

RHOPOINT NOVO-GLOSS



Operating Instructions

Thank you for purchasing this Rhopoint product.
Please read these instructions carefully before operating this product and retain them for future reference.

English

This instruction manual contains important information about the setup and use of your Rhopoint Novo-Gloss™ Flex 60. It is essential that the contents be read before powering up and operating the instrument.

If this instrument is passed to other users you must ensure that the instruction manual is supplied with the instrument. If you have any questions or require additional information about the Rhopoint Novo-Gloss™ Flex 60 please contact the Rhopoint Authorised Distributor for your region.

The technology and components used in the device are based on state-of-the art optic and electronics. As part of Rhopoint Instruments commitment to continually improving the technologies used in their products, they reserve the right to change information included in this document without prior notice.

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Storage and Handling

- This instrument contains precision optics and electronics. You should avoid knocking or dropping the device as the resulting impact could cause serious damage.
- In some circumstances the optical components in the instrument could become misted due to temperature change. It is recommended that the instrument is not used until it has stabilised to ambient temperature.
- Ensure that the instrument is not exposed to moisture, chemicals or to any corrosive vapours.
- Do not interfere or place any objects inside the measuring aperture as damage to the measuring system could occur.
- The instrument housing and screen are normally resistant to a variety of solvents however it is not possible to guarantee resistance to all chemicals, therefore the surfaces of the instrument should only be cleaned using a soft, moist cloth.
- Prevent exposure of the instrument to direct sunlight for prolonged periods and to continuous humidity and condensation.

Accessories

The instrument is supplied as a standard package complete with all accessories required to calibrate and recharge the unit including:

Rhopoint Novo-Gloss Flex 60° glossmeter

High and low gloss calibration tiles including certificate

Cleaning cloth for calibration tile

NIST traceable instrument certificate

USB mains charger with four selectable mains input connectors (UK / Europe / US / Australia)

USB PC cable

Quick start operating instructions

Protective instrument carry case

USB Key with instruction manual and Bluetooth data widget software

Product Warranty Card

Power

The [Rhopoint Novo-Gloss Flex 60](#) is powered by an integrated high capacity lithium ion cell.

Fully charged the instrument will operate continuously for >17 Hours or >20,000 readings.

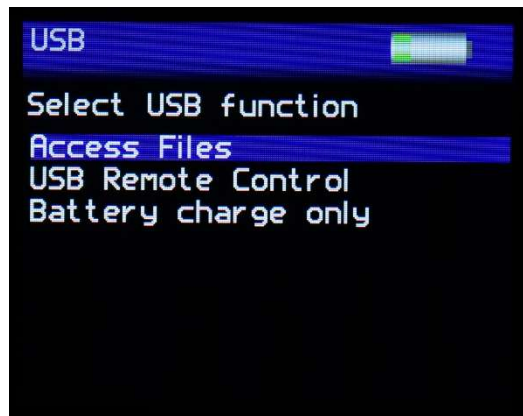
A mains powered USB charger is provided with the unit. This will fully charge the unit when connected to the unit's USB input in up to 9 hours.

Alternatively, instrument can be powered and charged using the USB cable attached to any compatible USB host (e.g. laptop etc.), Please note that charging from a USB host such as a laptop may take longer due to the lower current available.

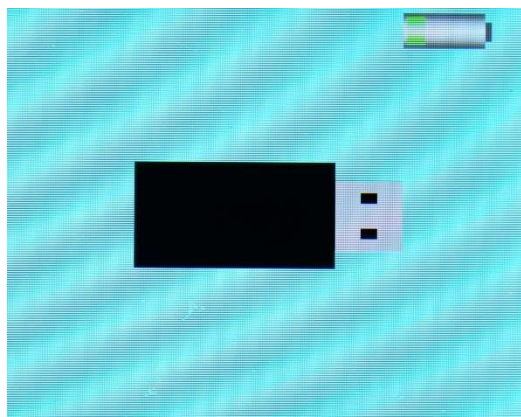
Do not operate the instrument whilst it is charging.

USB Connectivity

Three functions are available when the Novo-Gloss is connected to a computer using the USB cable supplied –



Access Files – Allows access to measurement and configuration files on the instrument. The instrument appears as a USB drive named NG-METER. When selected the display on the instrument shows a USB memory key as shown below –



USB Remote Control - Allows control of the Novo-Gloss remotely by sending ASCII commands from a computer or PLC. In this mode the instrument displays “REMOTE CONTROL ACTIVE” on the main measurement screen.

Battery Charge Only – Allows USB charging of the instrument – all instrument functions are available. However do not operate the instrument whilst it is connected via USB and/or charging.

Functional Overview

BACK OF INSTRUMENT

POWER ON/OFF

- Press once to power up
- Press and hold to power off*
- *Power off option must be selected in instrument set up.



