The C+K Multiprobe Adapter System and its Advantages
The Multiprobe Adapter System is modular. It consists of a basic device and the probes.

• The user chooses a basic device meeting his requirements. The probes are digital and all calibration data are inside and therefore they can be connected to any of them.
• The probes provide a high degree of flexibility and stability and can be easily serviced.
• The MPA system is operated with an overall C+K software.
• With a check calibration function the accuracy of the probes can be verified any time.
• The data from the ambient condition sensor RTH 100 are saved with the measurements.
• All future C+K probes will be compatible with this system.

Which Probes Can Be Connected?
The following probes for non-invasive measurements are currently available

- **Corneometer® CM 825**
- **Sebumeter® SM 815**
- **Skin-pH-Meter® PH 905**
- **Mexameter® MX 18**
- **Skin Colorimeter CL 400**
- **Tewameter® TM 300**
- **Glossymeter GL 200**
- **Skin-Thermo-Meter ST 500**
- **Reviscometer® RVM 600**
- **Cutometer® MPA 580**
- **RHT 100**

The Software
An user friendly software operates all probes at once. Only the Cutometer® requires a software of its own.

• Measuring values can be displayed as bars, curves or numerical data
• Standard deviation and average values of the measurements are calculated
• All data are saved in one database and can easily be selected according to date, name, skin site or entry. This makes it easy to collect data from different sessions of a study.
• The data can be exported to spreadsheets (Microsoft Excel®) for further evaluation.

There is also the possibility of programming an individual software for the special devices MPA 6P or MPA 10P (not running with C+K software).

Technical Data for the Basic Devices (without Probes)
MPA6: Dimensions: 27x14.5x7.6 cm Weight: 1.6 g Interface: USB Power supply: ext.100-240 VAC, 47-63 Hz, DC 12V/9A
MPA10: Dimensions: 39x22.5x7.6cm Weight: 3.1 kg Interface: USB Power supply: ext.100-240 VAC, 47-63 Hz, DC 12V/9A
dualMPA 580: Dim.: 39x22.5x7.8cm Weight: 3.9 kg Interface: USB Power supply: ext.100-240 VAC, 47-63 Hz, DC 12V/9A
Computer: Windows® XP, Vista or 7, 32 bit (64 bit), performance must meet system requirements, USB 2.0

Technical changes may be made without prior notice.
Which Basic Devices are Available?

Multiprobe Adapter MPA 6
- connection of five probes (same or different)
- inbuilt Sebumeter tube
- operation with C+K MPA software

Multiprobe Adapter MPA 10
- connection of nine probes (same or different)
- inbuilt Sebumeter tube
- operation with C+K MPA software

Cutometer® dual MPA 580
- connection of two Cutometer® probes (with different diameters)
- connection of four additional probes
- inbuilt Sebumeter® tube
- operation with C+K MPA software and C+K Cutometer® dual MPA 580 software.

Multiprobe Adapter MPA 2
- small, USB powered
- connection of up to two probes
- operation with C+K MPA software

Multi Display Device MDD 4
- stand-alone device with one probe & room condition sensor
- possibility of connecting two additional probes
- large graphic colour display for showing results
- functions are operated on the display by the turning knob
- optional possibility of operation with MPA software

Fields of application
- R&D departments of the cosmetic companies and the pharmaceutical industry
- Testing laboratories for efficacy testing and claim support
- All kinds of studies in dermatology as well as field tests
- Research of different materials (e.g. food, tissues)

Technical Data for the Basic Devices (without Probes)

MDD 4: Dimensions: 14x27.7x9 cm   Display: 9.6 x 5.7 cm   Weight: 1.4 kg   Interface: USB
Power supply: external 100-240 VAC, 47-63 Hz, DC 12V/9A

MPA 2: Dimensions: 7 x 7.5 x 6 cm   Weight: 260 g   Interface & Power supply: USB

Technical changes may be made without prior notice.
What does it measure?
The Corneometer® CM 825 is the mostly used instrument worldwide to determine the hydration level of the skin surface, mainly the Stratum corneum.

The Measuring Principle
The measurement is based on capacitance measurement of a dielectric medium. The Corneometer® CM 825 measures the change in the dielectric constant due to skin surface hydration changing the capacitance of a precision capacitor.

Fields of Application
The hydration measurement is the basic measurement for all dermatological and cosmetic applications.
- Ideal instrument for formulation, claim support and efficacy testing of moisturizers.
- It is used for objective clinical diagnosis or for monitoring therapies.
- In occupational health it is possible to detect skin problems before they become apparent.
- It gives information on the course of treatments and is suitable for medical surveys.

