SpectraAlyzer
GRAIN NEO

made in Germany

What it does for you

> The **SpectraAlyzer GRAIN** is built to provide grain and oil seed quality assessment and assurance to farmers, traders and processors.

The **SpectraAlyzer GRAIN** is your ideal solution to obtain the analysis of moisture, protein, fat/oil, ash content and other quality parameters in grains, cereals, oilseeds and flour. The SpectraAlyzer GRAIN is a grain/seed analyzer, Near-InfraRed spectrometer which is dedicated to analyze the composition of whole grain samples using the near infrared absorbance characteristics of the sample spectra.

For trading and the further processing of grain it is necessary to analyze important quality parameters in the grain to provide customers with products of highest and – what is most important – consistent quality. In order to be most competitive in the world market, consistent high yields, top quality and low production costs are the objectives that need to be achieved.

The **SpectraAylzer GRAIN** presents the analytical results of these major quality parameters in about 45 seconds.

There is no need for grinding or other sample preparation at all. The big optical path-length accepts a multitude of whole grain, oilseeds and legume fruits. Additional reagents do not need to be used - so this analyzer solution provides highly accurate quality control parameters at no extra cost.

All possible grain quality parameters will be determined simultaneously. The sample is top filled into the hopper from where a screw feeder conveys the sample into the sample chamber of the **SpectraAlyzer GRAIN** . The sample is fed through the sample chamber in discrete portions and then automatically collected in the removable drawer inside the analyser. All mechanical feeding components can be easily accessed by the user and dismantled without tools for easy cleaning.

In order to analyze powder samples e.g. wheat flour an optional Flour Module is as accessory available. Each grain analyzer can be (retro)fitted with a test weight module (i.e Bushel weight, hectoliter weight, or specific weight) to determine the volume to weight ratio of the sample.

The **SpectraAlyzer GRAIN** offers an improved UI experience with an array of new features and functions. The instrument is controlled with an intuitive icon driven software using a PCAP glass touch and color TFT display with 1280×800 pixel. With a screen size of 12.1" and high luminance the touch operation and data visualization is optimized even at bright sunlight. The routine operation of the analysis process can be automated with cloud connectivity features. Results obtained can be directly linked to ERP systems eliminating the need of manual data handling and archiving.

The **SpectraAlyzer GRAIN** can be operated from a 12-24 V DC power outlet of any car, truck or agricultural machine. The light source has an extended life span and can be exchanged without tools by the user.

All this making the **SpectraAlyzer GRAIN** the ideal choice for fast and accurate whole grain testing in any environment.

Technical data

Design	
Spectral range	570-1100 nm
Signal to noise ratio	tbd
Wavelength standard	intergated
Analysis time	typ. 40 s
Sample amount needed for analysis	typ. 200 g
Optical path length	6-36 mm
Measuring time	40 s, 200 g sample

Optional Accessories
Keyboard, Barcode Reader, Printer, Application worx G2 (AWX G2)

Analytical Performance
Please refer to commodity specific performance data sheet

Modules	
Flour module	Accessory for flour, semi-solid samples, very small quantity of grains
Test Weight Module	For determination of volume to weight ratio of the sample

Specifications	
Screen	12.1", TFT 1280x800 pixel, 1000 cd/m², PCAP Glass Touch
Power requirements	min. 90 V AC (50 - 60 Hz), max. 260 V AC (50 - 60 Hz), 200 VA (optional car adapter 12V)
Operating temperature	5 °C - 35 °C, 80 % non condensing
Interfaces	1x front USB, 3x back USB, 2x RS232, Ethernet
Dimensions	Height: 393 mm / Width: 570 mm / Depth: 458 mm
Weight	approx. 25 kg

Order information	
SpectraAlyzer GRAIN NEO	210-A100-1

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The ultimate solution for Grain Testing

> **Assuring grain quality from field to factory**

ZEUTEC

How it works

The **SpectraAlyzer GRAIN** is an all grain analyser and quality check instrument designed for the analysis of solid bulk materials in diffuse transmittance.

