

Set the Standard in Grain & Oilseed Inspection

Advanced Morphological Analysis Made Simple.

Intelligent analysis solutions for grains,
oilseeds, lentils, and coffee beans — powered
by AI to guarantee quality at every stage of
production and distribution.





SpectraAlyzer GRAIN VISION AI

AI-driven Morphology Analysis – Fast, Reliable, Unmatched.

What it offers you

SpectraAlyzer GRAIN VISION AI is an advanced, AI-powered analytical instrument designed for high-speed, high-precision physical inspection of grains and oilseeds. Powered by intelligent algorithms and dual 360° camera access, it delivers real-time visual analysis and effortlessly detects key quality parameters such as:

grain: variety, broken grains, grain impurities^{*1}, sprouted grains, miscellaneous impurities^{*2}, discolouration, fusarium and many more

coffee: variety, broken beans, insect bite...

rice: broken, chalkiness, damaged, dehusked, discolored, foreign matter, red...

Set a New Standard in Quality Control

Equipped with cutting-edge AI and visual analysis software, **SpectraAlyzer GRAIN VISION AI** sets a new benchmark for precision and operational efficiency. With analysis speeds exceeding 1,000 kernels per minute, it outperforms conventional solutions while processing samples up to 500 g in just one cycle.

Built for Every Step of the Grain Journey

Designed to optimize the entire grain value chain – from breeding and research to harvest, packaging, and trade – the system supports a wide range of grains and seeds, including rice, wheat, barley, quinoa, lentils, and coffee beans. It empowers decision-makers at every stage with accurate, actionable insights.

How it Works

Captured images undergo advanced preprocessing and real-time segmentation. AI-powered classifiers precisely determine the size, shape, and volume of each kernel, delivering consistent, traceable results. Multispectral illumination together with 3D Vision enhances the visibility of hidden defects, improving detection accuracy across all material types.

Results You Can See – And Trust

After analysis, the system automatically discharges the sample batch. All analytical data is processed, stored securely, and visualized in an intuitive user interface – making quality control faster, smarter, and more transparent.

^{*1} shrivelled grains, other cereals, grain damaged by pests, grains with discolored germs, mottled grains, grains overheated during drying

^{*2} extraneous seeds, unsound grains, extraneous matter, husks, ergot, bunted grains, impurities of animal origin



How It Works?

AI Precision Meets Imaging Excellence.

The SpectraAnalyzer **GRAIN VISION AI** combines high-speed imaging, advanced optics, and AI-based analysis to deliver precise, automated measurement of granular materials such as grains, oilseeds, lentils, and more.

1. Sample Weighing

Each sample is first weighed to ensure consistent, traceable measurement from the very beginning.

2. Continuous Feeding

The sample is gently and continuously fed onto a rotating glass turntable, positioning each kernel for maximum visibility.

3. 360° Imaging Coverage

Dual high-resolution camera systems capture synchronized top and bottom views. Paired with multispectral illumination, the system documents 360° of each particle's surface, leaving no detail unseen.

4. Advanced Imaging Technology

Custom-designed optics, calibrated lighting, and real-time 3D imaging provide crystal-clear visualization of every grain and defect.

5. Real-Time AI Analysis

Captured images are pre-processed to enhance contrast and clarity. Then, cutting-edge AI algorithms segment and classify each particle by size, shape, volume, and visible defects — all in real time.

6. The Result

A fully automated system delivering rapid, reliable, and intelligent morphological analysis — ideal for labs, processors, and inspection points seeking ultimate precision in grain quality assessment.

Key features:

Precision. Performance. Simplicity.



Flexible Sample Handling

Built-in scale and optimized imaging system support sample sizes from 1 g to 500 g. Automated enhancement ensures consistently sharp, fast evaluations.



Intuitive Interface & Design

Large 12.1" TFT touchscreen with a clean, user-friendly software interface. Compact and lightweight — ideal for seamless integration into any lab environment.



High-Definition Imaging & AI Analysis

Dual RGB CMOS cameras (45 fps), 48-bit color depth, and 3D LED lighting deliver ultra-high-resolution imaging. Intelligent particle analysis powered by advanced AI. Cloud-ready for streamlined data access and management.



Secure & Reliable Operation

With up to 25,000 pixels per kernel and 20 micron resolution, the system ensures analytical depth and repeatability. A robust Linux-based platform safeguards data integrity and operational stability.



