



**Metrohm**  
ion analysis  
swiss made 



# TitriC

The power pack for ion analysis

Titration and  
Ion Chromatography

# TitriC – the integrated system for fully automatic water analysis

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- As many analyses as required with each sample – one single report
- Simultaneous measurements
- Safe data storage in database
- Unique calculation of ionic balance
- Optimal combination of two different techniques
- Only one sample changer
- Only one user interface
- Minimum space requirements
- Complete determination of up to 100 samples automatically



validiC™

tiamo™  
titration and more

titrando®

# The analysis

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- Direct measurement, titration and ion chromatography
- Quick, reliable and reproducible
- Fully automatic and accurate
- Very easy to use
- Cost-efficient

# The system

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- 809 Titrando with 815 Robotic USB Sample Processor XL or 855 Robotic Titrosampler
- 861 Advanced Compact IC
- Quality «Made in Switzerland»



TitriC 1 – extremely compact system for direct measurements, titration and ion chromatography.



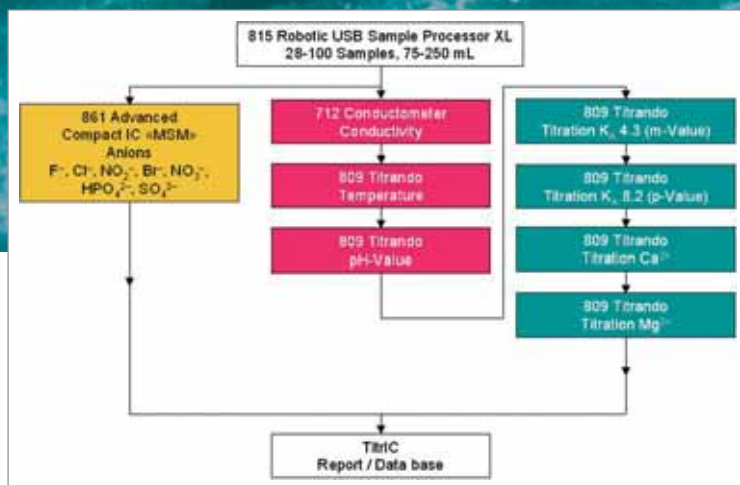
# TitriC – new possibilities in ion analysis through the unique combination of titration and ion chromatography

TitriC fully enables the automatic analysis of drinking water. All ionic components are determined quickly, reliably and reproducibly. Results are presented as a single report or stored in the integral database.

TitriC is the total solution for automatic completion of your workload. For example, the samples can be logged in by a barcode reader and placed on the sample rack. TitriC then controls the whole procedure and works day or night – or even over the weekend. Intelligent control and thoroughly tested technology guarantee reliable analyses. Up to 100 samples can be determined without any manual intervention. The high degree of automation reduces costs and increases the precision of the measurements.

By using defined criteria, TitriC is able to make logical decisions such as automatically diluting water samples. Calibration of the system also takes place automatically.

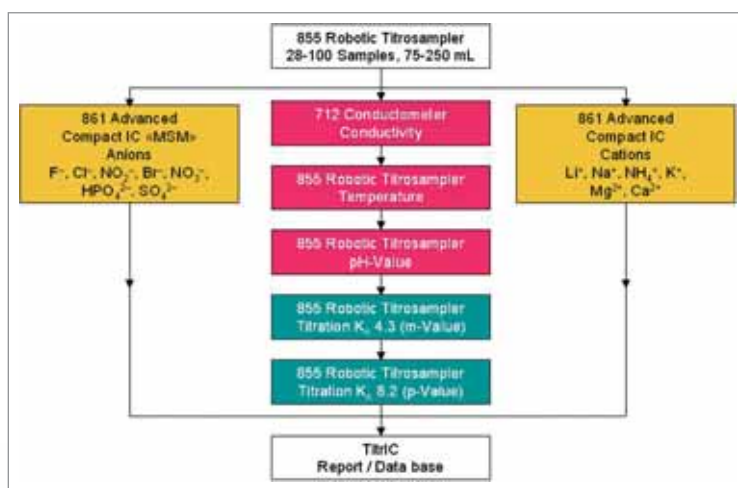
Particular attention has been given to keeping space requirements to a minimum. Synergies between titration, direct measurement and ion chromatography from Metrohm are also evident: All methods use the same liquid handling units with a common sample changer. This helps to save both costs and bench space – a rapid return on investment is guaranteed.



