentisic acid	125	1000
Glutathione	12	92
Haemoglobin	7	20
Heparin	62.5	500
Ibuprofen	6.25	50
Icodextrin	136.8	1094.4
L-DOPA	0.0625	0.5
Maltose	1250	10000
Methyl-DOPA	125	1000
Pralidoxime Iodide (PAM)	2.5	20
Salicylate	7.5	60
Tolbutamide	12.5	100
Tolazamide	5	40
Triglycerides	187.5	1500
Uric acid	3	24
Xylose	25	200

- Glucose concentration interval : 50, 100, 250, 300 mg/dL
- The 'upper limit' shown in this table is the concentration of interference checked by the test.
- Interference that is not listed in this table may affect the results.
- Patients who are undergoing pharmacotherapy may yield false results. Please contact your doctor before use.

# System Specifications

<b>Product Name</b>	Gmate® SMART
<b>Item Name</b>	Blood Glucose Monitoring System
<b>Model</b>	PG-101
<b>Item Authorization Number</b>	CE 0197
<b>Test Method</b>	Electrochemical sensor
<b>Sample</b>	Capillary whole blood
<b>Sample Size</b>	0.5 $\mu\text{l}$
<b>Test Time</b>	5 seconds
<b>Memory</b>	Depends on smartphone capacity (No limit)
<b>Result Range</b>	20-600mg/dL (1.1 ~ 33.3 mmol/L)
<b>Hematocrit Level</b>	20-60%
<b>Operating Temperature</b>	10-32°C (50-89.6°F)
<b>Operating Relative Humidity</b>	Less than 90%
<b>Altitude</b>	Up to 3,048 meters (10,000 feet)
<b>Rated Voltage</b>	From the smart phone 0.4Vrms  , 3mA
<b>Size</b>	21.0mm x 42.7mm x 8.8mm (0.83" x 1.68" x 0.35")
<b>Weight</b>	4.2g (0.15oz)



## System Specifications

	Lancing Device	Lancet
<b>Brand</b>	Lanzo	NANOLET TM
<b>Item Name</b>	Lancing Device	Sterile single-use lancet for blood collection
<b>Model</b>	Lanzo 1.5 Lancing Device	DB905B
<b>Item Authorization Number</b>	-	CE1639
<b>Packing Unit</b>	1ea	1PACK (10ea)
<b>Intended Use</b>	A device used to collect small quantity of blood sample from the body. Excluding lancet.	A disposable auto-device used for collecting blood sample
<b>Manufacture</b>	GMMC Bongseonglo 82-16 (506-6, Dangjeong-dong), Gunpo-si, Gyeonggi-do, Republic of Korea	Dong Bang medical co., Ltd. 40&30 Saneopdan- ji-gil, Ungcheon-eup, Boryeong-si, Chungc- heongnam-do, Korea
<b>EU Representative</b>	GMMC S.L. Carrer de Garbí, 15, 46240 Carlet (Valencia), Spain	Meridius Medical Europe Ltd. Unit 3D, North Point House, North Point Business Park, New Mallow Road, Cork, T23 AT2P, Ireland
<b>Remarks</b>	-	Disposable medical device Do not reuse

Philosys warrants that the Gmate® SMART Meter alone should be free of defects in materials and workmanship under regular use without damage for a period of five years since the date of purchase.

This warranty pertains only to the original purchaser.