Advantages
- The measurement is not influenced by substances in the skin.
- The modern, high quality electronics of the probe allow a very quick measurement (1 s).
- The measurement depth is very small (10-20 µm of the Stratum corneum) to avoid the influence of deeper skin layers.
- The probe is small and lightweight for easy handling and measurement on all body sites.
- The spring in the probe head ensures constant pressure on the skin enabling exact, reproducible measurements, which do not influence the skin.
- Worldwide established as „corneometry“ with a broad range of studies.
- Available for C+K MPA-System, as stand-alone device and wireless probe.

Technical Data
Dimensions: 11 cm, Measuring surface: 49 mm², Weight: 41 g, Units: arbitrary Corneometer® units, Measurement principle: capacitance, Measurement frequency: 0.9-1.2 MHz, Accuracy: ± 3%
Technical changes may be made without prior notice.
What does it measure?
The Sebumeter® SM815 is a worldwide acknowledged tool to measure sebum (oil) on skin, scalp and hair.

The Measuring Principle
The measurement is based on grease spot photometry. The tape of the Sebumeter® SM815 is brought into contact with skin or hair. It becomes transparent in relation to the sebum on the surface of the measurement area. Then the tape is inserted into the aperture of the device and the transparency is measured by a photocell. The light transmission represents the sebum content.

Fields of Application
There are many fields of application where the sebum content plays a major role.
- It is used for objective clinical diagnosis and the monitoring of the course of skin diseases.
- It is important for claim support and efficacy testing of all kinds of cosmetic and pharmaceutical products (especially cleansers, anti-acne products, shampoos and hair care, products for oily skin)

Advantages
- The modern, high quality electronics of the system allow a quick measurement.
- A spring in the measuring head provides constant pressure on the skin.
- Its low weight ensures easy handling.
- One cartridge lasts for approx. 400 measurements.
- The accuracy can easily be checked with a test cartridge at any time.
- Available for C+K MPA-System and as standalone device.

Technical Data
Dimensions: 8.5 x 11.3 x 2.3 cm, Measuring surface: 64 mm², Weight: 65 g
Units: Sebumeter® units from 0-350 (approximated to µg/cm² in a certain range), Accuracy: ± 5%
One cartridge lasts for approx. 400 measurements. Exhausted cartridges need replacement.
Technical changes may be made without prior notice.
What does it measure?
The Mexameter® MX 18 is a quick, easy and economical tool to measure the two components mainly responsible for the colour of skin: melanin and haemoglobin (erythema).

The Measuring Principle
The measurement is based on absorption/reflection.
The Mexameter® MX 18 emits 3 specific wavelengths. As the quantity of emitted light is defined, the quantity of light absorbed by the skin can be calculated.

Fields of Application
There are many fields of application where changes in the skin colour are of interest.
- Many international scientific studies demonstrate its benefits in all important dermatological and cosmetological application fields.
- It is used for objective clinical diagnosis, allergy and patch testing and measurement of melanoma and scar colour.
- It is indispensable in efficacy testing and claim support for cosmetics and pharmaceuticals (especially sunscreen and skin whitening products).
- For occupational health the skin irritation (erythema value) is of special interest.

Advantages
- The modern, high quality electronics of the probe allow a very quick measurement.
- A spring in the measuring head provides constant pressure on the skin.
- Its low weight ensures easy handling.
- Available for C+K MPA-System, as stand-alone device and wireless probe.
What does it measure?
The Colorimeter CL 400 measures specifically the colour of the skin. Measuring values are expressed as xyz values and are calculated in L*a*b* and RGB as index values.

The Measuring Principle
The probe sends out white LED light, arranged circularly to uniformly illuminate the skin. The emitted light is scattered in all directions, some parts travel through the layers and some is scattered out of the skin. The light reflected from the skin is measured in the probe. The raw data of the probe are corrected with a special colour matrix to adapt them closely to standard values and are expressed accordingly.

Fields of Application
Probe has been developed especially for the needs of measuring changes in the skin color.
- Cosmetic and pharmaceutical efficacy tests, like sunscreen products, self tanners, makeups, whitening products, decorative cosmetics and carotene food supplements
- In many dermatological uses e.g. aging spots, sun damage, treatment of skin diseases etc.

Advantages
- Very reproducible results on the skin surface, ideal tool for comparison measurements.
- Specially designed for skin colour measurement, as the absorption and reflection behaviour of skin differs very much from other materials.
- Economic, extremely easy to handle and short measuring time
- Large illumination area, so that sufficient light reaches the skin surface for the measurement but small enough measuring area.
- Light, constant pressure of the probe on the skin surface with minimized effect on the surface (pressure on the skin leads to changes in microcirculation and thus more reddish colour).
- Easy check calibration function
- Available for C+K MPA-System and wireless probe.