USB SOCKET

- Software free connection to PC
- Instrument charging socket

Fig. 1

NAVIGATION PROMPTS

NAVIGATION BUTTONS

- ○ ○ Measure / Enter
- ○ ○ Left
- ○ ● Right
- ○ ○ Up
- ○ ○ Down

BATTERY INDICATOR

BATCH NAME

MEASUREMENT BUTTON

TIME & DATE

MEASUREMENT HEAD

MEASUREMENT ADAPTOR

MEASUREMENT BUTTONS

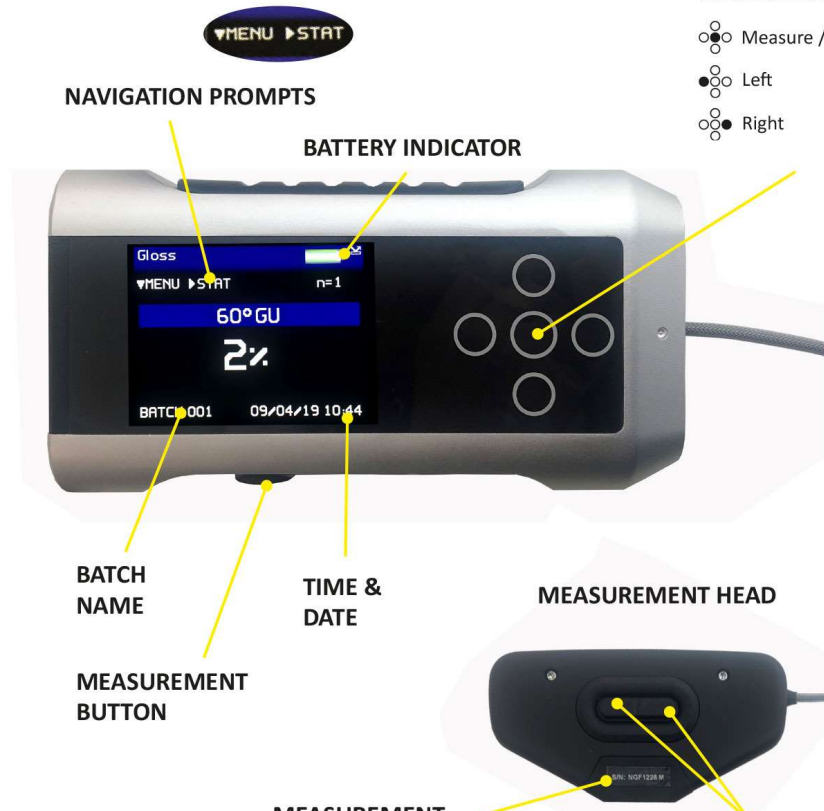
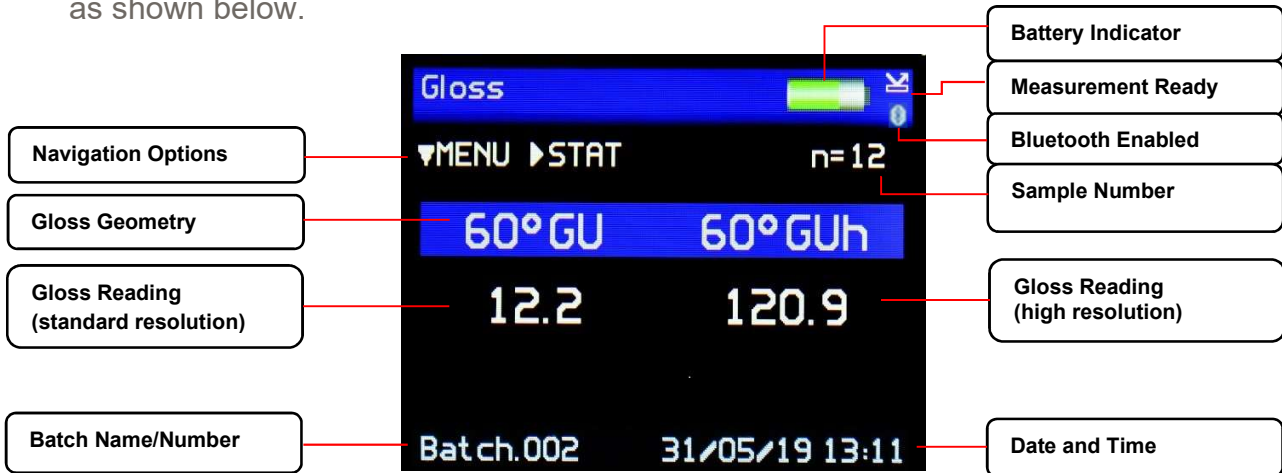


Fig. 2

The instrument is controlled by pressing the relevant touch sensitive button. Functionality is dependent on whether the instrument is in menu or operate mode, as detailed in the operation sections that follow.

Operation

With the unit switched on and initialised the instrument will display the home screen as shown below.

