

**GRScientific**

Conforms to ASTM/EN/ISO Standards



## **Aquamax KF** *Portable*

*The Truly Mobile  
Coulometric Karl Fischer Titrator*

## Aquamax KF *Portable*

Measuring and controlling the amount of water in oils is of considerable economic importance to the industrial community, particularly to the crude oil and electric power industries.

Water content determination by Karl Fischer titration is no longer restricted to being used by a chemist in a laboratory – now the technique is used by engineers, plant operators, tanker drivers, distribution/maintenance engineers and other non-laboratory personnel.

Karl Fischer titrations can now be performed in many different locations such as the tailgate of trucks, mobile laboratories, offshore installations, tankers, engineering workshops and dockside cabins.

The Aquamax KF *Portable* is a truly mobile version of the very successful Aquamax KF Coulometer which includes Low Drift Cell twin port glassware as standard. Also incorporates a carry handle and a protective sleeve for the titration vessel and electrodes. The unique low drift cell glassware design is by far the easiest to use and also the most robust. The electrode locking system allows the joints to seal completely, without the use of grease or PTFE sleeves, and provides improved baseline stability. Hassle free assembly and disassembly. This glassware enables users to transport the instrument with reagents already in the titration cell so that it can be used immediately on arrival.



## Truly Mobile



The Aquamax KF *Portable* is also supplied with a carry case to provide the portability required by the field engineer. It can be transported, complete with glassware assembled, ready for immediate use on arrival at destination. Power cords, syringes, etc. can all be carried inside the carry case lid which has a special compartment for this purpose.

There are plastic drip trays positioned either side of the titrator to accommodate two syringes, typically 1.0 or 5.0ml for the samples and 10 $\mu$ l syringe for water checks as per the ASTM methods.

## Wheel Trolley

The optional wheel trolley can be clipped on to the Aquamax KF carry case to make transporting from site to site even easier.



## Results Manager

Run#	Time	Dalk	Meq	Volume	Density	Result	Flag
1	17:49:30	0.97	1.0000	0.8700	10.25		
2	17:47:50	0.97	1.0000	0.8700	10.12		
3	17:49:37	0.98	1.0000	0.8700	10.82		
4	17:49:20	0.97	1.0000	0.8700	10.42		

Max: 10.0 ppm    Min: 10.1 ppm    Mean: 10.4 ppm    SD: 0.30    CV: 2.89



USB data collection

This is a windows application that allows you to view and print sets of results created by the Aquamax KF Titrator. It can download results directly from the titrator through a serial port connection, or open result files previously saved to disk. The Results Manager package contains all necessary cables, connections, installation cd and user manual.

For those who need to use the titrator outside of the laboratory and do not have a pc or laptop with them, our removable flash drive (memory stick) will store all the results. This flash drive can then be connected to a pc and results downloaded through Results Manager when returning to the laboratory. The Results Manager Software is supplied as an optional item with the Aquamax KF.

## Water Standard

The ug check button on the front panel allows the operator to simply press one button before injecting the 10ul distilled water as required by the ASTM methods for these analyses. This overrides the programmed calculation settings for a single run so that the display and print out report the result in micrograms water. After running the 10,000 microgram check the coulometer reverts back to ordinary user mode.



## Glassware

The unique Low Drift Cell glassware design is by far the easiest to use and also the most robust. The electrode locking system allows the joints to seal completely, without the use of grease or PTFE sleeves, and provides improved baseline stability. Hassle free assembly and disassembly.

### Key Features

- Simple operation
- 10 user programmable methods
- 1ppm / 100%
- Results in ppm, mg/kg, % & µg water
- Multi language display & print out
- Small footprint
- Integral high speed printer
- Integral battery
- Fully portable
- Low drift cell design
- Results Manager software
- Automatically compensated errors (patented technique)

## Protective Sleeve



A problem sometimes encountered with portable / mobile coulometers when using them in the field, is the effect of daylight on the reagents. Direct sunlight can interfere with the Karl Fischer reagents causing changes to background drift value and the microgram counts obtained. To reduce this we developed a protective sleeve which simply slides over the titration vessel and still allows easy access to inject samples and to be able to see what is happening in the titration vessel.

## Homogenizers



To conform to ASTM, API, etc, methodologies, it is necessary to homogenise crude oil samples prior to analysis.

The PRO25D is a powerful and versatile low cost digital homogenizer whilst the SB-1 model is a Silent Brushless Homogenizer which is maintenance free as it has no carbon brushes, so it runs cleaner and quieter.