Technical Data
Length: 126 mm, Illumination: Ø 24 mm, Measuring area: Ø 8 mm, Weight: 85 g, Illuminated area approx. 17 mm Ø, Units: xyz, RGB, L*a*b* index values (due to the unique structure of the skin and the special light source the values do not fully correspond to ISO standards and are therefore expressed as index values).
Light: 8 white LEDs arranged circularly, range of emitted wavelengths: 440-670 nm Calibration to skin colours with a special correction matrix. Accuracy: ± 5%
Technical changes may be made without prior notice.
What does it measure?
The Skin-pH-Meter® PH905 is a quick, easy and economical tool to specifically measure the pH on the skin surface or the scalp.

The Measuring Principle
The measurement is based on a high quality combined electrode, where both glass H⁺ ion sensitive electrode and additional reference electrode are placed in one housing. It is connected to a probe handle containing the measurement electronics.

Fields of Application
There are many fields of application where changes in skin pH are of interest.
• In dermatological and cosmetological application fields for the development of specific products
• For diagnosis and monitoring of skin diseases linked to an increased pH value
• The role of the pH has gained importance in skin health and is therefore subject to basic research.
• For the early detection of skin problems in occupational health

Advantages
• The modern, high quality electronics of the probe allow a very quick and reliable measurement avoiding occlusion effects.
• The probe head is planar for measuring on the skin surface.
• Single and continuous measurement possible.
• Regular calibration can be done by the user.
• Available for C+K MPA-System, as stand-alone device and wireless probe.

Technical Data
Dimensions: 22.8 cm, Measuring surface: Ø 1 cm flat, Weight: 130 g
Measurement range: pH 0 to pH 12, Accuracy: ± pH 0.1
Technical changes may be made without prior notice.
What does it measure?
The Skin-Thermometer ST500 is a quick, easy and economical tool to measure the skin temperature.

The Measuring Principle
The measurement is based on relative infrared temperature measurement.

Fields of Application
The probe finds its field of application everywhere where differences in the skin temperature and the skin microcirculation are of interest.
• It is a valuable tool for efficacy testing and claim support for cosmetics and pharmaceuticals (e.g. microcirculation enhancing products).
• In dermatology and occupational medicine it gives information for research and diagnosis.
• It is used for clinical diagnosis and studies for correlating skin temperature and microcirculation.

Advantages
• The modern, high quality electronics of the probe allow a very quick measurement.
• The probe measures touchless.
• Its low weight ensures easy handling.
• Available for C+K MPA-System and wireless probe.

Technical Data
Dimensions: 13.5 cm, Weight: 85 g incl. cable, Measuring surface: Ø 2.4 cm,
Measurement range: 15 - 35°C, Accuracy: ±0.5°C, Resolution: 0.01°C

Technical changes may be made without prior notice.
What does it measure?
The Cutometer® MPA 580 is a worldwide acknowledged standard device to measure elasticity and other biomechanical parameters of the skin. The Multiprobe Adaptor function allows to connect further probes additionally to the two Cutometer® probes.

The Measuring Principle
The measurement is based on suction. Negative pressure is created in the device and the skin is drawn into the aperture of the probe. Inside the probe the penetration depth is determined by a non-contact optical measuring system consisting of a light source and a light receptor, as well as two prisms facing each other, which project the light from transmitter to receptor. The light intensity varies due to the penetration depth of the skin. The resistance of the skin to be sucked up by negative pressure (firmness) and its ability to return into its original position (elasticity) are displayed as curves.

Fields of Application
The measurement with the Cutometer® is used as standard in dermatology and cosmetology
- It is indispensible for formulation, efficacy testing and claim support for all kinds of cosmetic products (especially anti-ageing products).
- It is used for research and clinical diagnosis, e.g. measurement on scars. Also special applications like in gynaecology are possible.
- Other materials like food can also be assessed.

Advantages
- The modern, high quality electronics of the probe allow a very quick measurement.
- Several probe aperture sizes for different skin sites and study requirements available.
- Two probes with different aperture sizes can be connected at the same time.
- A spring in the measuring head provides constant pressure on the skin.
- The low weight of the probe ensures easy handling. A multitude of elasticity related parameters can be calculated from the curves.
- The settings in the programme are very flexible and can be selected by the user according to different applications.
- All data of the curves can be transferred to spreadsheets (Microsoft Excel®) for further individual evaluation (up to four curves per sheet).
- Available solely as C+K MPA -System.

Technical Data
Dimensions: Device: 39 x 22.5 x 7.6 cm, Probe: 10.7 cm x Ø 2.4 cm, Aperture: Ø 2 mm standard, (4, 6 or 8 mm on request), Weight: Device: 3.9 kg, Probe: 165 g incl. air tube, Power supply: ext.100-240 VAC, 47-63 Hz, DC 12V/9A
Units: µm penetration depth into the probe opening, expressed as curves
Technical changes may be made without prior notice.
Software & Parameters

The software of the Cutometer® dual MPA 580 allows to calculate a lot of interesting parameters. Here is a short overview:

R-Parameters
- R0: This parameter represents the passive behaviour of the skin to force.
- R1: The ability of the skin to return to its original state.
- R2: Gross elasticity, the closer the value is to 1 (100 %) the more elastic the skin, very important parameter.
- R3: Last curve, compared to the maximum amplitude of the first curve. „Tiring effects“ of the skin are visible, as the amplitude increases with each new suction.
- R4: Last minimum amplitude compared to the first curve, „tiring effects“ of the skin are visible, as the ability of reformation decreases with each new suction.
- R5: Net elasticity, the closer the value is to 1 (100 %) the more elastic the skin.