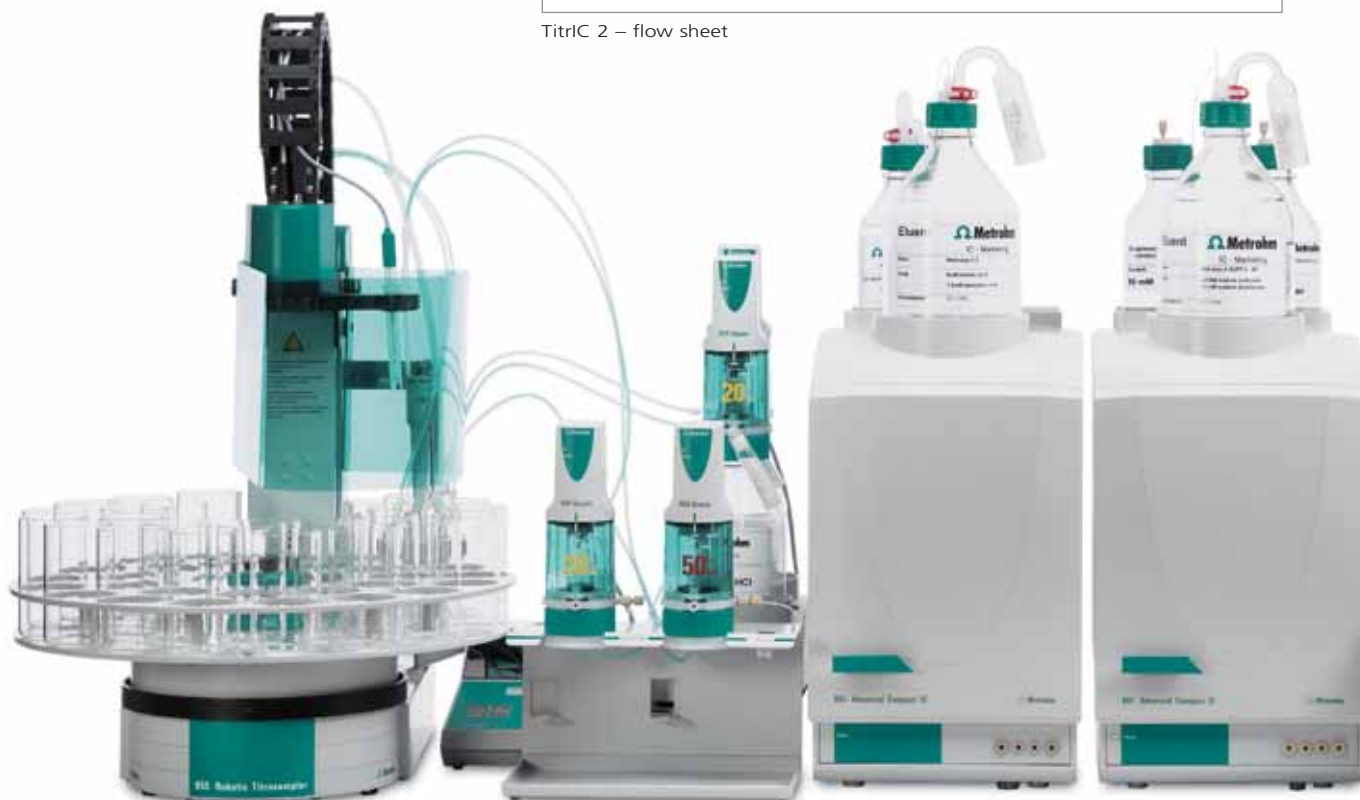
TitriC 1 – flow sheet

# TitriC – water analysis from a single source

The determination of ionic components in water samples involves four fields: direct measurement, ion chromatography, titration and voltammetry. Metrohm accepted the challenge of combining these methods in a single system in 1998, and the first TitriC system was introduced. Rapid advances in instrumentation development have allowed Metrohm to present a new version of the extremely powerful TitriC system, in which direct measurement, titration and ion chromatography are incorporated in a single analytical unit.



TitriC 2 – flow sheet



TitriC 2 – direct measurements and titration combined with anion and cation chromatography – the most compact solution for universal water analysis.