The instrument takes spectra of the samples in the short-wavelength range of the near infrared (SW-NIR) radiation. In this spectral range, the absorbance of the sample material is much lower than at higher wavelengths, so that there is still sufficient light intensity left for detection even when the radiation has passed several centimeters of sample. This technique is especially of interest when inhomogeneous samples like whole grains or bigger particles shall be analyzed. In case of grains and oil seeds, it is essential to obtain spectral information from inside the kernels and to make sure that this information is sufficiently representative.

When a grain sample is illuminated/ transmitted with NIR light (NIT Near Infrared transmission), the radiation is partly absorbed, partly scattered, and partly reflected by the kernels. As a result, the beam is no longer well defined in terms of geometric optics (like the transmittance characteristics of water or other clear liquids); this is why the measuring principle is called diffuse transmittance.

The amount of light absorbed by the sample at different wavelengths is directly related to the concentration of chemical functional groups, such as C-H; O-H, and N-H. As these concentrations are in turn related to concentrations of the parameters of interest – for example protein, moisture, or oil – property values can be determined.

The SpectraAlyzer GRAIN – All grain analyser and quality check instrument, is shipped with pre-installed standard calibration models for many products, parameters, and countries where typical applications are:

Grain reception/trading/malting

- Wheat, durum wheat, rice, barley, corn, soy, malt, green malt, rye, oats, triticale, sorghum/milo, lentils, beans, green and chick peas and others

Flour milling

- Wheat and rye flour, semolina, ground wheat, rice meal and flour, soy meal, corn meal and flour and others

Oil seed trading and crushing

- Soybean, canola/rapeseed, sunflower (ground) and others. All calibrations provide accurate analytical values and are 100 % transferrable between instruments!

Calibration software

By having all the software tools at hand an innovative calibration model wizard and simple to understand work flow allows even unskilled users to adjust existing and create new calibration models.

The **Application worx G2** chemometrics software package uses database and PLS statistic functions to create the calibration models.

Web server and cloud connectivity

The **SpectraAlyzer GRAIN** is equipped with a web server which can be regarded as an online electronic lab logbook. All analytical data stored in the SQL database of the instrument is accessible from leave anywhere any time using a web browser. The analytical data can be listed, visualized as trend chart, exported and processed according to the needs of the user or the required reporting. Calibration models and methods implemented in the analyzer can be exchanged easily. Data can be written automatically to any location in the web or any ERP system (e.g. SAP) for documentation. A unique cloud platform facilitates the storage of analytical data from multiple instruments in a dedicated user database center. The cloud platform enables combinational data processing for multiple instruments.

Key features

Easy sample presentation
by filling the whole grains into the funnel on the top.
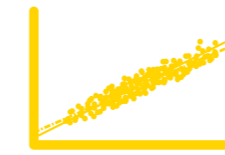
Many mathematical models
for all kind of products included for quick calibration models installation and start-up.

NIR sample/reference technology
like all SpectraAlyzer instruments for high sensitive and long term stable measurements.

Touch user interface
and intrinsically mounted glass touch for straight forward hygenic instrument operation.

Compact design
optimised for bench top or at-line application.

User friendly
sample presentation and easy to operate.

Production process flow diagram

Grain harvesting

Field drying

Threshing

pre-cleaning

1 Drying
Moisture measurement while drying of grains to reach safe moisture levels for storage and further processing.

Cleaning and Sorting

2 Storage
Checking the effect of storage on grain quality – Moisture, protein
Storage temperature and humidity can lead to changes in the moisture and protein content of the grains. Monitoring of these parameters is important for ensuring proper grain quality.

3 Trading
Moisture, protein, oil, hardness, sedimentation, test weight
Measurement of these parameters with the SpectraAlyzer ensures that the grains are sold or bought at proper price according to grain quality.