F-Parameters
- R6: Portion of the visco-elasticity on the elastic part of the curve. The smaller the value the higher the elasticity.
- R7: Portion of the elasticity compared to the complete curve, the closer the value is to 1 (100 %) the more elastic the skin.
- R8: The closer Ua of the first curve is to 0 the greater the ability of the skin to return into its original state.
- R9: Represents tiring effects of the skin after repeated sucking in of the skin. The smaller R9 the smaller the tiring effects.

F2: Area above the upper envelope-curve.
F3: Area within the envelope curves.
F4: The smaller F4 the more the skin resists to the suction (skin firmness).

Q-Parameters
A set of parameters developed by the scientist Di Qu* has recently been added, showing interesting correlations between skin age and the elastic and viscous recovery of the curves.
- Q0: Maximum recovery area, will go down with more firmness of the skin.
- Q1: Elastic recovery, will be higher with more firmness of the skin.
- Q2: Viscous recovery
- Q3: Viscoelastic recovery (overall elasticity), will be higher with more firmness of the skin.

F-Parameters
These area parameters can only be taken in mode 1 and some will need 10 repetitions.
- F1: This area is deducted from the total area. A completely elastic material will show no area at all, the closer the value to 0 the more elastic the material.
- F2: Area above the upper envelope-curve.
- F3: Area within the envelope curves.
- F4: The smaller F4 the more the skin resists to the suction (skin firmness).
What does it measure?
The Tewameter® TM 300 is the worldwide most accepted measuring device for the assessment of the Trans-Epidermal WaterLoss (TEWL). This is the most important parameter for the evaluation of the water barrier function of the skin.

The Measuring Principle
The Tewameter® probe measures the density gradient of the water evaporation from the skin indirectly by the two pairs of sensors (temperature and relative humidity) inside the hollow cylinder. This is an open chamber measurement. A microprocessor analyses the values.

A = surface [m²]

\[
\frac{dm}{dt} = - D \cdot A \cdot \frac{dp}{dx}
\]

m = water transported [g]

t = time [h]

D = diffusion constant (= 0.0877 g/m(h:mmHg))

p = vapour pressure of the atmosphere [mm Hg]

x = distance from skin surface to point of measurement [m]

Advantages
- The open chamber measurement is the only method to assess the TEWL continuously, which is necessary for most applications without influencing the skin surface. Numerous studies available.
- A stable measurement is achieved quickly, the next measurement can be done without waiting time.
- The small size of the probe head minimizes the influence of air turbulence inside the probe.
- Its low weight has no influence on the skin structure and ensures easy handling.
- Check calibration can easily be done by a small chamber at any time.
- Available for C+K MPA-System, as stand-alone device and wireless probe.

Fields of Application
There is a wide field of applications for detecting even slight damages in the water barrier of the skin.

- It is indispensable in efficacy testing and claim support for cosmetics and pharmaceuticals.
- It is used for objective clinical diagnosis in dermatology and occupational medicine.
- Monitoring of newborn and detecting skin damage are important applications.
- It can be used for in vitro testing of permeability.
- Also for the food industry the measurement is of interest.
- Many international scientific studies demonstrate its benefits in all dermatological and cosmetological application fields.

Technical Data
Dim.: Hollow cylinder: 2 cm, ∅ 1 cm, Probe: 15.3 cm, Weight: 90 g, Resolution: Humidity: ± 0.01 % RH, Temp.: ± 0.01 °C, Accuracy within 10 °C to 40 °C and for TEWL-values lower than 70 g/hm²:
rel. humidity (RH): ± 1.5 % RH in the range of 30 % RH to 90 % RH; ± 2.5 % RH in the range of 90 % RH to 100 % RH; ± 2.5 % RH in the range of 0 % RH to 30 % RH

Waterloss: ± 0.5 g/hm² for RH ≥ 30 %; ± 1.0 g/hm² for RH ≤ 30 %, Temperature: ± 0.5 °C

Technical changes may be made without prior notice.
Special Rings & Caps
- Sterilizable rings for the Tewameter®-probe head allow measurement on special surfaces, e.g. wounds
- Special caps with smaller opening are available for different applications e.g. measurement on small animals

Diffusion Cell Fixture
- A head to fix the Tewameter®-probe on diffusion cells (Ø 15 mm) for the wide field of in vitro measurements and diffusion tests is available.

