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RHOPOINT 

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- 20° GLOSSMETER
- DOI METER
- HAZE METER
- GONIOPHOTOMETER



Rhopoint Instruments Limited
is a member of the
Rhopoint Group

The Rhopoint IQ GLOSS-HAZE-DOI-GONIOPHOTOMETER has been established as the reference instrument for measuring reflective appearance. Combined gloss, haze and orange peel (DOI/RIQ values) information has made the IQ essential for controlling appearance finish

The **Rhopoint IQ FLEX 20** brings this technology to a new format specifically designed for **curved surfaces** and **small & delicate parts**.



EASY CUSTOMISATION FOR EVERY APPLICATION

Measurement of curved surfaces*

Conventional gloss instruments are best suited to large flat areas and test panels, as curved surfaces cause measurement errors. The small footprint of the IQ FLEX 20 makes it much more effective on curved surfaces than a conventional glossmeter; its compact size and shape also allows access to difficult to reach areas.

- Curved surfaces.



Measurement of small surfaces

The Rhopoint IQ FLEX 20 can be customised with the magnetically attached adaptor plates. These can be easily interchanged for different applications



- Reduced measurement spot sizes



(4 & 2mm) for small parts.



Bespoke measuring heads

- Bespoke 3D printed adaptor jigs for repeatable control of curved surfaces.



Convex surface



Concave surface



Complex curve

* Requires adaptor

THE RHOPOINT IQ FLEX 20 MEASURES

THE RHOPOINT IQ FLEX 20 QUANTIFIES SURFACE QUALITY PROBLEMS THAT ARE INVISIBLE TO A STANDARD GLOSSMETER

The Rhopoint IQ FLEX 20 measures reflected image quality; it is the only hand held instrument that profiles how light is reflected from a surface. Glossmeters are usually used to measure the shininess of a surface but are not sensitive to common effects which reduce appearance quality



Orange peel dramatically reduces appearance quality without affecting gloss readings. These two test panels measure identically with a standard glossmeter.

The Rhopoint IQ FLEX 20 with RIQ/DOI measurement can quantify the differences



Haze is a common problem associated with coatings and polished materials. Surfaces with haze have a milky finish with a shallow reflected image.

This important characteristic is directly measured with the Rhopoint IQ Flex 20.

20° GLOSS • RSPEC • REFLECTANCE HAZE
REFLECTED IMAGE QUALITY • DISTINCTNESS OF IMAGE
GONIOPHOTOMETRIC CURVES

REFLECTANCE HAZE – An optical effect caused by microscopic texture or residue on a surface.

Visible symptoms: A milky finish is apparent on the surface with a loss of reflected contrast. Halos and patterns can be seen around reflections of high intensity light sources.

Causes: Poor dispersion, raw material incompatibility, additive migration, vehicle quality, stoving/drying/curing conditions, polishing marks, fine scratches, ageing, oxidation, poor cleanliness/surface residue.

REFLECTANCE HAZE COMPENSATION – The instrument compensates for reflection loss within the coating or highly reflective pigments, metallic coatings and speciality pigments, allowing the haze of any painted surface to be measured.

REFLECTED IMAGE QUALITY (RIQ) – RIQ is used to quantify effects such as orange peel and surface waviness. This new parameter gives higher resolution results compared to Distinctness of Image (DOI) measurement and better mimics human perception of surface texture, especially on high quality finishes such as automotive.

Symptoms of poor RIQ: Orange peel, brush marks, waviness or other structures visible on the surface. Reflected images are distorted.

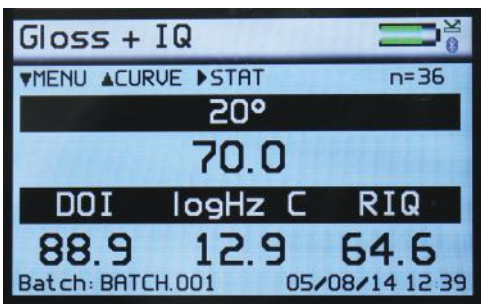
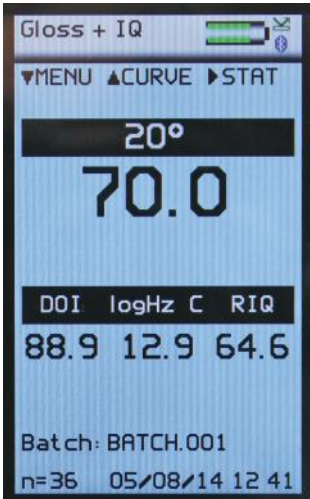
Causes: Application problems, incorrect coating flow, coating viscosity too high/low, sag or flow of coating before curing, incorrect particle size/distribution, overspray, improper flash recoat time, inter coat compatibility, incorrect cure times and cure temperature.

