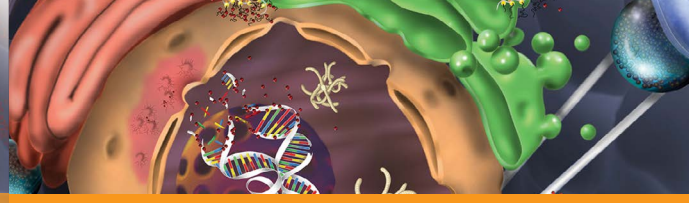
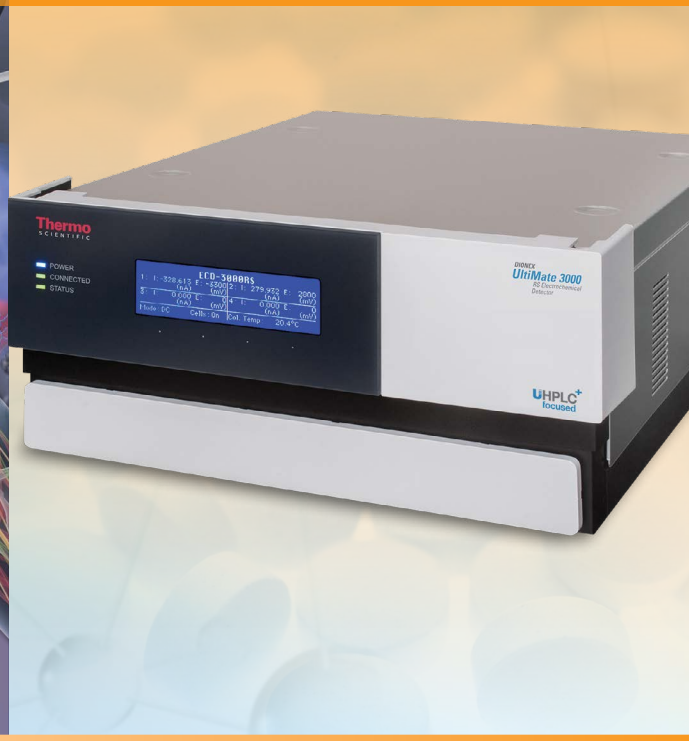


Thermo Scientific
Dionex UltiMate 3000
Electrochemical Detector



Redefining electrochemical detection

Sensitivity • Selectivity • Optimized Performance

UHPLC+ focused

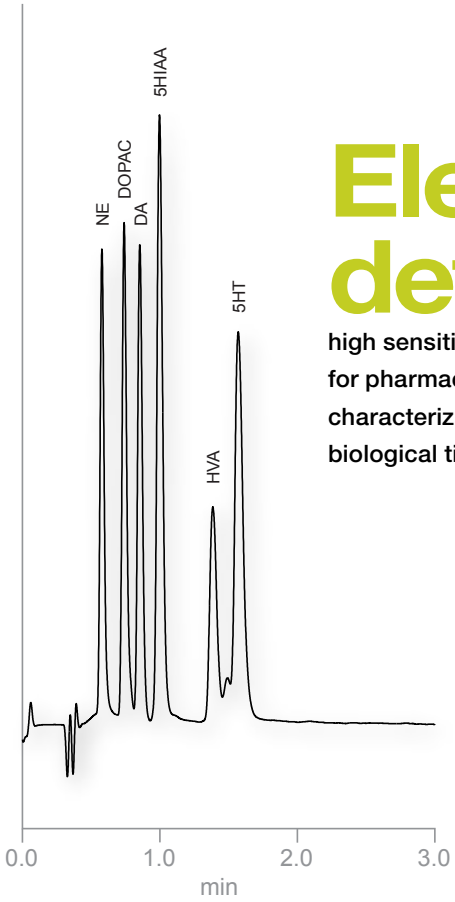
Thermo SCIENTIFIC

Higher sensitivity
greater selectivity

The Thermo Scientific™ Dionex™ UltiMate™ 3000 electrochemical detector, **designed by the pioneers of coulometric electrochemical detection, delivers state-of-the-art sensor technologies complete with an entire range of high performance and ultra-high performance LC systems optimized for electrochemical detection.**

For today's researcher, there is a continuing need for detecting vanishingly small quantities of analyte and often in complex samples. Because electrochemical detection measures only compounds that can undergo oxidation or reduction it is both highly sensitive and very selective.