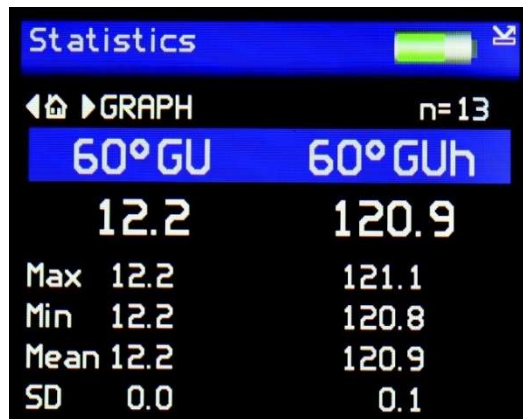


In this mode, measurements can be made by simply pressing any of the measurement buttons.

With the pass/fail feature enabled, the Novo-Gloss Flex 60 will compare each measurement range to user defined tolerances. If the gloss reading is within specification the angle header will be displayed in green; if the reading falls outside the tolerances the header is marked in red.



Press the Right button to access the statistics screen for the current batch. Measurements can be taken whilst in this screen and the statistics will be updated.



Press the Right button in the statistics screen to access the graph screen providing a graphical representation of the statistics data.



Measurements can be taken whilst in this screen and the graph will be updated after each reading. Press the Left button to return to the statistics screen.

Press the Right button to return to the home screen.

Calibration

The instrument has two ranges of measurement that are calibrated individually.

GU: 0-100GU

GUh: 0-12GU

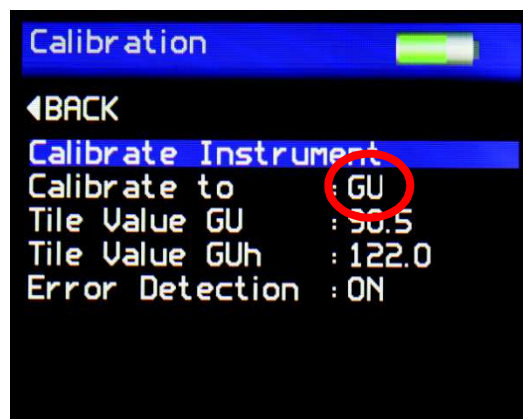
1. Select GU calibration tile



2. Attach tile to measurement head; for best performance place on a flat surface.



3. Navigate to: Menu > Setup > Calibration Menu
4. Ensure 'Calibrate to' is set to GU and select 'Calibrate Instrument'



5. Press the measurement button to calibrate and select 'Confirm' once completed



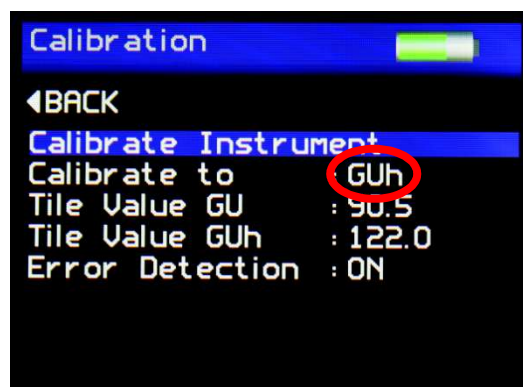
6. Select GUh calibration tile



7. Attach tile to measurement head; for best performance place on a flat surface.



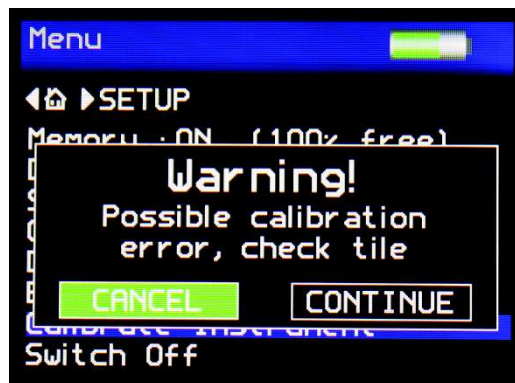
8. Navigate to: Menu > Setup > Calibration Menu
9. Ensure 'Calibrate to' is set to GUh and select 'Calibrate Instrument'



10. Press the measurement button to calibrate and select 'Confirm' once completed



11. The Novo-Gloss Flex 60 has a feature to check if the correct tile is selected for the calibrated range or to detect contamination on the tile, in case of error the following message will be displayed.



12. In case of error check the correct tile is selected (step 1. or step 6.)

13. If the correct tile is selected check tile for damage or contamination.



14. In case of contamination clean the tile with the supplied lint free cleaning cloth, do not use any solvents or cleaning fluids.

Menu Screen

The Menu Screen is used for quick access to often used options. Press the Up / Down buttons to navigate through the options, press the Enter button to select the option required.



Selectable settings in the menu screen are: -

Memory – Set to ON, enables storage and batching of measurement results. The amount of available storage memory is also displayed.

Set to OFF – disables result storage.