Ambient Condition Sensor RTH 100
- The room condition sensor shows room temperature and relative humidity. These values are stored in the software together with the measurement results.
- Important for measurement of TEWL as well as for many other parameters. TEWL, moisture, sebum, skin colour, gloss etc. will largely be influenced by transpiration.
- Indispensable for subsequent evaluation and comparison of measurement data
- Available for the C+K MPA-System and for the stand-alone devices.

Technical Data
Probe Heater PR 100: Power supply: external, 12 VDC, 3.5 A max. Dimensions: 10 x 11 x 10.5 cm Weight: 470 g
Operating conditions: T: 10-40° C r.H.: 30-70 % RH
Ambient Condition Sensor RTH 100: Dimensions: 4.7 x 1.9 x 5 cm Weight: 50 g Accuracy: r.H. ± 2%, T ± 0.9°C
Technical changes may be made without prior notice.
What does it measure?
The Skin-Glossymeter GL 200 is a quick, easy and economical tool to measure the gloss especially on skin. Also applications like measurements on lips, hair, teeth and other materials are easily possible.

The Measuring Principle
The measurement is based on reflection. Parallel white light is created by the LEDs in the Glossymeter probe head and is sent via a mirror in a 60° angle onto the skin surface. One of the two sensors measures the directly reflected light via a mirror, the other measures the diffuse reflected light vertically above the surface. So the Skin-Glossymeter GL 200 measures both, the portion of directly reflected light, which is related to the gloss and the scattered portion from the surface.

Advantages
• The probe allows a very quick measurement and is easy to handle.
• The diffuse scattering correction (DSC) is a unique function to specially assess the gloss of the skin. In contrary to uniform industrial material, the skin varies in structure, brightness and colour. The DSC eliminates the diffuse reflection light portion thus allowing to compare gloss measurements of different skin types accurately and easily.
• A spring in the measuring head provides constant pressure on the skin.
• Large illuminated area (Ø 20 mm) but small measuring area (5 x 2.5 mm), ideal for measurement e.g. on the face
• Continuous measurements possible.
• Available for C+K MPA-System as well as wireless probe.

Fields of Application
There are many applications in the R&D departments of the cosmetic industry where gloss is of interest.
• For efficacy testing and claim support for skin care, hair care and decorative cosmetics (lipsticks, make-up etc.)
• Evaluation of skin shine reducing or skin radiance enhancing products in facial care.
• For assessment of dental gloss related to dental practices, such as tooth surface enhancement and tooth bleaching.

Technical Data
Dimensions: 13 cm x Ø 2.4 cm  Measuring area: 2.5 mm x 5 mm  Weight: 85 g incl. cable
Light: white LED, emittance at 60°, reflection measurement at 60°, diffuse reflectance measurement at 90°
Units: Glossymeter units (excellent correlation with industrial standard units GU based on DIN and ISO)
Accuracy: ± 5%
Technical changes may be made without prior notice.
What does it measure?
The Reviscometer® RVM 600 is a very interesting tool to measure the direction of the collagen and elastin fibres in the skin. This is an important for investigating the mechanical properties of the skin.

The Measuring Principle
The measurement is based on resonance running time (RRT) of an acoustical shockwave. The probe head of the Reviscometer® RVM 600 contains two sensors, which are placed on the skin. The first is emitting one acoustical shockwave, the other serves as receiver. Shockwaves propagate differently through the skin according to the state of the elastic fibres and the moisture content of the skin. The time the wave needs to travel from emitter to receiver is the measured parameter.

Fields of Application
- The instrument is ideal to investigate the biological age, as measurements at different angles on the same body site correlate extremely well with the anisotropy of the Langer lines. For younger skin the values are rather uniform and as older the skin gets, the values are higher and a peak appears due to the directionality of the fibres in the skin.
- It is used for surgery to find the direction of incision for operation and monitor the healing process of scar tissue.
- It is indispensable in efficiency testing and claim support for cosmetic and pharmaceutical anti-ageing products.

Advantages
- The modern, high quality electronics of the probe allow a very quick and precise measurement.
- A positioning ring fixed with a double sided sticker makes it possible to measure exactly in 10° steps. Therefore a measurement in all directions on one skin site is possible.
- A spring in the measuring head provides constant pressure on the skin.
- Its low weight ensures easy handling.
- Available for C+K MPA-System and as stand-alone device. Together with the MPA 580 it forms a unique elasticity measurement center to examine biological age.

Technical Data
Dimensions: 13 cm x Ø 2.7 cm Measurement area:Ø 8 mm Weight: 109 g incl. cable
Resonance running time measurement of one acoustical shockwave with an energy of 1.77 µJoule
Distance between emitter and receiver: 2mm Units: Reviscometer® running time units
Technical changes may be made without prior notice.
What does it measure?
The Frictiometer FR 700 is a very interesting tool to measure the differences in friction on the skin in correlation to skin properties or products applied to the skin.