- PRO25D Digital Homogenizer, with stand
- SB-1 Silent Brushless Homogenizer, with stand
- Saw Tooth Generator Probe

## Aquamax KF Coulometric Standards

The Aquamax KF series of Coulometric Karl Fischer titrators can be used for the following standard methods, either by direct sample introduction or in conjunction with accessories such as water evaporators:-

ASTM	D 1533	Insulating liquids	EI / IP	386	Crude petroleum
	D 3401	Halogenated organic solvents		438	Petroleum products
	D 4928	Crude oils	BS	6829:1.5	Surface active agents
	D 5460	Rubber compounding materials	ISO	TC 158/SC	Natural gas and gas substitutes
	D 6304	Petroleum products, lubricating oils and additives		10101-1	Natural gas
	D 6869	Plastics		10101-3	Natural gas
	E 1064	Organic liquids		10337	Crude petroleum
				12937	Petroleum products
API MPMS	Ch. 10.9	Crude oil	IEC	60814	Insulating liquids

## Technical Specifications

Titration Method: Coulometric Karl Fischer titration  
Electrolysis Control: Patented "ACE" control system  
GB2370641

End Point Detection: AC polarisation  
End point indication: Visual display/print out/acoustic beep  
Titration vessel: Low Drift Cell design, no grease or PTFE sleeves required

Measuring range: Possible 1µg - 200mg water  
Typical 1µg - 10mg water

Moisture range: 1ppm - 100% water  
Max. sensitivity: 0.1µg  
Max. titration speed: 2.24 mg per minute  
Max. current: 400 ma  
Drift compensation: Automatically controlled  
Precision: 10-100µg ± 3µg, 100µg-1mg ±3µg,  
above 1mg ±0.3%  
Start delay time: 0-30 minutes, user selectable  
End delay time: 0-30 minutes, user selectable  
Calculation modes: Weight/weight, (W/w) (user programmable)  
Weight/dilution ratio, (W/K)  
Volume/density, (V/SG)  
Volume/volume, (V/v)

Display format: µg, mg/kg, ppm, %  
Print format: µg, mg/kg, ppm, %  
Statistics: max, mean, min values up to 99 runs  
Method storage: 10 user programmable methods  
Sample ID number: User programmable  
Stirrer speed: Microprocessor controlled  
Languages: Multi languages – user selectable  
Calendar/clock: Analysis time & date print out  
Battery low indicator: Display & print out indication  
Data outputs: USB and RS232 ports  
Removable Data storage: Flash drive (memory stick)  
Data Entry: 15 key touchpad  
Display: 40 character alphanumeric backlit LCD  
Printer: 42 character high speed thermal printer  
Protective Sleeve  
Carrying handle  
Power supply: 90-264V AC, 47-63 Hz.  
12V DC car adapter/internal battery  
Dimensions: 290 x 255 x 130 (excluding the protective cage)  
Weight: 5.0 kg

## About G.R. Scientific

Key personnel at G.R. Scientific are recognised experts in titration technology and electrochemistry. They have designed and manufactured titrators since the early 1980's and are widely regarded as some of the leading specialists in this technology.

## Ordering Information

Part No.	Product
710002	Aquamax KF Portable Coulometric Titrator
201004	Carry Case
401424	In-Car Adaptor
401511	Power Adaptor
503053	Titration Vessel LDC
503054	Detector Electrode LDC
503055	Generator Electrode & Frit LDC
503057	Electrode Lead
503058	Desiccant Tube LDC + Cap
503059	Pack Injection Septa (10pk)
503062	Gas Tight 0.25ml Syringe
503063	Gas Tight 1.0ml Syringe
503070	Molecular Sieve
503071	Stirrer Bar
503073	Paper Roll (Thermal) Single
503156	Polypropylene Funnel
503164	Luer Needle 19 Gauge (Screw Fit)
503167	Glassware Protective Sleeve

## Optional Extras

Part No.	Product
101005	Results Manager Software Package
503166	Wheel Trolley for Carry Case
503165	Solid Analysis Kit
620000	Aquamax KF Reagent Kit
503170	PRO25D Homogenizer 110V
503171	PRO25D Homogenizer 220V
503172	SB-1 Homogenizer 110V
503173	SB-1 Homogenizer 220V
503174	20mm x 115mm Generator Probe
503175	20mm x 200mm Generator Probe

## Certificates

All Aquamax KF Coulometric titrators are supplied with a calibration certificate traceable to national standards.

For additional technical information, specifications, MSDS data, user manuals, and exhibition news, visit our website at:

[www.grscientific.com](http://www.grscientific.com)

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