With Memory ON:

Delete Last Reading – Delete last measurement, no. of measurements and statistics data updated to previous values.

Start New Batch – Start new batch of readings; batch name is incremented by 1.

Clear Current Batch – Delete entire batch of measurements for current batch.

Delete All Batches – Delete all batches and measurements stored.

Batch Name – Default name is BATCH, a maximum of 8 user defined batch names can be used as detailed in the “Batching Options” section.

Calibrate Instrument – Perform a calibration of the instrument as detailed under “Operation”.

Switch Off – Turn off the instrument.

Press the Left button to return to the home screen.

Press the Right button to enter the Setup screen.

Batching Options

The batching feature allows the user to group measurements together in batches. Each batch has associated statistics; the data for each batch can be accessed by connecting the instrument to a PC.

The current batch name is displayed on the home screen in the bottom left corner, the sample number within that batch is shown in the top right of the screen indicated with n=(sample number).

A new batch is started using the Start New Batch option in either the Menu screen or the Data menu, note that the batch name will increment as will the 'n' indicator.

The current batch can be cleared in the either the Menu screen or the Data Menu, the batch name will remain the same but the 'n' indicator will reset to zero.

Auto batch size is user defined using the Auto Batch option in the Data Menu. When the number of readings in the current batch reach the number set by the user the instrument will automatically increment the batch name and set the 'n' indicator to zero. Maximum batch size is 250, when this number is reached a new batch will start.

Viewing Batch Data

To access the stored batch information, connect the instrument to a PC using the USB data cable supplied.

A new device name "NG FLEX 60" can be viewed and accessed via "MY COMPUTER". In this device open the DATA folder; this folder contains subfolders for the data of each individual saved batch.

The BATCH folder contains individual files for each reading in the batch.

Each BATCH folder also contains a STATS file and a SUMMARY file. The STATS file contains the complete batch statistics and the SUMMARY file contains data for each individual reading in a single file.

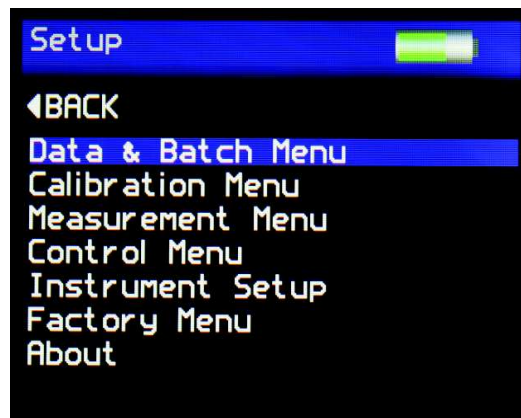
User Defined Batch Names

Batch names are user definable. With the instrument connected to a PC, open the folder named "CONFIG". Within this folder there is a document named "batches". This is a .csv file that can be opened in Notepad, Excel or WordPad.

User defined names should be saved in this document, each name listed on a separate line. Ensure that the final line is terminated with a carriage return.

The format of these names should only contain letters, no numbers, spaces or other characters can be used. Once completed save the file then switch the instrument off and on again to initialize the new batch names.

Setup Screen



The Setup Screen is used to customise the instrument to the user's preference.

Press the Up / Down buttons to navigate through the options, press the Enter button to select the option required.

Data and Batch Menu - Batch / Data options (See Data & Batch Menu Screen)

Calibration Menu - Calibration options (See Calibration Menu Screen)

Measurement Menu - Geometry setup (See Measurement Menu Screen)

Control Menu - Bluetooth setup (See Control Menu Screen)

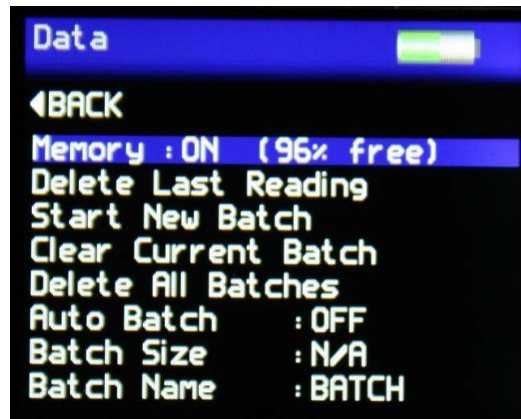
Instrument Setup - Language, Date / Time and Power options (Setup Menu Screen)

Factory Menu - PIN locked menu options for Rhopoint authorised service centres

About Menu - Information relating to the instrument's firmware version, serial number and last date of Factory Calibration

Press the Left button to return to the home screen.

