

# 822 Titration Curve Simulator



Diagnostic tool for the quick and easy testing of titrators. Simulates reproducibly:

- Acid-base titration with one equivalence point
- Citric acid titration with three equivalence points
- Conditioning for Karl Fischer titration
- Karl Fischer titration

## The diagnostic tool for potentiometric and...

### Test to be certain

Metrohm instruments are known for their precision and reliability. Thanks to their robust construction they are hardly ever affected by external mechanical or electrical influences. Even though a malfunction can never be completely excluded, it is normally due to operator errors, faulty connections or third-party instruments. Should you ever suspect a fault in a Metrohm instrument, it is always advisable to localize the problem using fast and easy to perform diagnostic tests.

These diagnostic tests require tools that are not readily found in the laboratory. The 822 Titration Curve Simulator is such a tool.

It is connected **instead of the electrode**, is extremely easy to operate and allows to generate potentiometric as well as Karl Fischer titration curves. By means of these curves you can rapidly gauge the proper functioning and the accuracy of the instrument concerned.



822 Titration Curve Simulator with 808 Titrando and titration curve on the Touch Control

### Profitable simulation

When a titration is carried out, a solution of known concentration reacts with a solution whose concentration is unknown. Using the signal values supplied by the sensor and the corresponding reagent volumes, the titrator evaluates the **equivalence point**, i.e. the point at which the amount of titrant added is exactly equivalent to the amount of the analyte to be determined.

#### «Dry» validation

During the instrument test the 822 Titration Curve Simulator reproducibly simulates a titration, which means that the user gets a titration curve with an **equivalence point** by a «dry» method, without having to use any chemicals and electrodes.

Are the obtained results accurate? Do the titrator and the dosing elements work correctly and is the evaluation of the equivalence points still as reliable as when the instrument was commissioned? These question can arise in any lab or plant that uses titration. Buret cylinders can be gauged and verified with an analytical balance – but what about curves? Users require a diagnostic tool that allows them to test their titrators themselves whenever the need exists.



## ... Karl Fischer titrators

### How does it work?

As a function of the dispensed volume, the 822 Titration Curve Simulator generates a voltage that changes with each dosing step. The resulting S-shaped curve can have one or more equivalence points and is suitable for all current Metrohm titration systems. The titration curve data are digitally stored in the curve simulator. This allows one to obtain strictly reproducible equivalence points.

### Delicate evaluation

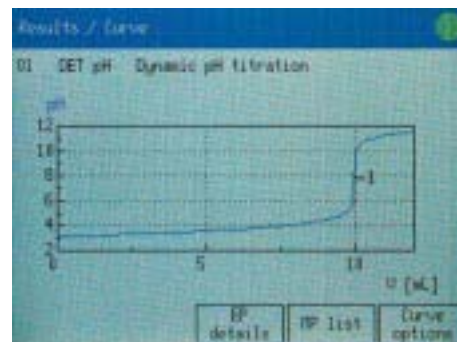
Occasionally it may happen that previously found equivalence points suddenly are no longer evaluated. Is it the chemistry, the solvent, the electrodes or even the titrator or has there been a sudden change in the sample? These are the questions that confront the analyst. The Titration Curve Simulator also generates extremely flat curves that nevertheless can be evaluated. If your titrator is able to evaluate such curves, an instrument fault can be excluded. This means that the range of possible error sources is reduced quickly and economically.

### Practice-oriented simulation

The instrument simulates potentiometric as well as Karl Fischer titrations. The simulated curve of a citric acid titration is especially exacting on the evaluations software as the first and second potential jump are very low indeed. There is also a special mode that allows to simulate Karl Fischer titrations with sample addition after conditioning.

### Understand the titration parameters!

Reagent addition has a decisive influence on evaluation. As a rule, the result is more precise the more measuring points there are. However, in practice, the time needed for the titration is a very important criterion. Also here the Titration Curve Simulator is of great help: Quickly and without using any chemicals you can visualize the effect of the different titration parameters on the precision and the titration rate.



Curve generated by the Titration Curve Simulator; the titrant consumption is plotted on the horizontal axis, the pH value on the vertical axis.



The LEDs of the Titration Curve Simulator provide a real-time impression of the dosing element control.



