Aquamax KF *Plus*

Aquamax KF *Plus* titrators have been specifically designed for the determination of water content. Combining coulometry with the Karl Fischer method, Aquamax KF titrators determine the water content of samples by measuring the amount of electrolysis current necessary to produce the required iodine – this is an absolute technique which does not require the calibration of reagents.

The Aquamax KF *Plus* is a truly versatile model which includes a built-in battery and printer to enable use in areas where the power supply is irregular. Low Drift Cell twin port glassware, results manager software and accessories are supplied as standard. As well as being a stand-alone instrument, the Aquamax KF *Plus* can be combined with an Oil Evaporator or a Solids Evaporator system. Suitable for a wide range of applications the Aquamax KF *Plus* can be used to determine water contents of liquids, gases and solids.

The Aquamax KF *Plus* offers many advantages over competition. Easy to use – simple to programme so that only a single button needs to be pressed for a titration, everything else is automatic. Results can also be downloaded via the Results Manager software package onto a pc spreadsheet.

Results Manager

This is a windows application that allows you to view and print sets of results created by the Aquamax KF Coulometric. 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 a standard item included with the Aquamax KF.

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
- Fully portable
- Low drift cell design
- Automatically compensated errors (patented technique)
- Results Manager software
- Optional carry case
- Conforms to ASTM D1533, D4928, D6304, IP386, IP438, API MPMS Chapter 10.9, IEC60814, ISO 10101-3, 10337 & 12937

Areas of application:

- Petrochemical
- Power (electricity)
- Contract Laboratories
- Universities
- Pharmaceuticals & Toiletries / Cosmetics
- Aviation
- Chemicals
- Gases
- Automotive

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

Power supply: 90-264V AC, 47-63 Hz.
12V DC car adapter/internal battery

Dimensions: 250 x 245 x 120 mm

Weight: 3.5 kg

Ordering Information

Part No.	Product
71000	Aquamax KF *Plus*
Supplied Accessories (also available as spare items)	
503053	Titration Vessel LDC
503054	Detector electrode LDC
503057	Electrode lead
503055	Generator electrode (with frit) LDC
503058	Desiccant tube & cap
503059	Injection septa (pack 10)
503063	Gas Tight 1.0ml syringe
503065	Luer needle 17 gauge
503073	Thermal paper roll
503072	Funnel
503070	Molecular sieve
101005	Results Manager software package

Optional Accessories

Part No.	Product
503056	Generator Electrode without frit LDC
503062	Gas Tight Syringe 0.25ml
503064	Gas Tight Syringe 5.0ml
503067	Luer Needle Pair (17 & 19 gauge)
61000	Aquamax KF Formula Reagent Kit
61003	Water Standard 0.1mg/ml, 10x5ml
61004	Water Standard 1.0mg/ml, 10x5ml
61005	Water Standard 10.0 mg/ml, 10x5ml

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.

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

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Aquamax KF *ECO*

The Aquamax KF *ECO* has been specifically designed as an economical, entry level coulometric Karl Fischer titrator. Combining coulometry with the Karl Fischer method, our titrators determine water content of samples by measuring the amount of electrolysis current necessary to produce the required iodine – this is an absolute technique which does not require calibration of the reagents.

Suitable for a wide range of samples, such as incoming raw materials through to outgoing finished products in many industries including petrochemical, power, automotive, chemical, pharmaceutical and cosmetics.

The Aquamax KF *ECO* offers many advantages over other coulometers. Easy to use – simple to programme so that only a single button needs to be pressed for a titration, everything else is automatic. The keypad, stirrer unit and titration vessel are all located on a single, small footprint module. Results can also be downloaded via the Results Manager software package onto a pc spreadsheet. Contact our technical support team for free application assistance.

Results Manager

This is a windows application that allows you to view and print sets of results created by the Aquamax KF Coulometric. 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 a standard item included with the Aquamax KF.

Key Features

- Simple operation
- 10 user programmable methods
- 1 ppm / 100%
- Results in ppm, mg/kg,% and µg water
- Multi language display
- Small footprint
- Robust titration cell design
- ACE control system (patented technique)
- Results Manager software

Areas of Application

Raw Materials
- Inorganic and organic salts, oxides, peroxides and carbonates

Pharmaceutical
- Tablets
- Salves and creams
- Drugs
- Vitamins

Cosmetics
- Soaps, shower gels and shampoos
- Dental Care and mouth rinse products
- Sprays

Beverages

Dairy and Meat Products

Honey, Molasses and Sugars

Tobacco products

Animal Feed

Biological
- Proteins and gelatins
- Hormones and steroids
- Dried plant material
- Vaccines

Petrochem
- Hydrocarbons
- Lubricating, motor oil and greases
- Hydraulic, insulating and transformer oils
- Mineral oils

Plastics

Surfactants

Paints, lacquers and solvents

Leather, paper and textiles

Agriculture

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

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, %

Method storage: 10 user programmable methods

Sample ID number: User programmable

Stirrer speed: Microprocessor controlled

Languages: Multi languages – user selectable

Data outputs: USB and RS232 ports

Removable Data storage: Flash drive (memory stick)

Data Entry: 15 key touchpad

Display: 40 character alphanumeric backlit LCD

Power supply: 90-264V AC, 47-63 Hz.