Data & Batch Screen



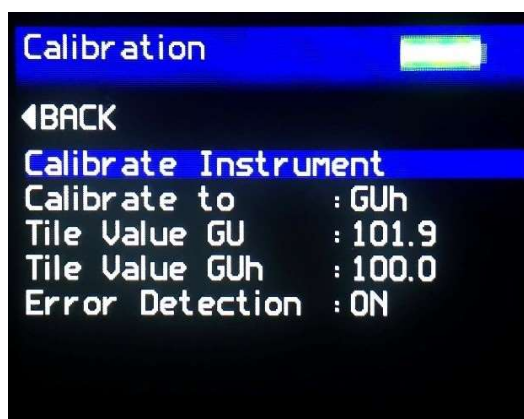
The Data & Batch Screen is similar in functionality to that of the menu screen but also allows the selection and setting of the Auto Batch size.

By selecting Auto Batch to ON the batch size can be selected between 1 - 250 by pressing the Left / Right buttons to select the relevant digit and the Up / Down buttons to increase/decrease the value. Press the Enter button to save the batch size.

If Batch names have been user defined, as detailed under Batching Options, selection of the Batch Name required is achieved by repeatedly pressing the Enter button with Batch Name selected.

Press the Left button to return to the home screen.

Calibration Screen



The Calibration Screen is used to setup the instrument calibration to the user's preference. Press the Up / Down buttons to navigate through the options, press the Enter button to select the option required.

Selectable settings in the Calibration screen are:

Calibrate instrument - Performs an instant calibration of the instrument; a dialogue box being displayed upon completion to either "Cancel" or "Confirm".

Calibrate to - Set to GU - a traceable gloss tile is used as the calibration standard
Set to GUh - a traceable low gloss tile is used as the calibration standard

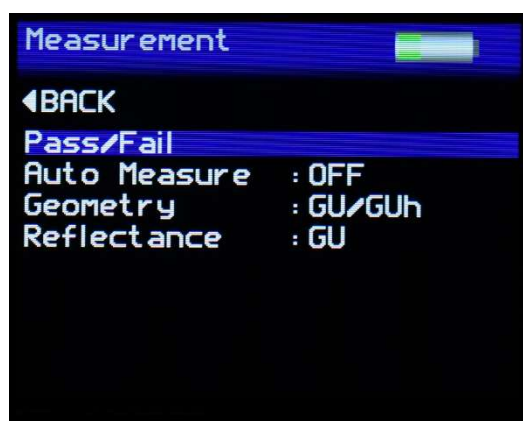
Tile Value GU - GU standard calibration value – Do not change

Tile Value GUh - GUh standard calibration value – Do not change

Error Detection - Set to ON the instrument detects the condition of the calibration standard being used. If there are fingermarks or debris which cause it to fall outside the value set in Haze Tolerance an error message is displayed before calibration requesting that the tile be checked for cleanliness.

Set to OFF - Values are still checked against the stored reference but no other error checking is carried out.

Measurement Screen



The Measurement Screen is used to configure the instrument's measurement parameters to the user's preference. Press the Up / Down buttons to navigate through the options, press the Enter button to select the option required.

Selectable settings in the Measurement screen are:

Pass/Fail - Enters the Pass/Fail set up screen, only available when reflectance is set to GU

Auto Measure – Enables or disables automatic measurement mode, used for monitoring surfaces for changes over a period of time. Press the Enter button to select the required measurement frequency of either 2, 5 or 10 seconds. When auto measure mode is activated a dialogue box is displayed after the Enter button is pressed and before the beginning of the measurement sequence indicating that it is activated. To stop auto measure simply press the Enter button once again at any time during the sequence.

Geometry - Displays the measurement range either:

GU - High gloss range 0-100 GU

GUh - Low gloss range 0-12 GUh

GU/GUh - Display both together

Reflectance - Selects the measurement unit to be displayed

% - display percentage reflectance, 100% reflectance = 1000GU@60 Degrees. Only available in GU Geometry

GU – display Gloss Units

With Reflectance set to %, measurement results for each angle are displayed as –



With Reflectance set to GU, measurement results are displayed as –



Press the Left button to return to the home screen.

Pass/Fail Setup Screen



The pass/fail setup screen is used to enable/disable on screen pass/fail indication and set measurement criteria.

The down key can be used to navigate to the Pass/Fail option and the central button pressed to toggle the feature on and off.

Press the right navigation button to edit the pass & fail criteria.

Once the Pass/Fail feature is enabled, any measurement which falls between the max and min values will be considered a pass and its header text will be coloured green. Readings above the max value or below min value will be deemed a fail and header text will be coloured red. Saved data and data transmitted by Bluetooth will also contain a pass/fail field.

Selecting the Done option will complete this process.

Control Screen



The Control Screen is used to configure the instrument's Bluetooth parameters to the user's preference. Press the Up / Down buttons to navigate through the options, press the Enter button to select the option required.

Settings in the Control screen are:

ID – Measurement definition header

SOF/EOF – Start / End of file markers for use in analysis software

BT Wireless - Enables or disables Bluetooth

BT Mode – Set the functionality of Bluetooth –

RC (Remote Control) – Operate and receive data via Bluetooth

Data – Only receive data via Bluetooth

USB Mode – Set the functionality of the USB connection when connected to a PC

Charge – Charge the instrument via USB (note the instrument can be operated during this time but cannot be used to make measurements)

Manual – Allow the functionality to be selected on the instrument each time a connection is made

RC – Remotely control the instrument via USB to make measurements and transfer data.

