SpectraAlyzer GRAIN

# Great taste comes with great recipe and great quality

ZEUTEC

made in Germany

# What it does for you

> The **SpectraAlyzer GRAIN** is an all grain analyzer, Near-InfraRed spectrometer which is dedicated to analyze the composition of 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 within 45 seconds:**

• Wheat, barley, durum, oil seeds and many more: protein, moisture, Gluten, oil content and others

There is no need to manually condition the sample and extra reagents do not have to be used so this analyzer solution provides **highly accurate quality control parameters** at no extra cost.

All possible grain quality check parameters can be analyzed simultaneously. The sample is top filled (funnel) directly into the sample cell of the **SpectraAlyzer GRAIN** analyzer and automatically conveyed, there is no need for grinding or other sample preparation at all. The sample will be fed through the sample chamber via a robust feeding device and automatically discharged.

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

# 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, 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

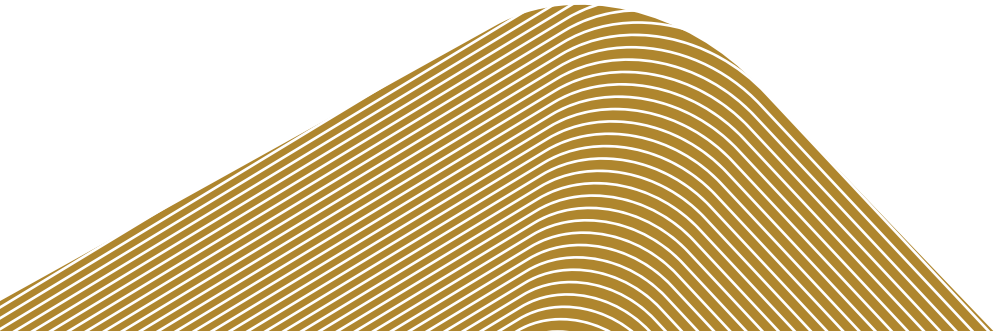
**Oilseed crushing**

- 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 software package uses database and PLS statistic functions to create the calibration model. In routine use Application worx can be used as direct operating software, giving full access to the instrument while retrieving high resolution spectral data for extended calibration work.



# 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.

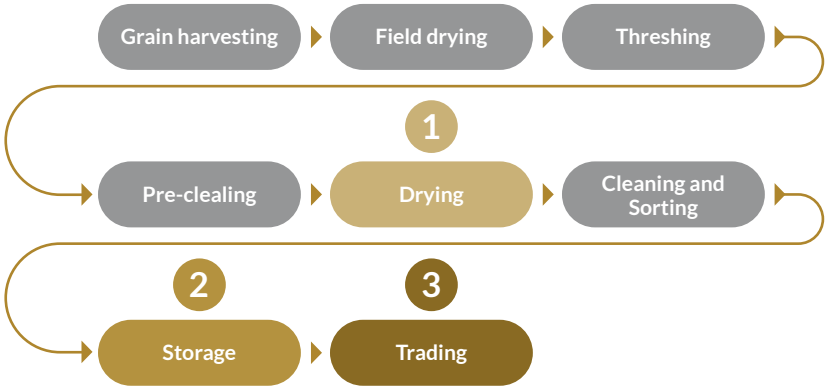
**NIR sample/reference technology**
like all SpectraAlyzer instruments for high sensitive and long term stable measurements.


**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 Drying 1

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

## Storage 2

**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.

## Trading 3

**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.

# Technical data

| Design | |
|---|---|
| Spectral range | (570) 850 – 1100 nm |
| Verification of wavelength | Automatically during start-up |
| High signal to noise ratio | > 30.000 : 1 |
| Optical bandwidth | 4 nm |
| No of datapoints | 1000 |
| Measurement | Transmisson |
| Sample presentation | Automatic |
| Optical path length | Automatically adjusted, range 6 – 30 mm |
| Measuring time | 45 s, 200 – 300 g sample |

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

| Analytical Performance |
|---|
| Please refer to commodity specific performance data sheet |

| Modules | |
|---|---|
| Flour module | For flour, semolina, soy meal and other ground samples |
| Test Weight Module | For determination of volume to weight ratio of the sample |

| Specifications | |
|---|---|
| Screen | TFT 640 x 480 pixel |
| Power requirements | min. 90 V AC (50 - 60 Hz), max. 260 V AC (50 - 60 Hz), 200 VA |
| Operating temperature | 5 °C - 35 °C non-condensing |
| Interfaces | 1 x front USB 2.0, 2 x USB 2.0, 1 x RS232, Ethernet |
| Dimensions | Height: 370 mm / Width: 400 mm / Depth: 440 mm |
| Weight | 27 kg |

| Order information | |
|---|---|
| SpectraAlyzer GRAIN | 200-A100-1 |

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