- Direct measurement to femtogram levels
- Very low sample volume requirement
- Readily eliminates matrix interferences
- Selectively detects analytes of interest



Improved temporal resolution in microdialysis experiments with UHPLC

Electrochemical detection delivers

high sensitivity for neurotransmitter analysis, simplicity and robustness for pharmaceutical or clinical diagnostics, and the selectivity for the characterization of complex samples such as natural products, biological tissues and fluids.

Take it to
the next level

The UltiMate 3000 ECD-3000RS takes electrochemical detection to the next level with
UHPLC compatibility and total system integration, all with unprecedented operational simplicity.

- Choice of sensors – both coulometric and amperometric sensors to meet the demands of any application
- UHPLC compatibility – ultralow peak dispersion and high data acquisition rates for conventional or fast, high resolution chromatography
- Modular – easily expandable to multiple independent sensors for unrivaled flexibility
- Gradient compatibility – the only electrochemical detector capable of operating aggressive gradients for method flexibility
- Autoranging – simultaneously measure both low and high levels of analytes without losing data
- SmartChip™ technology – easy operation with automatic sensor recognition, event logging and electrode protection

pharmaceutical *clinical research* *food and beverage*
neuroscience *natural products* *metabolomics*
clinical diagnostics *oxidative stress* *botanicals*

SmartChip sensors
make the difference

Introducing SmartChip Technology

The next generation of electrochemical sensors have arrived—all sensors for the ECD-3000RS detector have built-in SmartChip technology:

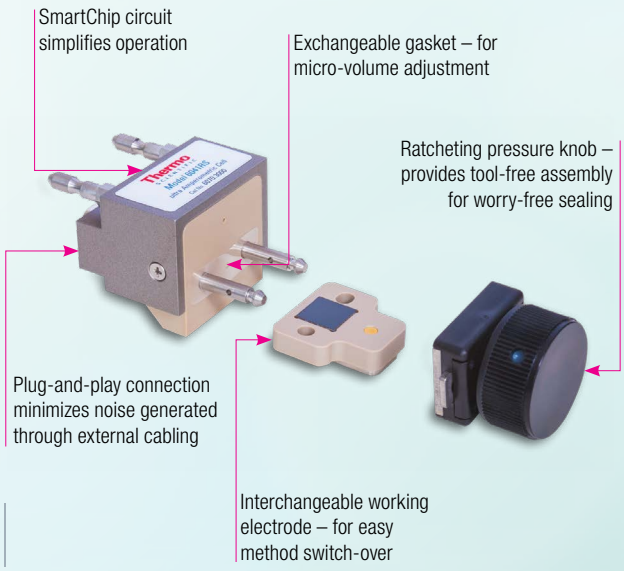
- Automatic recognition – identifies installed sensor model type and defines data channels in Thermo Scientific Dionex Chromeleon™ chromatography data system software
- Audit trail logging – records sensor diagnostics making it ideal for GMP/GLP reporting
- Integrated sensor protection – selects the allowable potential for the sensor and working electrode material

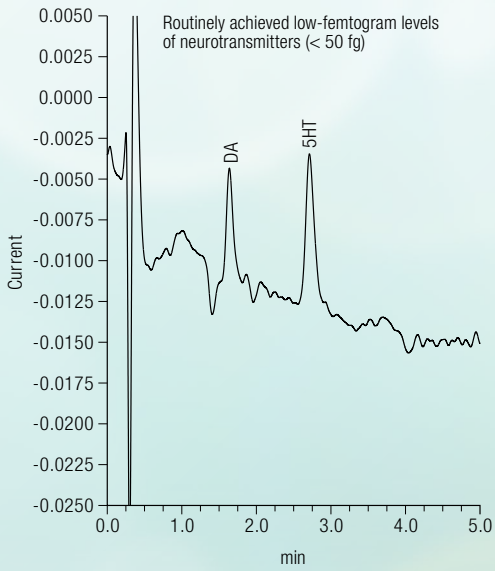
Choose from amperometric and coulometric sensors

Amperometric sensors are chosen when an application demands high sensitivity measurement especially when sample volumes are limited. Coulometric sensors, unique to Thermo Fisher Scientific, are the sensors of choice to maximize both selectivity and sensitivity.