799 GPT Titrimetric Titrator with display of simulated titration curve, generated by the 822 Titration Curve Simulator.

## Technical specifications

### *Curve types*

Acid-base

Citric acid

Conditioning

Karl Fischer

### *Analog output*

Voltage range                      -2500...+2500 mV

### *Ambient temperature*

Nominal operational range      +5 ...+45 °C at max. 85% humidity

Storage                                -40 ...+70 °C

Transport                            -40 ...+70 °C

### *Power supplied by titrator*

Voltage                                +5V / +12 V

Power consumption                0.1 W

### *Dimensions*

Width                                  150 mm

Height                                41 mm

Depth                                118 mm

### *Weight (without accessories)*

704 g

## Essential features

Status control lamps of 822

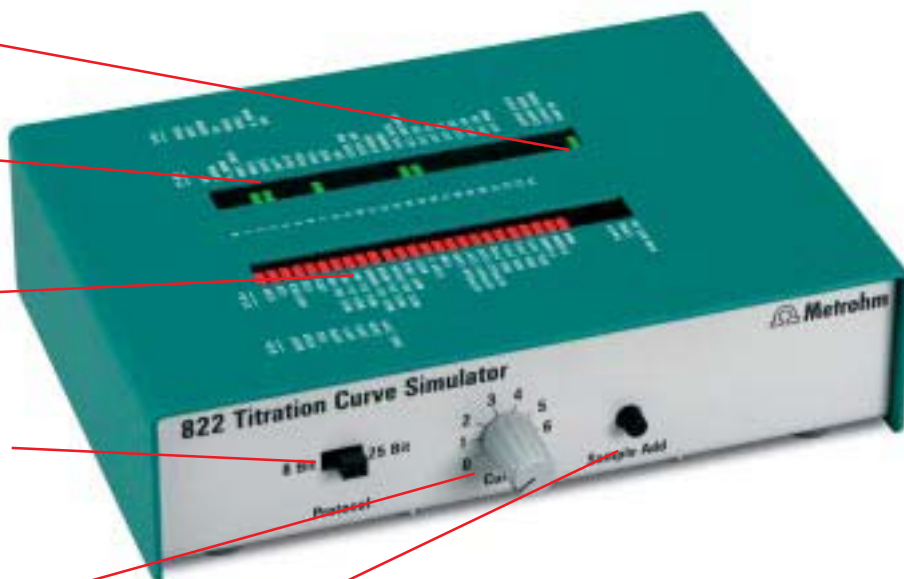
Information on BUS activities. The LEDs represent the serial information in parallel form

Response of dosing system to the BUS activities

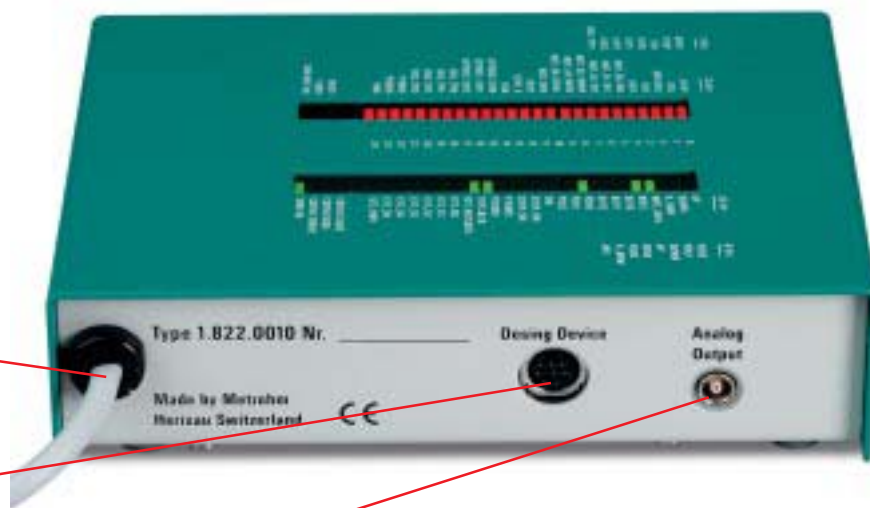
Switch for selecting between MSB-controlled dosing systems (serial 25 bit) and serially controlled dosing systems with 8 bit

Preselector switch for the different titration curves

Simulated sample addition for Karl Fischer titrations



822 Titration Curve Simulator



Rear view of 822 Titration Curve Simulator

Titration connection either direct or via adapter

Connection for external dosing system

Analog output for the measuring signal, is connected to the titrator



## Ordering information

### 2.822.0010 Titration Curve Simulator

Diagnostic tool for titrators. Supplies strictly reproducible data for acid-base titrations, citric acid titration (three equivalence points), Karl Fischer titration and conditioning for Karl Fischer titration. Allows to check the proper functioning of the electrode inputs, the dosing outputs and the evaluation software of the titrator. Power supplied by the titrator to be tested.

#### Which titrators can be tested with the Titration Curve Simulator?

As a rule, all Metrohm Titrinos, Titroprocessors (726, 796) and Titrandos can be tested with the 822 Titration Curve Simulator. The required cables or adapters are included in the standard accessories of the 822 Titration Curve Simulator.



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