The Measuring Principle
The probe contains a motor, a steering unit and the friction head. A constant rotational speed (adjustable to different speeds) is applied onto the skin by the friction head. The torque is measured and the result is displayed as Frictiometer® units in the software.

Fields of Application
- With the Frictiometer it is possible to assess skin properties: e.g. normal and dry skin as well as skin with or without wrinkles will show different values.
- For testing of skin care products making the skin smoother leading to lower Frictiometer values. The w/o emulsions decrease the frictionary resistance more than the o/w emulsions.
- Effects of textiles and papers on the skin can be evaluated. Different materials of course have different Frictiometer® values. For testing, the material is pulled over the friction head and fastened. Moist materials have a higher frictionary resistance thus also having a higher irritation potential on the skin. It is possible to study e.g. the effects of untreated paper tissues on the skin in comparison with paper tissues containing additives.

Advantages
- Constant pressure on the skin by the weight of the rotating disk
- Different velocities of rotation can be set.
- Measurement on different surfaces is possible, e.g. textiles, plastic, metal and many more.
- Quick measurements as well as continuous measurements over a longer time.
- The probe head can easily be cleaned.
- The irritation effects from the tests with textiles or papers can be determined with other C+K testing methods e.g. the erythema with the Mexameter®.
- Available for C+K MPA-System.
What does it do?
The VisioFace® RD and its software have been developed in cooperation with our partners Monaderm to take high-resolution full face photos under standardized conditions. It is focussed on simple organisation of the photos and detailed comparisons.

The Principle
The VisioFace® RD is equipped with a stable, long lasting and homogenous illumination for the face by 210 white light LEDs. A high-resolution reflex camera (18 Mpx) with a special objective is integrated.

Fields of Application
Ideal device for
- treatment documentation
- making studies

Advantages
- Removable head and chin rest allowing exact positioning frontally or sidewise
- Repositioning of the face reproducibly: overlays (ghost images) of previous images of the person and drawing of marks on interesting parts are possible.
- A colour chart is photographed with each face to make photos comparable over time and ambient light conditions.
- No heat development from the LEDs.
- Conveniently designed software to enable you to work quickly.
- Easy creating of studies with patients/volunteers and different stages.
- Perfect organization of all photos for later comparisons.

Zoom into several images at the same time to compare. Up to 10 images can be viewed in tile view, and more images in pile view.

Different print options (images by study, person, time or only the details of a study)

All changes of the data in a study are recorded in a „history“.

The software works with a login. Different rights can be provided for administrators (creating of studies, deleting of images, etc.) and for users.

Possibility of adapting the software to your CI by changing the logo and the background colour.

Technical Data
Dimensions: 54 x 50 x 44 cm, Weight: approx. 12 kg, Illumination: 210 white LEDs, Camera: Canon EOS 550D, 18 Mpx, sensor CMOS, autofocus, images can be saved as jpg (recommended) or png, Objective: EF 20 mm/2.8, USM: focal length 20 mm, filter diameter 72 mm, focus by ultrasound, Power Supply: external 100-250 V, 47-63 Hz, DC 12V/9A, Port: USB
Computer: Windows® XP, Vista or 7, 32 bit (64 bit), performance must meet system requirements, USB 2.0
Technical changes may be made without prior notice.
What does it measure?
The Skin-Visiometer® SV 600 is an established tool to evaluate the topography of the skin surface by light transmission of a very thin, special blue dyed silicone replica.

The Measuring Principle
The replica is placed between a parallel light source and a b/w CMOS-camera. The light is absorbed according to the thickness of the silicone material. The replica reproduces the heights and depths of the skin as a negative, i.e. wrinkles are higher in the replica as the silicone is thicker in this place. The amount of absorbed light is calculated by Lambert and Beer’s Law: \( \Phi_{ex} = \Phi_{in} \cdot e^{-kd} \)
The outgoing light is proportional to the incoming light, the thickness of the material and the material constant k.

Software & Parameters
The image is digitalized by the instrument and shows the heights and depths of the replica on a grey scale (256 grey values). Thus the depth of each pixel can be calculated in \( \mu m \) by the special software.
- Many functions and calculations are very quickly available in the software.
- Lines can be drawn on the images and the profile and the results are shown immediately.
- Calculation of standard roughness parameters Rt, Rm, Rz, Rp and Ra for up to 180 lines (drawn vertically or horizontally on the image).
- Calculation of special parameters like volume (\( mm^3 \)) and unfolded surface (%).
- Display of coloured 3D image, relief, false colour etc. possible.
- Determination of desquamation and sebum production with foils Corneofix® F20 & Sebufix® F16.

Fields of Application
- Indispensable tool for the R&D laboratories or the test institutes for efficacy testing of anti-wrinkle products.