The amperometric Thermo Scientific Dionex 6041RS ultra analytical sensor

- Optimized for high sensitivity
- Compatible with column formats from microbore to conventional 4.6 mm diameters
- HPLC and UHPLC compatible
- Available with a variety of working electrode materials, including boron-doped diamond (BDD)
- Maintenance-free solid state reference electrodes for long-term stability and reliability
- Easy assembly with new ratcheted design





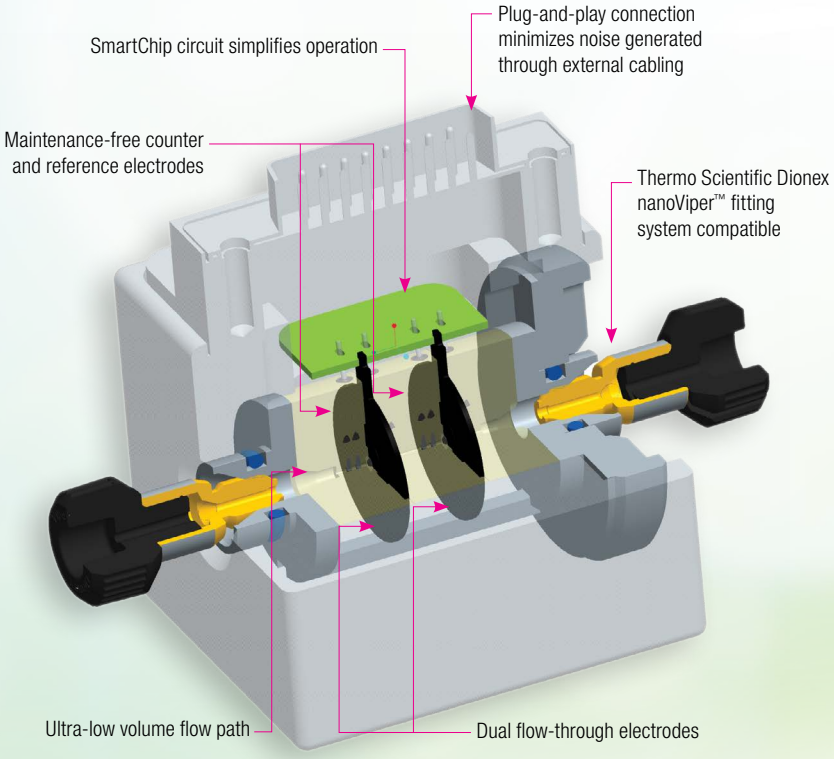
The Thermo Scientific Dionex 6011RS dual electrode coulometric sensor

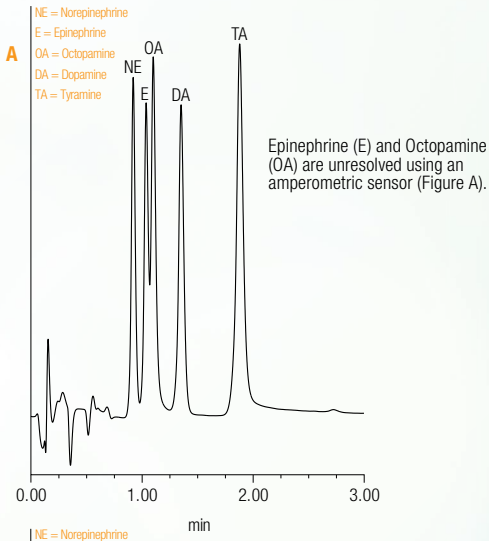
This sensor has flow-through graphite electrodes that provide near 100% efficiency, independent of flow rate. This reliable, general purpose sensor is maintenance-free for routine analysis with minimal downtime.

- Dual, independent electrode design for selective analysis
- Identify and resolve co-eluting analytes
- Ultra-low internal volume for HPLC and UHPLC compatibility
- Maintenance-free, solid-state reference electrodes for stability and reliability
- The industry standard for reliable electrochemical detection