Data – Data only mode.

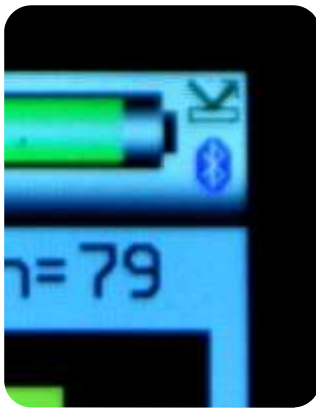
Press the Left button to return to the home screen.

Bluetooth Communication & Pairing

The Novo-Gloss Flex 60 has a Bluetooth function that allows readings to be instantly transmitted to a compatible PC.

Gloss values and the instrument serial number and service/calibration data can be instantly accessed by many PC applications including Excel, Word, WordPad, OpenOffice or SPC packages.

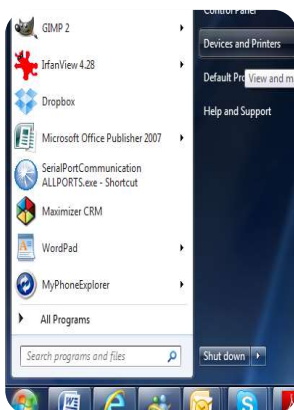
Pairing Procedure



1. Switch on the instrument.
2. The Bluetooth icon must be visible to allow pairing.



3. If the Bluetooth icon is not visible, enable it as detailed in Control Screen. Ensure that Bluetooth mode is set to either Data or Data+

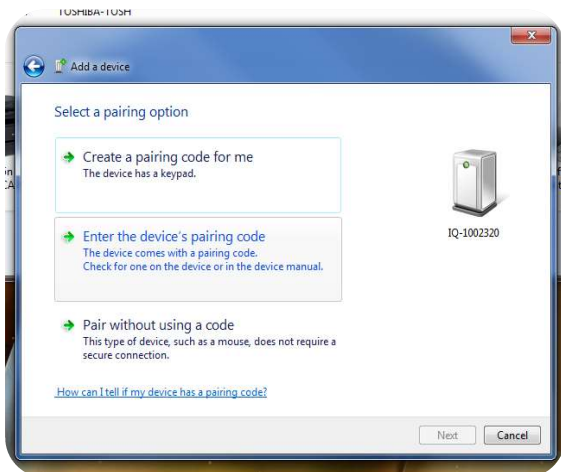


4. In Windows, go to START menu and select "Devices and Printers."

5. In Devices and Printers screen Click "Add a device"



6. Windows will now search for available Bluetooth devices; double click on the icon that corresponds to the instrument.

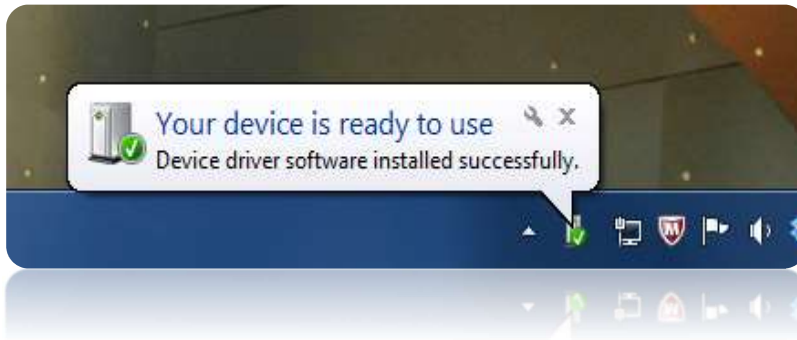


7: Click "Enter the device's pairing code" in the "Add a device" screen.



8: Enter the pairingcode "0000".

Make sure the instrument remains switched on throughout this process. To disable or extend auto power off, refer to instructions detailed in the "Instrument Setup Screen" section.



9. The Novo-Gloss Flex 60 is now installed on your PC and ready for connection to the Bluetooth Data Widget.

It is important to wait until Windows displays the "Your device is ready to use" message before starting the data widget.

Bluetooth Data Widget Installation Instructions

The Bluetooth (BT) Data Widget software supplied with the instrument is a mini program that converts transmitted measurement data into keystrokes that are automatically input into any open PC program.

1. Install the BT Data Widget software (BTdatawidget.exe) found on the DVD supplied with the instrument.



2. Check Bluetooth is switched on and that the instrument has been paired correctly.



3. On the desktop click on the “Data Widget” icon to start

4. Click on the blue “refresh” arrow to search for paired Novo-Gloss & IQ instruments.





5. The buttons are greyed out while the data widget searches for switched on instruments that have been paired to the PC.



