

## Technical Moisture Meter PCE-A 315

Continuous measurement of the moisture content of goods like grains, beans, rice, nuts, powder, coal, paste, biomass, and soil on conveying equipment or in silos.

The microwave grain moisture meter was developed by Aquar System Ltd. and has been deployed in many global grain processing facilities for continuous moisture measurement.

PCE Instruments offers delivery, modification and on-site installation, calibration, and maintenance in Western Europe, the United States, Canada, and South America.

The default calibration curves of this moisture analyzer allow for continuous, automated measurement of absolute moisture content in goods like grains, legumes, and oil seeds.

Since grain-drying is an energy intensive process, controlling this drying process offers tremendous cost savings. The online moisture analyzer is particularly well suited for this task when it is employed during the drying process and before the milling of grain. The microwave moisture sensor makes a fast and accurate measurement possible.

### Benefits:

- grain moisture is continuously measured during mass flow independent of material density and with a high degree of reproducibility.
  - long-term stability of measurement system; after initial calibration there is no need for scheduled re-calibrations.
- The moisture analyzer is practically free of natural drift.

### Technical Specifications of the microwave grain moisture meter

Measurement range for moisture content during continuous mass flow	5 ... 25%
Max. absolute error of moisture measurement	±0.5 % (5 ... 18 %) ±1.0 % (>18 %)
Working temperature range	5 ... +55 °C
Operation mode	continuous
Power supply	24 VDC
Input power	up to 5 W
Warm-up time at start-up	aprox. 60 min
Outputs	RS-232, RS-485, 4-20 mA
Inputs	4-20 mA
Protection class sensor	IP65 / EX ia
Weight	max. 14.5 lbs / 6,5 kg

Goods and materials which can be accurately measured with the microwave moisture meter include grains like wheat, barley, triticale (animal compound feed from wheat and rye), rye, oats, maize, millet, buckwheat legumes, lupine seeds, rapeseed, and sunflower seeds. The microwave moisture analyzer is not only used to measure

moisture content during continuous processing but it can also be connected to evaluation software, data loggers, process controllers and complete process control systems through various interface options like RS-232, RS 485 or 4-20 mA.

Thus, the microwave moisture analyzer becomes an integrated part of the complete measurement and process control chain. The operating principle of the moisture meter is based on the differentials between the ultrahigh frequency, dielectric characteristics of grains and water. The meter has a ring resonator in its center which has a dielectric canal through which the grain flows. The parameters of the resonator are changed when the electromagnetic waves come into contact with the different moisture grades of various grains.

The fact that the resonator measures two parameters - resonant frequency and resonant amplitude - simultaneously and its combination with a specialized process control algorithm give the moisture meter a distinct advantage: independent of material density, a high degree of measurement reliability and reproducibility is achieved. There is no damage to the tested material or the sensors. Since the transmission is very low there is no heating or deformation of the tested material.