Coulometer WTD for Determination of Water

Charakteristics

- K. Fischer coulometric method
- small and trace amounts of water
- independent or PC controlled measurements

Use

- tribology
- farmaceutical products
- alimentary products
- petroleum products, oils
- technical gases

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.

Employing the coulometric method allows detection of small or even trace amounts of water in a variety of solutions; including, but not limited to, solutions based on organic acids, alcohols, esters, hydrocarbons and many other organic solvents. The ability to establish the water content of a sample of oil taken from a transformer, turbine or compressor improving operational efficiency – more accurate scheduling of maintenance preventing costly repairs and unscheduled downtime.

Application is not limited to liquid solutions, as it is possible to analyse the moisture content of certain gases within the same flask arrangement.

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, extraction time, temperature of the drying oven are all adjustable from the computer. The software also allows saving and export of the results for archival purposes.



Coulometer WTD combined with a drying oven

When analysing substances that are not soluble or are reactive with the iodine titrant, the direct approach is generally not suitable, but can sometimes still be conducted in combination with a drying oven.

The sample for analysis is heated in the drying oven to release all water present within the sample. The resultant vapour is transferred via a carrier gas into the titration flask. The built-in air pump is designed to permit use of pre-dried standard air as a carrier gas or a suitable inert gas can be employed as an alternative.

Coulometer WTD with module KOH

In situations, especially in oils and petroleum products, where an acid number determination is also required, Diram offers a KOH module as an addition for the Coulometer WTD.

Technical data - Coulometer WTD

	measurement range	1 ppm to 5% H₂O	
	measurement error	< 5 μ g to 1 mg H_2 O	
		0.5 % at 1 mg H ₂ O	
	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	
Fechnical data - drying oven			
	temperature	to 300 °C	

temperature	to 300 °C
sample weight	1 to 10 g
power supply	230 V AC, 140 W
dimensions	120×140×190 mm
weight	3.5 kg
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