OMNIS Coulometer and OMNIS Sample Robot Oven

Fully automated system for determining trace level moisture content

**PEOPLE
YOU
CAN
TRUST**

Ω **Metrohm**

A complete modular solution

WHY COULOMETRIC KARL FISCHER TITRATION?

For trace-level determination of moisture content (10 µg to 10 mg content absolute) in liquids, solids, and gases coulometry is the method of choice. It is simple to use, results are available in less than three minutes, and as coulometry is an absolute method, a titer determination is not necessary.

A CLASSIC: BROMINE INDEX ACCORDING TO ASTM D1492 (BRC)

The bromine index is a measure of the number of double bonds present in a sample. Just like iodine is generated in coulometric Karl Fischer titration to determine the moisture content, bromine is generated directly in the titration cell to determine the bromine index based on the reaction with the double bonds in the sample.

MAXIMUM FLEXIBILITY

OMNIS is a modular system: If the sample volume in your laboratory increases, simply add another OMNIS Coulometer Module to your system – e.g., to determine water content and bromine index in parallel, or if you want to perform analyses with different reagents without having to change the reagent and recondition the titration cell each time.

AUTOMATIC TITRATION START

Has this happened to you before? You introduce the sample into the titration cell but have forgotten to start the titration beforehand. In this case, the cell is conditioned until all the water in the sample has reacted. Recalculations are not possible, and the measurement must be repeated. With the OMNIS Coulometer, this can no longer happen. The system recognizes the addition of the sample and starts the titration automatically.

MAXIMUM USER SAFETY: AUTOMATIC REAGENT EXCHANGE

For maximum safety and convenience, you can add an OMNIS Dosing Module to your OMNIS Coulometer system. Automatically exchanging reagents eliminates the risk of exposure to the KF reagent and shortens the conditioning time of the titration cell as it does not have to be opened to exchange the reagent.
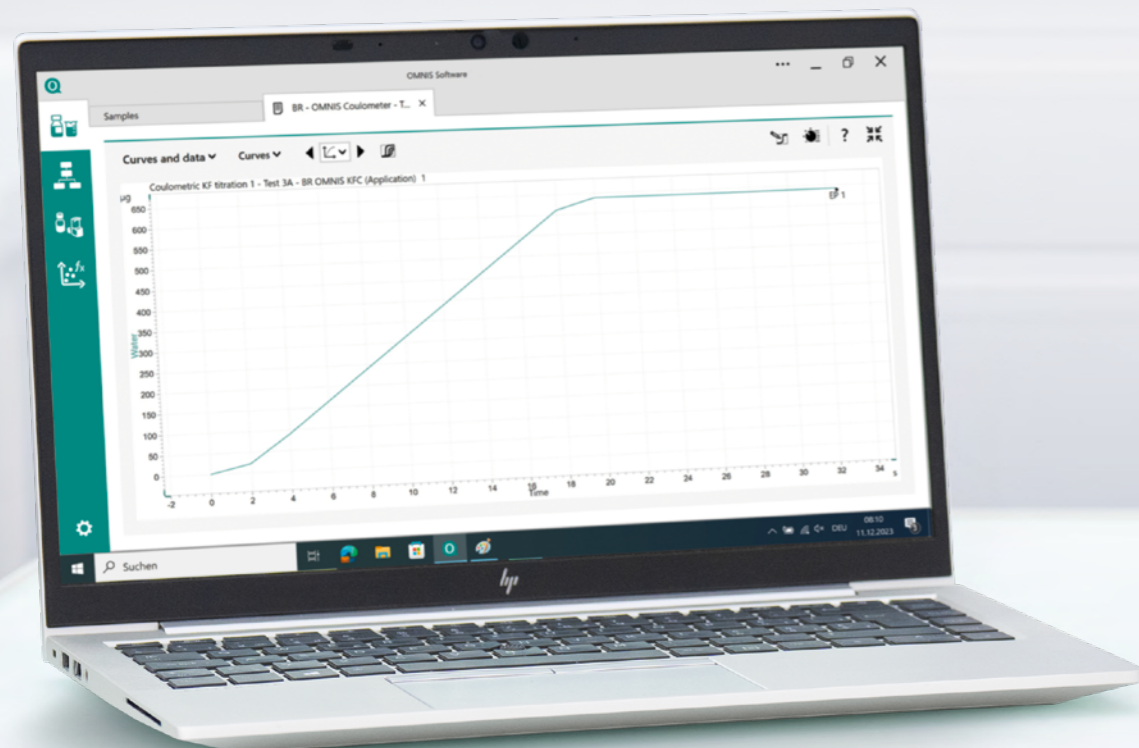
Gas extraction with the OMNIS Sample Robot Oven

FOR SOLIDS AND OTHER CHALLENGING KINDS OF SAMPLES

Certain kinds of samples (e.g., solids) are not suitable for direct injection in the coulometric titration cell. For such samples or if you want to save time by automating your analysis, gas extraction using a Karl Fischer oven is the solution of choice: The sample is put in an air-tight vial, which is heated up in the oven. Any moisture contained in the sample evaporates and is transported into the titration cell by a stream of carrier gas and titrated there.