Advantages
- The two-part silicone is very viscous and reproduces even smallest skin depths.
- Replicas can be made in different places, be stored over a long term and then be evaluated together with a macro function.
- All results can be stored, printed out together with the images and exported to spreadsheets (Microsoft Excel®).
- Easy and quick calibration of the system.
- The skin camera Visioscan® VC 98 with its analysing software SELS (Surface Evaluation of the Living Skin) can be added to the system.

Technical Data
- Power supply: external 100-240 VAC, 47-63 Hz, 0.3 A max. Dimensions: 23 x 26 x 7 cm Weight: 3.0 kg
- Measurement area: 7.5 x 5 mm ± 21 µm (360 x 274 pixels) Resolution: 640 x 480 pixel
- Light source: globe with 20 white LEDs Interface: USB and FireWire
- Pump: Dimensions: 22.5 x 18 x 10 cm Weight: 3.5 kg
- Technical changes may be made without prior notice.
What does it measure?
The VisioLine® VL650 is the ideal instrument to objectively analyze the deeper lines and macro wrinkles such as crow feet. It is a further development of the renowned Quantirides® system.

The Measuring Principle
The measurement is based on skin replica and oblique lighting. The replica is illuminated at an angle of 35° and the mountains representing the wrinkles of the skin produce measurable shadows. They are digitalized by a high resolution camera mounted vertically to the replica and serve as a basis for different arithmetical calculations (length, depth and area of the wrinkles in µm).

Fields of Application
- It is indispensable in efficacy testing and claim support for cosmetic and pharmaceutical anti-wrinkle products.
- Interesting studies can be done in cosmetology and dermatology.
- Another application are scar measurements done with the negative image function of the software.

Advantages
- Easy to make replica in all sizes of all different body sites.
- On the stage the replica can be moved very accurately in x,y direction by screws.
- To analyze the same site before and after treatment perfect placing is possible with the help of a histogram of the shadows and an overlay mask of the previous replica.
- Measurements and calibration can be performed very quickly.
- Perfect tool for multicentric studies, as the replica can be collected over a long time in different places and then be evaluated together.
- 3D and false colours for impressive marketing purposes available.
- All data are automatically stored in a database in the software.

Technical Data
Power supply: for laptop: external, 12VDC ; for desktop: via USB  Dimensions: 15.3 x 21.7 x 21.7 cm  Measurement area : from 13.5 x 18 mm to 16.5 x 22 mm  Weight: 4 kg  Port: USB  Light source: white LED under 35° (± 0.5°)  Shadow length determination in µm  xy-Stage: resolution: 1µm accuracy: 2µm range: 10 mm  Camera: 2560 x 1920 Pixel, 5 MegaPixel  Objective: Focal length: 25 mm  Aperture: 1.4 - 16  Technical changes may be made without prior notice.
What does it measure?
The Visioscan® VC 98 is a special UVA-light video camera with high resolution to study the skin surface directly. The images show the structure of the skin and the level of dryness very impressively.

The Measuring Principle
The camera features a high resolution b/w video sensor and a ring shaped UV-A light source (proven to present no hazard to normal human skin) for uniform illumination of the skin.

Fields of Application
- Efficacy testing and claim support for cosmetics, pharmaceuticals and detergents.
- Objective clinical diagnosis in dermatology.
- Occupational medicine, medical consultancy and other applications.

Software & Parameters
The camera can be connected to the computer by the digitalization unit Video Digitizer VD 300 via FireWire port. A variety of interesting parameters can be determined:
- The evaluation method SELS (Surface Evaluation of the Living Skin)* analyses the grey level distribution and allows the calculation of four clinical parameters to quantitatively and qualitatively describe the skin surface as an index: Skin smoothness ($se_{\text{sm}}$), Skin roughness ($Se_{\text{r}}$), Scaliness ($Se_{\text{s}}$), Wrinkles ($Se_{\text{w}}$).
- Evaluation of desquamation directly on skin & scalp or with the foil Corneofix® F20.
- Determination of sebum production with the foil Sebufix® F16.
- Additional interesting functions e.g. hair length measurement after shaving possible.

Advantages
- The special UV-light gives a very sharp and non-glossy image
- Pigmentation under the skin surface can be shown very well.
- All results can be stored, printed out together with the images and exported to spreadsheets (Microsoft Excel®).
- Easy and quick calibration of the system.
- A macro function allows the analysis of many images at the same time.
- The Visioscan® VC 98 can be used together with the Skin Visiometer® SV 600 as combination instrument.