DISTINCTNESS OF IMAGE (DOI) – A measure of how clearly a reflected image will appear in a reflective surface.

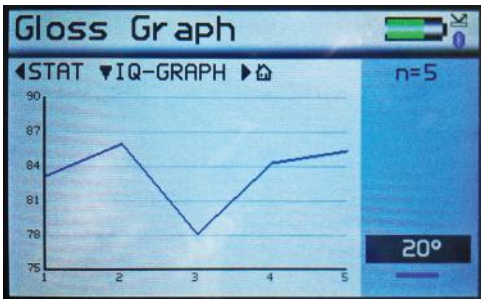


Measurement

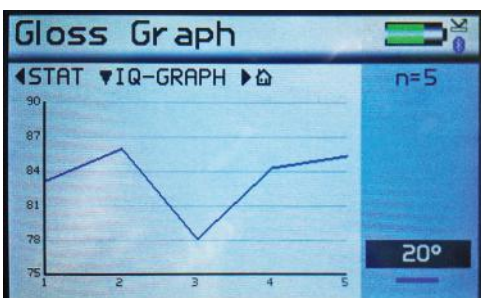
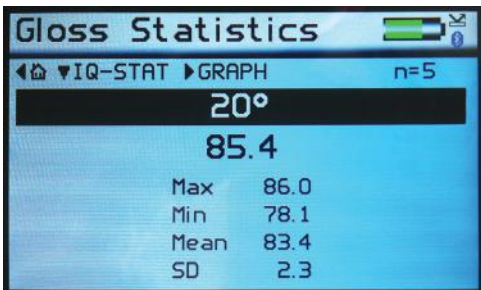
An optical effect caused by microscopic texture or residue on a surface.



Auto rotating measuring screen for ease of use in all environments



Graphical reporting for quick trend analysis.



Displays full statistics for the number of readings in the current batch.

Goniophotometric Curves

Different types of surface textures produce identifiably shaped reflectance profile. This goniophotometric data can be downloaded to PC for further analysis and comparison via USB cable or Bluetooth data widget.

Easy Batching

User definable batch names and batch sizes for quicker and more efficient reporting

Rapid Data Transfer

Software-free data transfer.

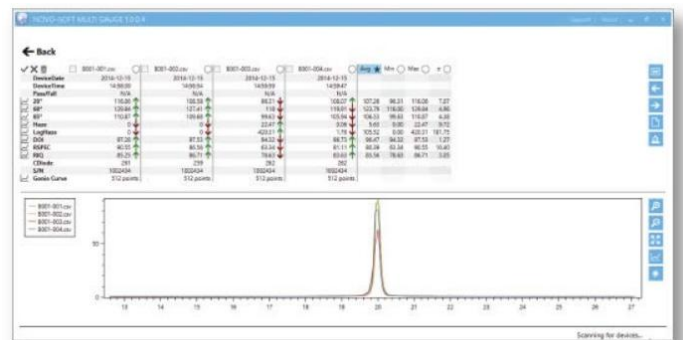
USB connection to PC instantly recognises the device as a drive location which facilitates the quick transfer of files using Windows Explorer or similar.

Direct Data Input Via Bluetooth

Instantly transmit measured readings directly to programs such as MS Excel on your PC / tablet / smartphone to greatly simplify the reporting process.



Statistical analysis via Novo-Gloss Multi Gauge Software



CONFIGURING THE IQ FLEX 20

Absolute v comparative measurement

Sample curvature naturally reflects light away from the measurement sensor. This can be compensated by using a smaller measurement spot which is less affected by the curvature. However, on highly curved surfaces readings should be used comparatively i.e. the same spot on similar shaped samples and is therefore ideal for comparing batch to batch consistency.



