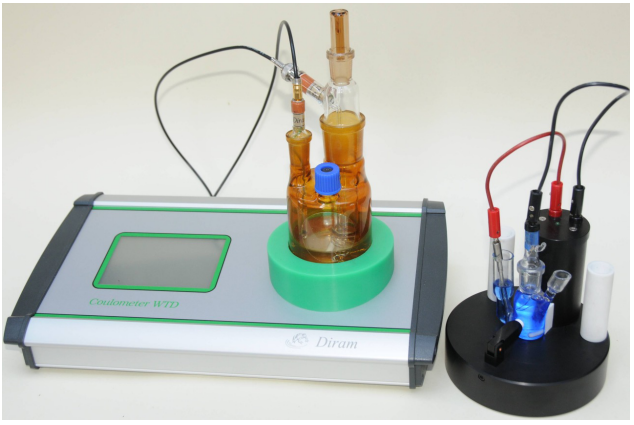
Coulometer WTD for Determination of Water and Acid Number

Charakteristics

- K. Fischer coulometric method of water determination
- acid number determination using spectrophotometric end-point detection and coulometric generation of a titrant

Use

- tribology
- farmaceutical and alimentary products
- petroleum products, oils



The Coulometer WTD has been developed, by Diram s.r.o., to perform routine analysis of moisture. Utilizing Karl Fischer titration, the coulometric generation of an iodine titrant allows determination of even trace amounts of water within a sample.

Custom designed by Diram s.r.o., the apparatus combines the microprocessor-controlled measurement electronics and the glass titration flask into a single convenient instrument. A single filling of the flask allows several analyses of up to 0.2g of water, depending on the dilution of the working electrolyte. The apparatus can function with or without, a diaphragm separating the anode & cathode electrodes.

The touchscreen, on the front panel, allows adjustment of the procedure parameters and easy display of the resultant measurements. Once the apparatus is connected via USB to a computer, the Diram Measure software displays the measurements during the course of the titration. Again parameters such as circuit current, end-point of the titration, stirring rate, start-time of analysis are all adjustable from the computer. The software also allows saving and export of the results for archival purposes.

Coulometer KOH

Coulometer KOH module is an add-on module for the Coulometer WTD allowing a single process of water & acid number determination.

Acid number by definition is the quantity of potassium hydroxide necessary to neutralise acidic components present in one gram of oil. It has been historically usually determined by a volumetric titration with a potassium hydroxide standard solution, performed in an organic solvent media. When the coulometric approach is employed, the hydroxyl ion titrant is generated directly on the platinum electrode as a result of electrolytic water decomposition.

The neutralisation takes place in the closed cathodic compartment of the glass vessel which excludes possible interferences arising from the atmospheric carbon dioxide. The advantage of the coulometric method lies in minuscule solvent consumption and high accuracy of titrant metering, without the necessity to utilise standardised volumetric solution methods.

The equivalence point is evaluated spectrophotometrically in the presence of a suitable acid-base indicator. This technique significantly reduces problems associated with a subjective end-point determination especially when dark coloured oils are analysed. The solution in the titration vessel is a mixture of alcohol and toluene (1:2) containing a suitable indicator and salt to ensure sufficient conductivity. Finally, directly dividing the resultant micrograms of potassium hydroxide by the sample weight generates the Acid Number.

Technical data - Coulometer WTD

measurement range	1 ppm to 5% H_2O
measurement error	< 5 µg to 1 mg H_2O 0.5 % at 1 mg H_2O
titration current	max. 300 mA
indication current	1.6 to 20 µA
sample weight	0.01 to 2 g
units	µg, ppm, %
display / keyboard	LCD / touchscreen
power supply	230 V AC, 35 W
dimensions	340×190×60 mm
weight	1.6 kg
titration vessel volume	200 ml

Technical data - Coulometer KOH

measurement range	0,002 to 5 mg KOH/g
sample weight	0.01 to 0.5 g
measurement error	< 0.4 µg; above 40 µg KOH: 1%
dimensions	125×120 mm
solvent volume	10 ml per measurement

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