6. Look in the data widget drop down box to see discovered instruments.



7. Select the instrument required.

8. Click the green tick to connect the instrument.



The transmitter icon now appears on the Novo-Gloss Flex 60.

All readings will now automatically be transferred to any open Windows package.

Download example EXCEL spreadsheets from the Rhopoint website or locate them on the memory key.

Instrument Setup Screen



The Instrument setup screen is used to configure the instrument's basic operating environment to the user's preference. Press the Up / Down buttons to navigate through the options, press the Enter button to select the option required.

Selectable settings in the Instrument Setup screen are: -

Language – Set instrument language to English (default), Spanish, Italian, German, Chinese, Japanese, French

Screen View – Set the orientation of the screen as NORMAL, or AUTO

Backlight – Set screen intensity to either 20%, 40%, 60%, 80% or 100% brightness

Power Off – Set instrument to automatically power off after either 30, 60, 90 or 120 seconds of inactivity or DISABLE this feature

Power Switch - Set the functionality of the Power Switch -

ON ONLY – Switch the instrument ON only

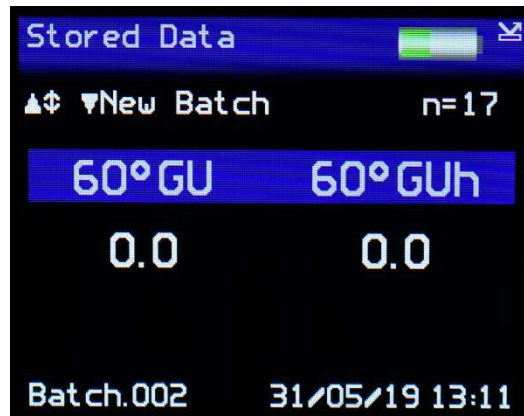
ON & OFF - Switch the instrument ON and OFF

ON (Fn) – Enable Function Select mode

ON (●) – Use as an operate button

Selecting the Power Switch to Function Select mode provides easy access to two regularly used features - Rotate Screen and New Batch.

In the Home screen, press and hold the On / Off button, the display will change as shown below-



Press either the Up button to rotate the screen. Only one rotation is possible each time the On / Off button is pressed.

Press the Down button to start a new batch, this action is either confirmed or cancelled by selecting the required box when prompted using the Left / Right buttons and pressing the Enter button.

Sound – Enable or disable button press sound

USB Charge – Set the USB charge current to either 500mA or 100/500mA

Set Date & Time – Set the date and time on the instrument. Press the DOWN button to set time. Press the Left / Right buttons to select the date or time and the Up / Down buttons to increase/decrease the value. Press the Enter button again to save the value.

Press the Left button to return to the home screen

Factory Menu

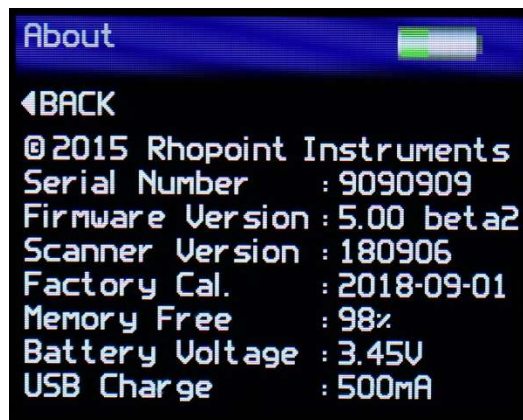


The Maintenance screen is used by Rhopoint Approved Service Centres. It is PIN locked to prevent unauthorised access.

There are no user configurable settings available in this menu.

Press the Enter button to return to the home screen

About Screen



The About screen is for information only.

It provides information relating to the instrument's software, the instrument serial number and last date of Factory Calibration. It also shows the amount of free memory available and battery power status.

Appearance Theory

Why is reflected appearance important?

A crucial factor in assessing the appearance of any manufactured product is the “glossiness” of its finish.

Gloss finishes are often used to make products visually appealing. Highly reflective, extremely smooth finishes are used to enhance the aesthetics of cars, luxury yachts and high end consumer electronics. Matt finishes are used for contrast or on furniture and architectural features.

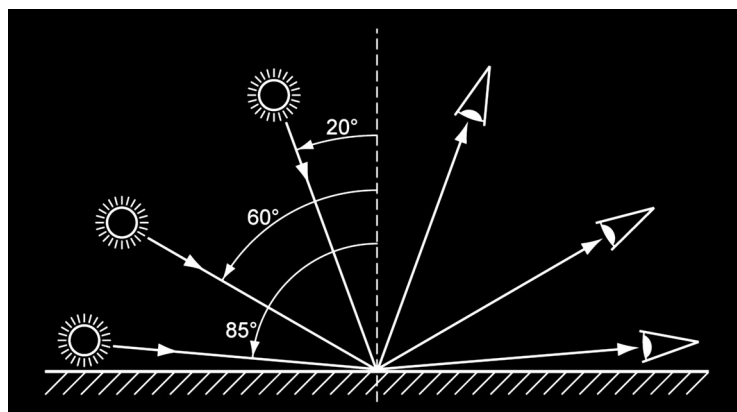
Gloss

Gloss is the visual sensation associated with the brightness of direct light reflected in a surface. Surfaces with high reflectance are determined as glossy; less reflective surfaces are semi-gloss or matt.