* developed by the Institute for Experimental Dermatology, Prof. Tronnier, University of Witten-Herdecke, Germany

Technical Data
Dimensions: 11.8 x 5.6 x 4.8 cm   Weight: 250 g   Image size: 6 x 8 mm   Resolution: 640 x 480 pixel on PC screen
Light source: UV-A light (340-400 nm, peak at 375 nm)   Video Sensor: 1/3" CCD chip
Video Digitizer VD300: Dimensions: 23 x 12 x 5 cm   Weight: 1.5 kg   Interface: IEEE (FireWire), USB
Power supply: 100-240 V AC, 0.3 A, 50-60 Hz   Technical changes may be made without prior notice.
What does it measure?

The Visiopor® PP34N camera uses a specific UV-light to visualize the fluorescing acne lesions of an area of 10 x 8 mm. The orange-red fluorescence indicates the presence of Propionibacterium acnes bacteria within clinically non-evident (follicular impactions and microcomedones) and clinically evident (comedones, papules and pustules) lesions.

Acne is a common disorder of the pilosebaceous follicles with the multifactorial pathogenesis. It typically begins in adolescence when androgen hormones stimulate the production of sebum and proliferation of follicular epidermis. The openings of hair follicles become clogged with oil secretion and corneocytes. In consequence initially invisible lesions (microcomedones) and then clinically evident comedones develop. Microcomedones and comedones are further colonized by P. acnes bacteria which promote inflamed acne lesions (papules and pustules) through the production of proinflammatory mediators, free fatty acids and porphyrins.

The presence of porphyrins can be demonstrated by orange-red fluorescence in the follicle openings by examining the skin under appropriate UV-A light. The intensity of follicular fluorescence and the extent of facial involvement are proportional to the population density of P. acnes and porphyrin content at the skin surface.

Clinical improvement after therapy is accompanied by significant reduction of the porphyrin concentration and the number of P. acnes, respectively.

Advantages & Fields of Application

There are numerous applications in dermatology and cosmetology especially in the field of acne.

- Detection of early invisible lesions and visualization of advanced small acne lesions.
- Efficacy testing of anti-bacterial products and drugs against P. acnes.
- Determination of the comedogenic and comedolytic activity of topically applied products.
- Non-invasive, easy to use and economic.
- Comfortable software for the evaluation of the number and size of the fluorescent spots.
- Possibility of distinguishing between the red-orange spots (porphyrins) and the yellow-greenish spots (others).

Technical Data

Camera works with Windows XP, Vista and 7; Interface/Power supply: USB;
Dimensions: approx. 12 x 5.5 x 5.5 cm; Cable length 1.5 m;
Illumination: 16 UVA-LEDs, 375...385 nm; Area of view: 10 x 8 mm; Resolution: 1280 x 1024;
Camera button to freeze the image

Technical changes may be made without prior notice.
**What does it measure?**
The Sebufix® F16 is a special foil absorbing the sebum of the skin surface due to its micro pores.

**The Measuring Principle**
The foil is applied to the skin and the sebum will become visible as transparent spots in various sizes after only a few seconds. The lateral spread of sebum in the foil is minimized. Dry skin shows a few small spots, whereas oily skin is visualized by a great number of large spots.

**Fields of Application**
- The Sebufix® F16 is a very helpful tool for investigating the activity of the sebaceous glands in all fields of dermatology.
- In cosmetology for formulation and efficacy testing the sebum level of the skin is one of the most important parameters.

**Advantages**
- The very quick measurement without any glue has no occlusion effects on the skin thereby avoiding false results.
- The measurement is not influenced by the hydration level of the skin (sweating).
- The Sebufix® F16 is a very good addition to the Visioscan® skin camera. The sebum production can even be monitored live over a given period on a video monitor. With the software the number, size and area covered with spots can be evaluated.
- Also with the Skin-Visiometer® software the foils can be assessed.

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**Technical Data**

*Dimensions: 1.7 cm x 1.7 cm  Thickness: 0.2 mm*

The foils present no hazard to the skin. Technical changes may be made without prior notice.
What does it measure?
The Corneofix® F20 is a special foil collecting corneocytes (flakes of dead cells). The number, size and thickness of the corneocytes indicate the hydration level of the Stratum corneum. Many thick, large corneocytes can only be collected when the skin is dehydrated or even damaged. Moist skin shows small regular flakes.

The Measuring Principle
The adhesive side is applied to the skin area to be measured. On removing the tape from the skin the corneocytes stick to the tape.

Fields of Application
- The Corneofix® F20 is a very helpful tool for diagnosis and monitoring of the skin hydration and damage level in dermatology.
- In cosmetology for formulation and efficacy testing the moisture content of the skin is one of the most important parameters.

Advantages
- The method is quick, easy and economical.
- The Corneofix® F20 is a very good addition to the Visioscan® skin camera or the Visiometer®. With the software the number, size and area covered with flakes can be evaluated as well as a desquamation index.

Technical Data
Dimensions: 2.00 cm x 1.95 cm    Thickness: 0.1 mm
The foils present no hazard to the skin.
Technical changes may be made without prior notice.