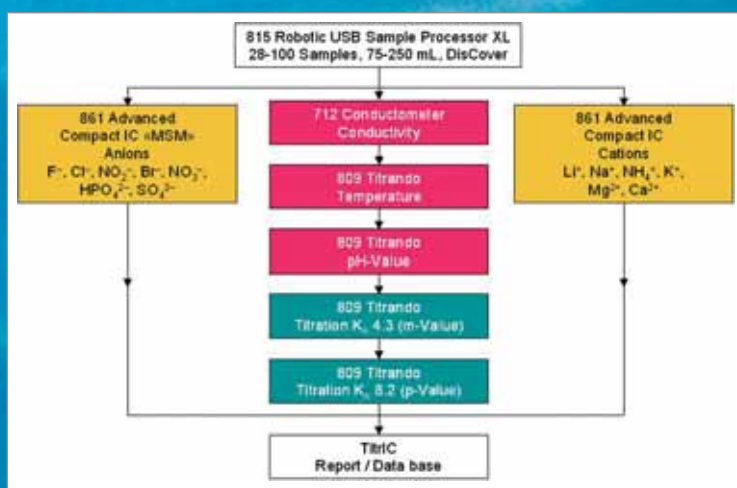


# TitriC – custom-made analytical system

TitriC can be adapted to suit any number of analytical requirements, in which the application determines the parameters of interest. This means that different methods and procedures can be freely combined. TitriC is available in three different basic versions:

- TitriC 1 covers the direct measurement of pH, conductivity and temperature, as well as the titrimetric determination of the p and m values. Calcium and magnesium are also determined titrimetrically. All anions are determined by ion chromatography.
- TitriC 2 carries out the direct measurement of pH, conductivity and temperature, and also determines the p and m values. All cations, including calcium and magnesium, and all anions present in the sample are determined by two separate ion chromatographs.
- TitriC 3 is the same as TitriC 2, but has an additional feature: The covers of sealed sample vessels are automatically removed immediately before the measurement.

Extremely flexible TitriC software is included in the range of standard equipment; this allows any titrations or direct measurements to be carried out as required. Great attention has also been given to flexibility in the ion chromatography field: In principle, any type of anion or cation determination can be carried out by TitriC – which is why TitriC is not only the system of choice for water analysis, but is also ideal for applications in food, electroplating or pharmaceutical industries.



TitriC 3 – flow sheet



TitriC 3 – sensitive samples can be sealed and placed on the sample rack. The 815 Robotic USB Sample Processor XL removes the covers of the sample beakers automatically just before the measurement.