Glossmeters quantify this effect by measuring light reflection from a sample at defined angles.

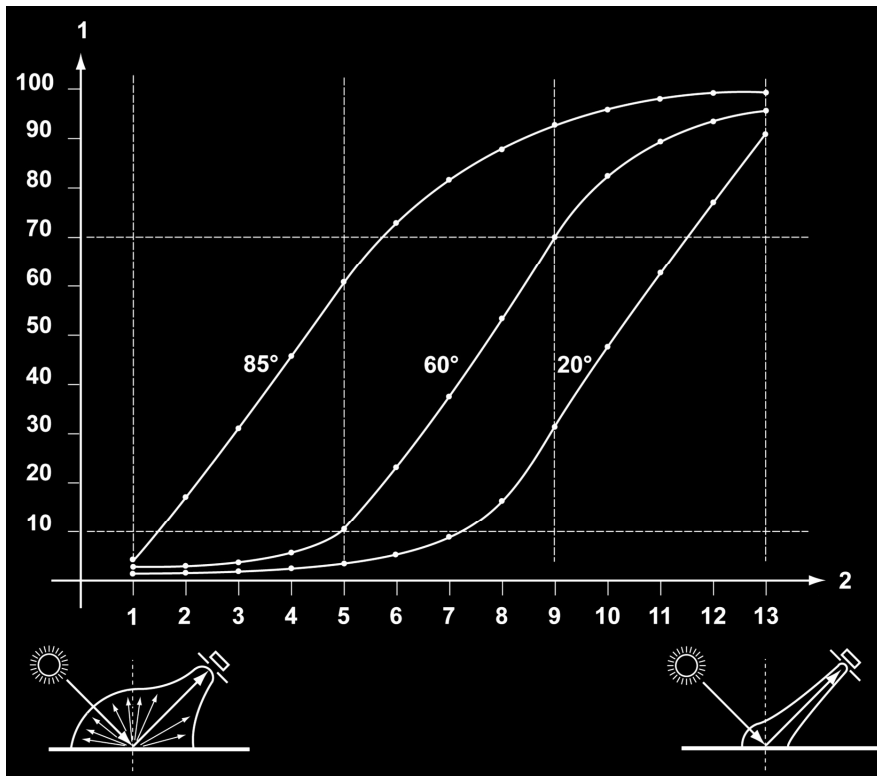
The Gloss Unit (GU) is defined in international standards including ISO 2813 and ASTM D523. It is determined by the amount of reflected light from a glass standard of known refractive index.

Calibration tiles supplied with Rhopoint instruments are traceable to master glass standards held at NIST (USA).



The measurement angles most commonly used for gloss are 20°, 60° and 85°.

- The most appropriate angle should be selected dependent on the glossiness of the sample surface.
- Using the correct measurement geometry increases resolution and improves the correlation of results with human perception of quality.



Graph showing 13 painted panels visually assessed and ranked for gloss, the measured values show 85° has improved resolution for low gloss, 60° is best suited for mid gloss and 20° should be used for high gloss.

To determine the correct measurement angle the surface should be assessed with the 60° geometry-

- Matt surfaces which measure below 10 GU @ 60° should be re-measured with the 85° angle.
- High gloss surfaces which measure above 70 GU @ 60° should be assessed using the 20° angle.
- The 60° angle is suitable for use on mid gloss samples 10-70 GU.

% Reflectance

Materials having a high refractive index such as clear plastics and varnishes can typically have measurement values that exceed 100GU due to multiple reflections occurring within the material. Highly reflective metals can also produce gloss values up to 2000GU. In these cases, it is common not to report values in GU but to express them in terms of percentage Reflectance.

% Reflectance therefore compares the amount of light energy transmitted and received by a gloss meter and expresses the value as a percentage of the measurement angles full range.

Whilst the Gloss (GU) scale is linear, each measurement angle has a different upper range; 20°: 0 – 2000GU, 60°: 0 – 1000GU, 85°: 0 – 199GU.

The measurement mode is a simple conversion of gloss value to percentage reflectance.

20 degree - 2000GU = 100% reflectance

60 degree - 1000GU = 100% reflectance

85 degree - 199GU = 100% reflectance

So, 20 degree - 1000GU = 50% reflectance, 500GU =25% etc

When the Novo-Gloss Flex 60 is calibrated in this mode it will calibrate to the GU value but will still display % reflectance.