ONE OR TWO OVEN MODULES POSSIBLE

The OMNIS Sample Robot Oven can be equipped with one or two Oven Modules for maximum flexibility and sample capacity. Retrofitting your system with a second Oven Module is possible at any time – and much more affordable and space-saving than acquiring an additional instrument.

In addition to the standard 6 mL sizes with crimp cap and 8 mL with screw cap vials according to ISO 8362 from sizes 2R to 30R can be also used. You can also combine vials of two different sizes on your OMNIS Sample Robot Oven.

NO MANUAL INTERVENTION NECESSARY

If the capacity of the Karl Fischer reagent is exhausted or if too much methanol has evaporated due to continuous operation at higher temperatures, both can be automatically replaced or refilled via optional OMNIS Dosing Modules. This eliminates the need for manual intervention in the running system.

Vial Type	Max. sample number
2 R	154 (2 x 77)
6 mL	100 (2 x 50)
8 mL	100 (2 x 50)
30 R	54 (2 x 27)

GAS EXTRACTION AT UP TO 300 °C

With a maximum temperature of 300°C, the OMNIS Oven Module is suitable for all standard applications using gas extraction.

CARRIER GAS OPTIONS

The OMNIS Oven Module allows both ambient air and nitrogen to be used as carrier gas. A large adsorber cartridge for the molecular sieve ensures maximum drying and long service life.

TEMPERATURE GRADIENTS POSSIBLE

If the optimal oven temperature for your sample is not known to you, you can determine it licensing the optional «Temperature gradient» function.

ADJUSTABLE NEEDLE LENGTH

A small but highly useful feature is the length-adjustable puncture needle: Its length can be adapted to the size of the sample vial or the filling level in the sample vial.

OMNIS – everything on one platform

THE OMNIS COULOMETER INTEGRATES SEAMLESSLY INTO THE OMNIS SYSTEM PLATFORM

No matter which OMNIS device you start with, you can expand and customize your system at any time to meet your requirements.

- Start with an OMNIS Coulometer and expand it with an OMNIS Titration Module and further OMNIS Dosing Modules for volumetric Karl Fischer or potentiometric titrations.

- The other way around: Expand your OMNIS Titrator with an OMNIS Coulometer Module for coulometric water content determinations or bromine index determinations.

- Automate your system with an OMNIS Sample Robot Oven if your sample load increases, if you want to reduce manual sample preparation, or if you want to improve the reproducibility of your measurement results.

OMNIS SOFTWARE

The OMNIS Software meets all requirements for working in the modern, digitalized laboratory, including data integrity, client/server application, and API for connection to third party systems for further data processing.

OMNIS:

All your applications on one platform

An OMNIS Dosing Module and a Measuring Module Analog enable photometric titrations.

An OMNIS Titration Module with a Measuring Module Digital add the capability to perform potentiometric titrations.

An OMNIS Titration Module with a Measuring Module Analog allows you to perform volumetric Karl Fischer titrations.

The OMNIS Coulometer for coulometric Karl Fischer titrations is at the heart of this system.

TECHNICAL DATA AND OMNIS COULOMETER AND OMNIS SAMPLE ROBOT OVEN

OMNIS Coulometer		
Potentiometric	Measuring range	−2400 mV to +2400 mV
	Resolution	1,56 µV
	Measuring accuracy	±0,5 mV in the measuring range −2000 mV to +2000 mV
	Input resistance	≥ 1*10^{12} Ω
	Offset current	≤ ±1*10^{-12} A
Temperature sensor	**Pt1000**	
	Measuring range	−150 °C to +250 °C
	Resolution	Approx. 0,002 °C
	Measuring accuracy	±0,4 °C in the measuring range −20,0 °C to +150,0 °C
Polarizer	**Ipol DC**	
	Polarization current	−200 µA to +200 µA, adjustable in 0,5 µA steps
	Measuring range	−2400 mV to +2400 mV
	Measuring resolution	0,1 mV
	Ipol AC	
	Polarization current	5 µA, 10 µA, 20 µA, 30 µA
	Measuring range	0 to +1700 mV
	Measuring resolution	0,1 mV
	Upol DC	
	Polarization voltage	−2000 mV to +2000 mV, adjustable in 5 mV steps
	Measuring range	−200 µA to +200 µA
	Measuring resolution	0,01 µA
Iodine generation for KFT water determination	Determination range	10 to 200 mg H_2O
	Resolution	0.1 µg H_2O
	Titration speed	Max. 2.24 mg H_2O /min
	Reproducibility	Sample: Reagent manufacturer's standard. With 10 µg to 1000 µg H_2O: ±3 µg With >1000 µg H_2O: 0.3% or better
OMNIS Sample Robot Oven		
	Dimensions	765 mm x 558 mm x 564 mm (Height x Depth x Width)
	Weight	21 to 30 kg
Standardracks	Crimp closure	50 x 6 mL
	Screw cap	50 x 8 mL

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