# TitriC can handle it

## Direct measurements with TitriC

- pH value
- Temperature
- Conductivity

## Titration with TitriC

- p value
- m value
- Calcium
- Magnesium

## Anion IC with TitriC

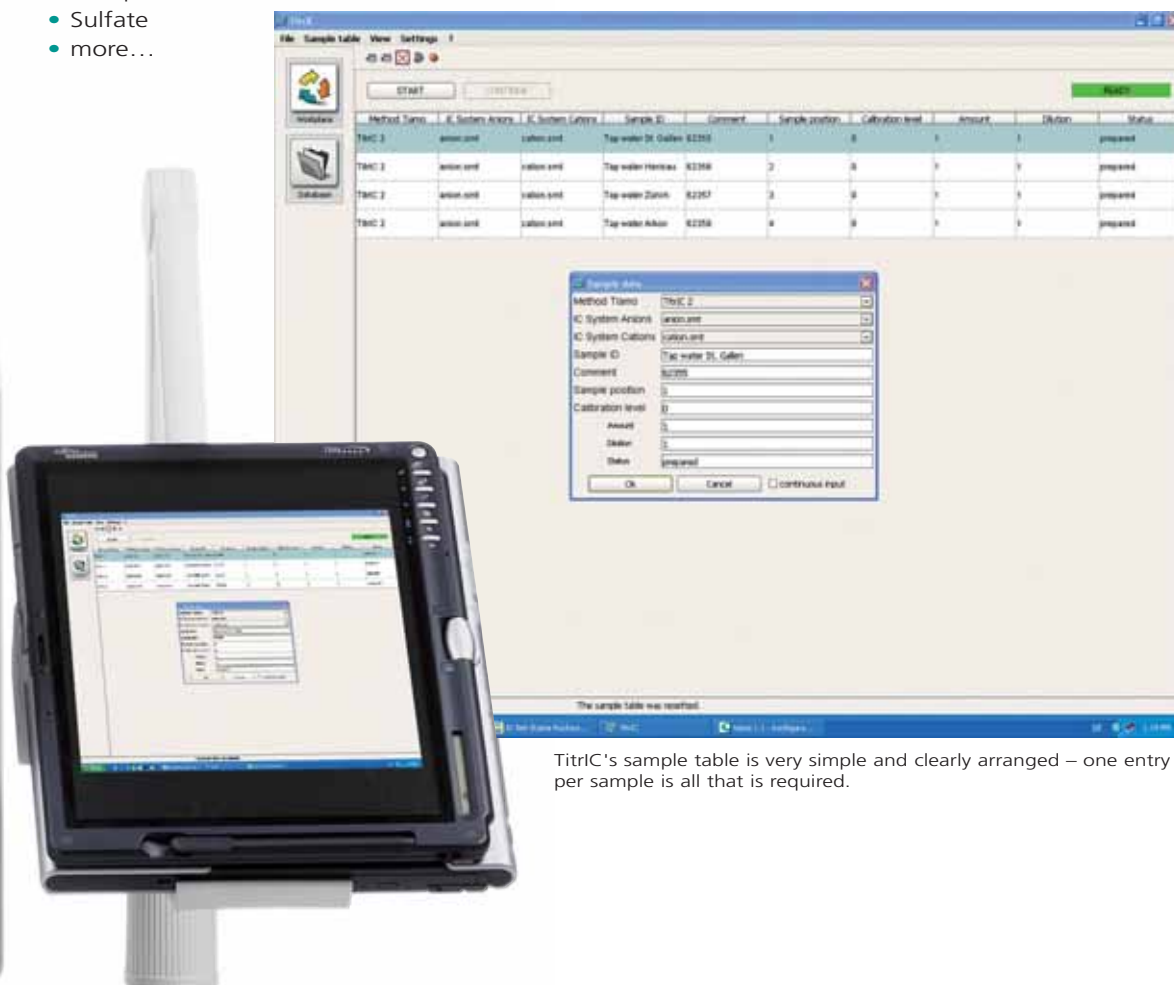
- Fluoride
- Chloride
- Bromide
- Nitrite
- Nitrate
- Phosphate
- Sulfate
- more...

## Cation IC with TitriC

- Lithium
- Sodium
- Ammonium
- Potassium
- Calcium
- Magnesium
- more...

## Calculations with TitriC

- Molar concentrations of all cations
- Molar concentrations of all anions
- Ionic balance



TitriC's sample table is very simple and clearly arranged – one entry per sample is all that is required.

TitriC 2 – user-friendly control of direct measurements, titration and ion chromatography from the Tabloid PC.