Repeatability

	IQ Flex 20	4mm Reduced Spot size adaptor	2mm Reduced Spot size adaptor	Curved part adaptor	Custom 3d printed adaptor
Flat surface	Excellent	Excellent	Excellent	Excellent	N/A
Large radius curved e.g. car body	Good	Good	Good	Good	Excellent
Cylinder > 20mm diameter	Poor	Poor	Poor	Good	Excellent
Cylinder < 20mm diameter	Not recommended	Not recommended	Not recommended	Poor	Varies according to applicatio
Small flat parts > 10 x 10mm	Excellent	Excellent	Excellent	Not recommended	Excellent
Small flat parts < 10 x 10mm	Poor	Varies according to applicatio	Varies according to applicatio	Not recommended	Excellent
Complex shapes (curved in both directions)	Not recommended	Not recommended	Not recommended	Not recommended	Excellent

Above comments are made with measuring head used correctly as described in figure 1

CORRELATION TO STANDARD GLOSSMETER READINGS BY GLOSS LEVEL

	IQ Flex 20	4mm	2mm	Curved part adaptor	Custom 3d printed adaptor
Flat surface – high gloss > 50GU at 20°	Excellent	Excellent	Excellent	Excellent	N/A
Flat surface – mid gloss 30-50GU at 20°	Excellent	Good	Good	Excellent	N/A
Flat surface – low gloss < 20 at 20°	Excellent	Good	Not recommended	Excellent	N/A

Above comments are made with measuring head used correctly as described in figure 1

CORRELATION TO STANDARD GLOSSMETER READINGS BY SAMPLE SHAPE

	IQ Flex 20	4mm	2mm	Curved part adaptor	Custom 3d printed adaptor
Large radius curved (car body)	Good	Good	Good	Good	Excellent
Cylinder > 20mm Diameter	Good	Good	Good	Good	Excellent
Cylinder > 20mm diameter	Comparati e Reading	Comparati e Reading	Comparati e Reading	Comparati e Reading	Comparati e Reading
Cylinder < 20mm diameter	Not recommended	Not recommended	Not recommended	Poor	Varies according to applicatio
Small fl t parts	Excellent areas > 8mm x 8mm	Good > 4mm x 4mm	High gloss: Good Areas > 2mm x 2mm Poor for low gloss finishe	Not recommended	Excellent
Complex shapes (curved in both directions)	N/A	N/A	N/A	N/A	Comparati e readings only

Above comments are made with measuring head used correctly as described in figure 1

INCREASING MEASUREMENT REPEATABILITY

Q. When should I use a custom adaptor?

- A. To increase repeatability of measurements on curved surfaces or small parts - essential or complex curves.

ADAPTORS

Q. When do I use the curved part adaptor?

- A. This should be used for the measurement of all cylindrical objects

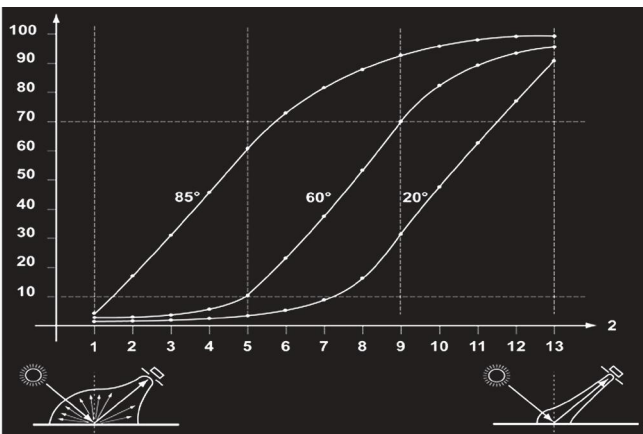
WHAT GLOSS LEVELS CAN BE MEASURED WITH THE FLEX 20

Q. ISO2813 recommends surfaces measuring mid to low gloss finishes using 60 and 85 deg. Is the flex 20 suitable for measuring these surfaces?

- A. Yes, see table above.

60 and 85 give greater resolution of measurement at these gloss levels (small visible differences in finish = a large difference in gloss value).

Whilst 20 has a smaller measurement resolution, visible differences in gloss can be quantified with the F x 20



ADAPTORS

Q. **Why should I use a custom adaptor:**

A. This will increase the repeatability of measurement for irregular shaped objects.



Comparisons can only be made between readings of the same adaptor type.

MAKING A MEASUREMENT

- Ensure that the instrument is calibrated following the procedure in the product manual.
- Select the measuring measuring appropriate for the surface to be measured.
- Place the measuring head on the surface and hold this as indicated in figure 1.
- Ensure that the no ambient light can be detected by the measuring head.