Unmatched Accuracy & Speed

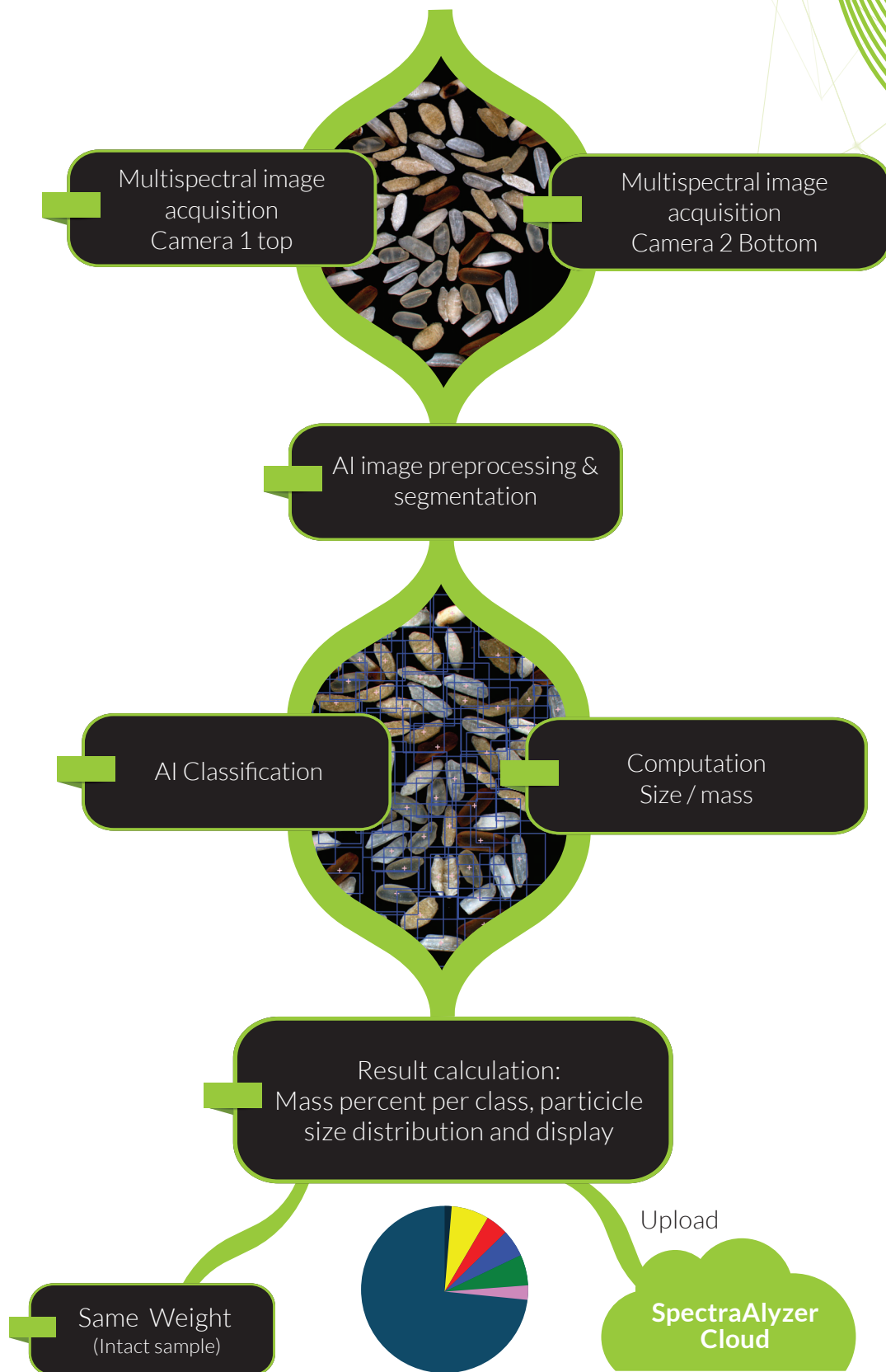
Cutting-edge AI-powered visual analysis for precise, non-destructive grain inspection with real-time 3D imaging — delivering results in under 90 seconds.



Smart Connectivity

Equipped with Ethernet, USB, RS232, and printer ports. Access measurement data remotely via PC, tablet, or smartphone using integrated web server functionality.

Data flow diagram



Technical data

Design

System:	AI-ML-based
Assessment:	Non-destructive
Measurement:	Transmission-based
3D Imaging:	360° 3D imaging
Size and Area Calculation:	Determines grain size (LxW) and area (volume/weight)
Integrated Scale:	Measures sample weight
Sample:	Presentation: Automatic
Sample Feeding & Analysis:	Continuous, automatic analysis
Measuring Time:	Approx. 2 minutes

Optional accessories

Barcode Reader, Keyboard, Printer, Web server or cloud connections

Module

Camera module:	Two 8.3 MP 48 bit RGB CMOS cameras, 45 fps, capturing 25,000 pixels per kernel for efficient data extraction.
Optic module:	Prism polarized film/lens and RGB backlight for high-quality images with minimal background noise

Specifications

Screen:	12.1", TFT 1280 x 800 pixel PCAP Touch
Power requirement:	100–240 V AC (50–60 Hz), 1.7 A, with 12 V car adapter option.
Operating temperature:	5–40 °C, 80 % non condensing
Interfaces:	1 x front USB, 3 x back USB, 2 x RS232, 1 x Ethernet
Dimension:	Height: 393 mm / Width: 570 mm / Depth: 458 mm
Weight:	18 kg

Order information

SpectraAnalyzer GRAIN VISION AI 600-A100-1

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