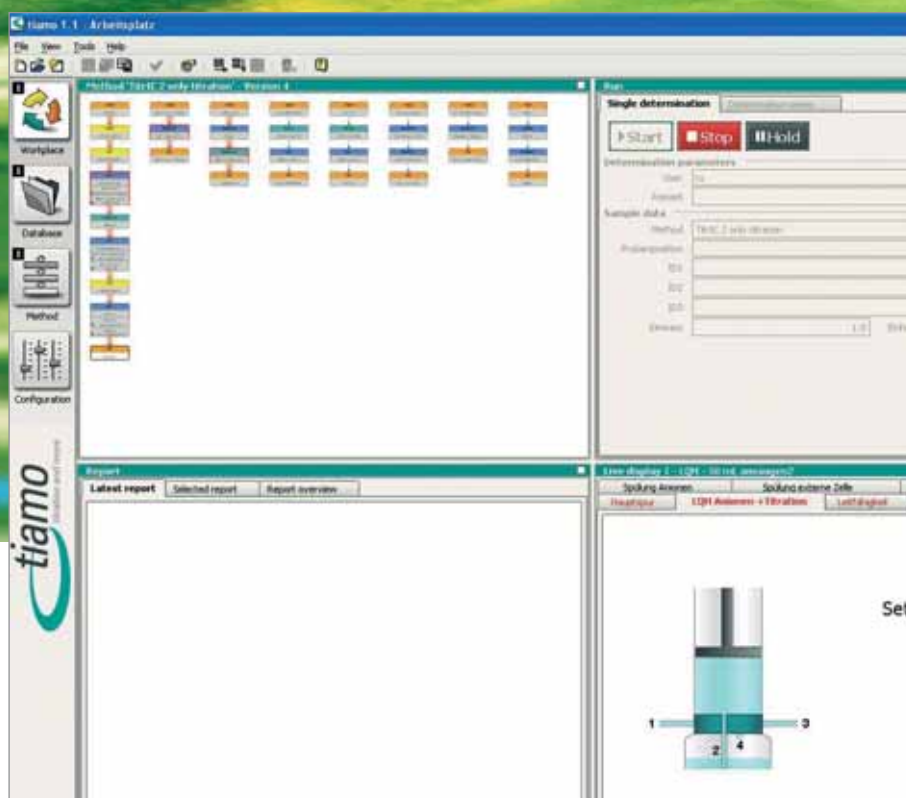


# TitriC means flexibility

The parameters mentioned above are typical for water analysis. TitriC can also be adapted to other applications without any problem – additional titrations can be added or existing ones modified. The same applies for ion chromatography: The range of ions to be determined can be easily extended.

Your local Metrohm supplier can provide competent information about application problems. Comprehensive documentation of Metrohm applications for titration and ion chromatography can also be found at [www.metrohm.com](http://www.metrohm.com).

A water analysis overview is provided in the Metrohm monograph: «The determination of water constituents with Metrohm instruments», which can be obtained free of charge from your local Metrohm supplier.



In the background, **tiamo** controls liquid handling, direct measurement and titration.

# Ordering information

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**TitriC 1** Fully automated system for the direct measurement of temperature, conductivity and pH value, the titrimetric determination of p and m values, calcium and magnesium, and the ion chromatographic determination of anions.

The system comprises a 712 Conductometer, four 800 Dosinos, an 802 Rod Stirrer and an 809 Titrand plus an 815 Robotic USB Sample Processor XL and an 861 Advanced Compact IC with chemical suppression.



**TitriC 2** Fully automated system for the direct measurement of temperature, conductivity and pH value, the titrimetric determination of p and m values, and the ion chromatographic determination of cations including calcium and magnesium, as well as the ion chromatographic determination of anions.

The system comprises a 712 Conductometer, three 800 Dosinos, an 802 Rod Stirrer, an 855 Robotic Titrosampler, an 861 Advanced Compact IC without chemical suppression and an 861 Advanced Compact IC with chemical suppression.



**TitriC 3** Fully automated system for the direct measurement of temperature, conductivity and pH value, the titrimetric determination of p and m values, and the ion chromatographic determination of cations including calcium and magnesium, as well as the ion chromatographic determination of anions. The Sample Processor is equipped with the DisCover function for the automatic removal of the covers from the sealed sample vessels.

The system comprises a 712 Conductometer, three 800 Dosinos, an 802 Rod Stirrer, an 809 Titrand, an 815 Robotic USB Sample Processor XL, an 861 Advanced Compact IC without chemical suppression and an 861 Advanced Compact IC with chemical suppression.



# Optional accessories

## Sample racks

6.2041.800 <sup>a</sup>	Sample rack 100 x 75 mL
6.2041.810	Sample rack 34 x 150 mL
6.2041.820 <sup>a</sup>	Sample rack 28 x 250 mL
6.2041.840	Sample rack 59 x 120 mL

## Sample beakers

6.1432.210 <sup>a</sup>	Sample beaker 75 mL made of glass (for 6.2041.800)
6.1432.320 <sup>a</sup>	Sample beaker 250 mL made of glass (for 6.2041.820)
6.1453.250 <sup>a</sup>	Sample beaker 250 mL made of polypropylene (for 6.2041.820)
6.1459.300	Disposable beaker 120 mL made of polypropylene, 100 pcs. (for 6.2041.840)
6.1459.310	Disposable beaker 150 mL made of polypropylene, 1000 pcs. (for 6.2041.810)

## Electrodes

6.0257.000 <sup>b</sup>	Aquatrode Plus with Pt 1000
6.0508.110 <sup>c</sup>	Calcium ISE with polymer membrane

## Separation columns

6.1006.510	Anion column Metrosep A Supp 5 – 100
6.1006.500	Guard column Metrosep A Supp 4/5 Guard
6.1010.210	Cation column Metrosep C 2 – 100
6.1010.200	Guard column Metrosep C 2 Guard

<sup>a</sup> suitable for DisCover function of TitrIC 3

<sup>b</sup> included in delivery package of TitrIC 1, 2 and 3

<sup>c</sup> included in delivery package of TitrIC 1





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