Dimensions: 250 x 245 x 120 mm

Weight: 3.5 kg

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

Ordering Information

Part No.	Product
71000 *ECO*	Aquamax KF *ECO*
Supplied accessories (also available as spare items)	
Part No.	**Product**
503046	Titration vessel single port
503048	Detector electrode for single port vessel
503049	Generator electrode (with frit) for single port vessel
503051	PTFE sleeves (pack 5 each)
503058	Desiccant tube & cap
503059	Injection septa (pack 10)
503060	1ml glass syringe
503065	Luer needle 17 gauge
101005	Results Manager software

Optional Accessories

Part No.	Product
503062	Gas Tight Syringe 0.25ml
503063	Gas Tight Syringe 1.0ml
503064	Gas Tight Syringe 5.0ml
61000	Aquamax KF Formula Reagent Kit
61003	10 x 5ml 0.1 mg/ml Water Standard
61004	10 x 5ml 1.0 mg/ml Water Standard
61005	10 x 5ml 10.0 mg/ml Water Standard
503057	Electrode Lead
503050	Generator electrode (without frit) for single port vessel

About G.R. Scientific

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Certificates

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

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Aquamax KF *Portable*

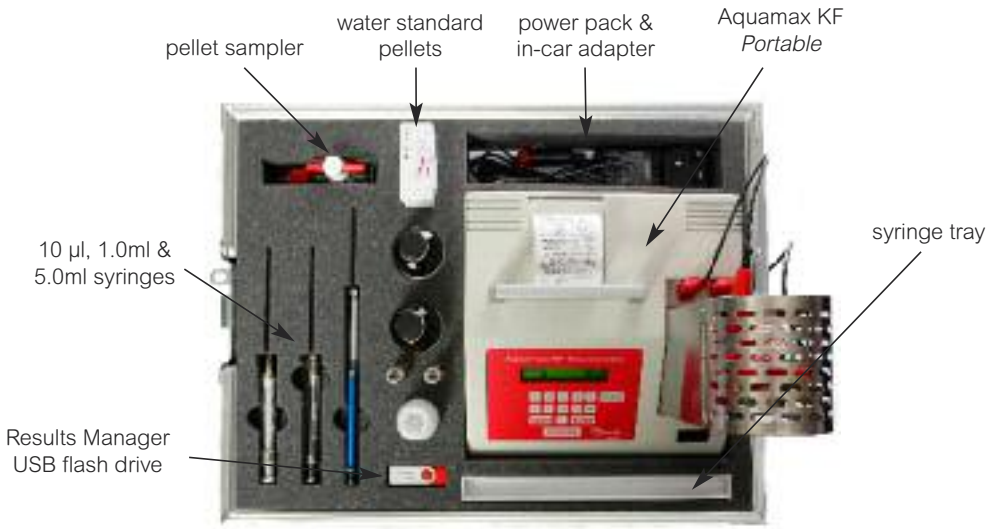
Measuring and controlling the amount of water in oils is of considerable economic importance to the industrial community, particularly to the crude oil and electric power industries. Water content determination by Karl Fischer titration is no longer restricted to being used by a chemist in a laboratory – 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 specialised version of the very successful Aquamax KF Coulometer which has built-in carry handle and a stainless steel protection cage around 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 cell design enables users to transport the instrument with reagents already in the titration cell so that it can be used immediately on arrival.

Aquamax KF *Portable* OPS Workstation

The Aquamax KF *Portable* can also be supplied complete with an OPS Workstation. A sturdy outer case secures and enables transportation of the titrator complete with 2 spare anode reagent bottles, 2 spare cathode reagent vials, distilled water and 10 microlitre syringe for water standard test, pellet sampler and water standard pellets, 1ml & 5ml sample syringes and luer needles, power pack, in-car adapter and Results Manager USB flash drive for storage of all results whilst in the field.



Above the flash drive are two bottles anode reagent, two cathode reagent vials and distilled water bottle.

Results Manager

This is a windows application that allows you to view and print sets of results created by the Aquamax KF Coulometric. 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 a standard item included with the Aquamax KF.

Water Standard

The display prompt when first switched on reads “Water Standard Test” . By simply pressing just one single button, the titrator is ready for the operator to inject 10 µl of distilled water as required by the ASTM methods for these analyses. After running this 10,000 µg check the titrator reverts back to ordinary user mode. The Water Standard Test can also be used to check lower microgram count levels using water standard pellets and pellet sampler.

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
- Fully portable
- Low drift cell design
- Automatically compensated errors (patented technique)
- Results Manager software
- Optional carry case
- Optional OPS workstation

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

Stainless steel protection cage

Carrying handle

Power supply: 90-264V AC, 47-63 Hz.
12V DC car adapter/internal battery

Dimensions: 250 x 245 x 300 (incl. cage)

Weight: 4 kg

Ordering Information

Part No.	Product
71000P	Aquamax KF *Portable*
Supplied Accessories (also available as spare items)	
503053	Titration Vessel LDC
503054	Detector electrode LDC
503055	Generator electrode (with frit) LDC
503058	Desiccant tube & cap
503059	Injection septa (pack 10)
503063	Gas Tight 1.0 ml syringe
503065	Luer needle 17 Gauge
503073	Thermal paper roll
101005	Results Manager software package

Optional Accessories

Part No.	Product
201004	Carry Case
503062	Gas Tight Syringe 0.25ml
503064	Gas Tight Syringe 5.0ml
61000	Aquamax KF Formula Reagent Kit
61003	10 x 5ml 0.1 mg/ml Water Standard
61004	10 x 5ml 1.0 mg/ml Water Standard
61005	10 x 5ml 10.0 mg/ml Water Standard
503057	Electrode Lead
101018	OPS Workstation complete

About G.R. Scientific

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Certificates

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

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