BYK-mac ROBOTIC

Automatic measurement of total color impression of effect finishes at the line

Products can only be manufactured with uniform and consistent quality when process stability is guaranteed. Therefore, multi-angle color, sparkle and graininess must be measured on a routine basis. The BYK-mac ROBOTIC spectrophotometer allows automated total color control as it is mounted on a robotic arm. The robotic system not only measures a high number of cars, but also on the same areas.

Total color impression of effect finishes

The BYK-mac ROBOTIC measures both multi-angle color and flake characterization.

- Multi-angle color measurement at 6-angles clearly defines the light-dark as well as color flop behavior of effect finishes
- Sparkling and Graininess control with a high resolution CCD camera simulates effect changes under direct and diffuse lighting conditions.
- Multi-angle color and effect data help to analyze the cause of a color mismatch

New!

Reliable and objective color and effect data

The BYK-mac ROBOTIC spectrophotometer uses a light source with long-term stability and patented illumination control which provide superior accuracy and low maintenance for many years.

- Stable, long-term calibration – needed only every three months
- Temperature independent measurement results between 10 – 40°C – without calibration
- 10 year warranty on light source – no lamp changes needed
- Excellent agreement between instruments and correlation to BYK-mac and BYK-mac COLOR

Reliable readings at any time

In order to guarantee stable positioning, the BYK-mac ROBOTIC is equipped with trigger pins on the bottom plate of the instrument. The sensitivity of the pins can be adjusted to the curvature of the measurement area. If the pins do not have contact with the surface an error message will be displayed.

In compliance with:

Standards

ASTM	D 2244, E 308, E 1164, E 2194
DIN	5033, 5036, 6174, 6175-2
ISO	7724
SAE	J 1545

Ordering Information

Cat. No.	Description
CM-6369	BYK-mac ROBOTIC
SE-6369	Extended Warranty one year additional

Comes complete with:
Multi-angle spectrophotometer
White calibration standard with certificate
Cyan and effect checking reference
Light protection cover
BYKWARE auto-chart software
Communication software
Installation kit
Operating manual on CD
Carrying case; Training

Free 1x preventive maintenance service during warranty period

Hardware Requirements:
Operating system: Windows® 2000 or higher
Excel® version: 2002 or higher VBA
Memory: min. 256 MB RAM (recommended 512 MB)
Hard disk capacity: min. 100 MB
Monitor resolution: XGA (1024 x 768) or higher
Disk drive: CD-ROM or DVD
Interface: USB-port

Technical Specifications

Color	
Measuring Geometry	45° illumination -15°, 15°, 25°, 45°, 75°, 110° aspecular viewing
Measuring Area	87 x 23 mm (in)
Spectral Range	400 – 700 nm, 10 nm resolution
Measurement Range	0 to 400 % reflectance
Repeatability[1]	0.02 ΔE* (10 consecutive measurements on white)
Reproducibility[1]	0.20 ΔE* (average on 12 BCRA II tiles)
Color Scales	ΔE*; ΔE CMC; ΔE 94; ΔE 2000; ΔE 99; ΔE DIN6175
Illuminants	A; C; D50; D65; F2; F7; F11; F12
Observer	2°; 10°
Effect	
Measurement Geometry	15° / 45° / 75° and diffused illumination perpendicular viewing
Effect Parameters	ΔS; ΔS_a; ΔS_i; ΔG
Repeatability[1]	S_a / S_i: 5% or > 0.50 / G = ± 0.05
Reproducibility[1]	S_a / S_i: 10% or > 1.00 / G = ± 0.15
Object Curvature	Radius > 400 mm
Measuring Time	< 6 seconds
Memory	1000 standards / samples
Language	English, German, French, Italian, Spanish
Power Supply	External power supply 24 VDC
Interface	RS 422
Robotic Requirements	Vibration-free operation
Operating Temperature	10 to 42° C (50 to 110 ° F)
Relative Humidity	up to 85%, 35° C (95° F); non-condensing
Dimensions	21 x 12.5 x 17.5 cm (8.3 x 5 x 6.9 in.)
Weight	approx. 3.5 kg (approx. 7.7 lbs)

[1] Standard deviation

BYK-mac ROBOTIC Training

BYK-Gardner offers you more than just an instrument. We assist you in operating the whole system and analyzing your color, sparkle and graininess data. Therefore, the instrument comes with a two day training course including:

Color and Effect Theory:

- Visual perception and instrumental measurement of multi-angle color, sparkle and graininess.
- Data interpretation for trouble shooting
- Support in integrating the BYK-mac ROBOTIC sensor into an automated measurement system

Software training

- Data analysis using standard reports:
  - Lab-scatter graph per angle to show at one glance whether all parts are within specifications
  - Color travel by sample to show how individual measurement zones perform per measurement angle
  - Effect graph to control whether sparkle and graininess values are within specification

Day 1: Color and Effect theory with data interpretation for optimization and trouble shooting
Support in integrating the BYK-mac ROBOTIC sensor into an automated measurement system

Day 2: Software training with data analysis using standard reports

Ordering Information

Cat. No.	Description
CM-6417	Light Protection Cover
AW-4809	BYKWARE auto-chart

Note: For replacement of white, cyan and effect standard, please contact your local service department.

Accessories

	To avoid the influence of ambient light
	Software for data analysis with database management and professional documentation in Excel®

Certified For Preventive Maintenance see page 271.