Figure 1.

CALIBRATION GUIDE

	Measuring less than 100 GU (plastics and coatings)	Measuring polished metals >100GU
Standard Spot Size	Calibrate on black tile very shift (8 Hours) -MUST BE RE-CALIBRATED with standard spot size adaptor when switching from small spot size measurement.	Calibrate on optional mir or tile (if required) -MUST BE RE-CALIBRATED with standard spot size adaptor when switching from small spot size measurement.
Small spot size	-Calibrate with small spot size adaptor (8 Hours) -MUST BE RE-CALIBRATED with small spot size adaptor when switching from standard spot size measurement.	Calibrate on optional mir or tile (8 Hours) -MUST BE RE-CALIBRATED with small spot size adaptor when switching from standard spot size measurement.



SAMPLE APPLICATIONS



Automotive - Body



Yacht Manufacturers



Mobile Phones



Tablet PC



Automotive Interior



Curved Surfaces



PVC



Plastics Industry



Polished Metals

INSTRUMENT SPECIFICATION

Operation

- | Full colour easy to read screen
- | Adjustable brightness
- | 6 button touch sensitive interface
- | Auto-rotating measurement screen

Construction

- | All aluminium construction - enclosure, optics, standard holder

Measurement

- | Single button push to measure all parameters
- | Fast Measurement
- | Results batching with user definable names

Statistical Analysis

- | SD, all measured parameters

Graphical Analysis

- | On board trend analysis of gloss and IQ values

Power

- | Rechargeable lithium ion
- | 17+ hours operation
- | 4,000+ readings per charge

Recharge Time

- | Mains charger: 4hrs

Memory

- | 8 MB = 999 readings
- | User definable alphanumeric batching

Data Transfer

- | PC compatible
- | USB connection, no software installation required

Measurement Area

- | Remote control via USB / Bluetooth
- | 20° = 6mm x 6.39 ellipse

Options

- | Curved part adaptor (minimum sample radius: 20mm)
- | 2mm adaptor head
- | 4mm adaptor head

Dimensions & Weights

- | 150mm x 79mm x 34mm (without head) (H x W x D)
- | 550g
- | Packed weight approx: 1.5kg
- | Packed dimensions: 180mm x 330mm x 280mm (H x W x D)
- | Commodity code: 9027 5000

Order Code A6000-016

Languages Available



SPECIFICATIONS

GLOSS

20° Improved accuracy and resolution on high gloss & metallic samples (>70GU when measured at 60°)

Measurement range:	0-100 GU	100-2000 GU
Resolution	0.1 GU	0.1 GU
Repeatability:	±0.2 GU	±0.2 %
Reproducibility:	±0.5 GU	±0.5 %

STANDARDS: Readings verified to ISO 2813 and ASTM D523

RSPEC

Peak Specular Reflectance: 20° ±0.09905°
Measurement range: 0-2000GU

HAZE

Near Specular Reflectance measured at 17.2-19°, 21-22.8
Switchable between Haze Units (HU) and Log Haze Units (LogHU)

Resolution 0.1HU • Repeatability ±0.5H

Reproducibility ±1.5HU

STANDARDS: ASTM E430, ISO 13803

RIQ

Resolution 0.1 • Repeatability ±0.2 • Reproducibility ±0.5

Measurement range: 0-100

DOI

Resolution 0.1 • Repeatability ±0.2 • Reproducibility ±0.5

Measurement range: 0-100

STANDARD: ASTM E430

GLOSS CALIBRATION STANDARD

Traceability: NIST Traceable

Repeatability and reproducibility values are quoted for flat surfaces.

Curved surface values are dependent on the shape of the surface and the adaptor type used.

INCLUDED ACCESSORIES

- Instrument with 20° Flex head
- Calibration tile with hold
- USB data cable
- Novo-Gloss Multi Gauge Software
- USB
 - Instruction manual
 - Bluetooth data app
 - Example Excel spreadsheets
 - Instructional video

ORDER CODES

Rhopoint IQ Flex 20	A6000-016
Adaptor for reduced spot size (4mm)	B6000-501
Adaptor for reduced spot size (2mm)	B6000-502
Curved part adaptor	M6000-504/NEW

EXTRAS

FREE EXTENDED WARRANTY

CALIBRATION AND SERVICE

Fast and economical service via our global network of accredited calibration and service centres.

For detailed information, please visit www.rhopointinstruments.com/support

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