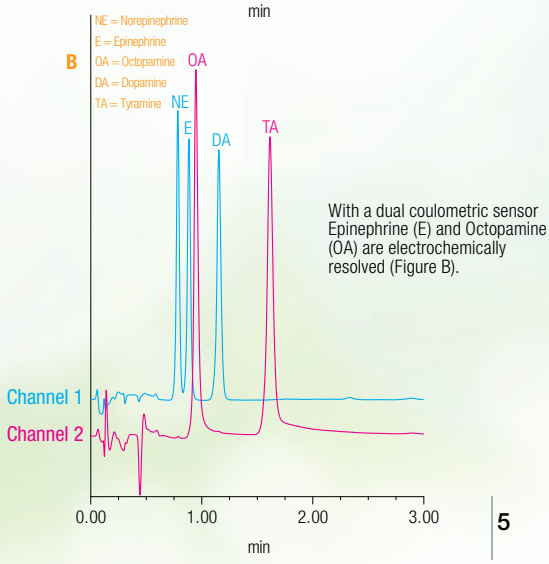
Coulometric electrodes offer more than just sensitivity. A distinct advantage is realized by manipulation using two coulometric electrodes in series. In screen mode, the high efficiency of the first electrode removes interferences, leaving the second electrode free to selectively measure the analytes without the need for complex sample preparation. This even allows for the resolution of co-eluting analytes.

In RedOx mode, the inherent electrochemical properties of some analytes can be used to further enhance the selectivity. The result is better quantitation—free from interferences.





Epinephrine (E) and Octopamine (OA) are unresolved using an amperometric sensor (Figure A).



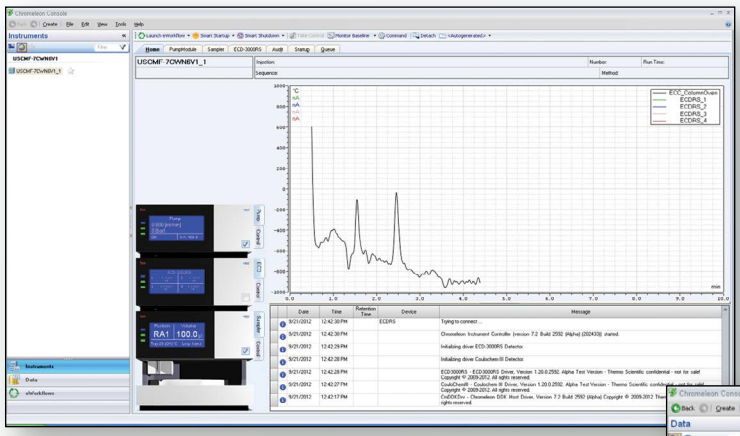
With a dual coulometric sensor Epinephrine (E) and Octopamine (OA) are electrochemically resolved (Figure B).

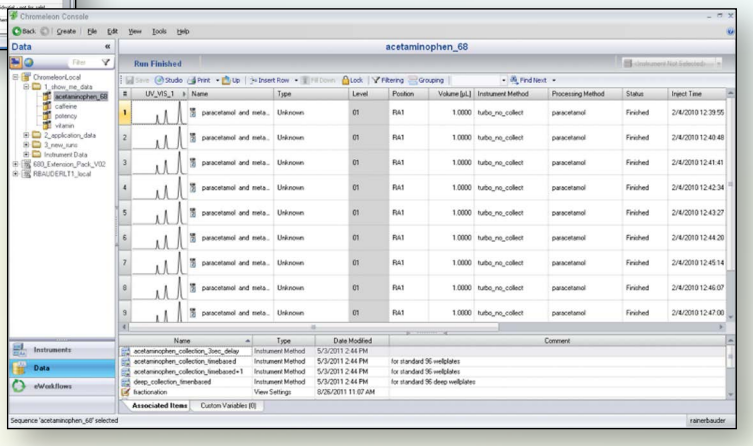
Optimized for
simplicity and performance

Operational Simplicity™ with Chromeleon software

The ECD-3000RS detector is controlled by Chromeleon chromatography data software. Using Operational Simplicity as its guiding design principle, Chromeleon 7 takes you from samples to results in the shortest time possible.

- Fully integrated with SmartChip Technology
- COBRA signal processing for automatic peak recognition
- SmartPeaks assistant recommends best available integration solution to individual or multiple chromatograms
- Streamline and automate the chromatography process from injection to final report using eWorkflows
- Seamless integration and access to the online electrochemical applications and methods library





Thermo Scientific UltiMate 3000 UHPLC+ Systems **Optimized for Electrochemical Detection**

Maximum performance comes not just from the detector but also from its integration with an LC system designed for electrochemical detection. UltiMate 3000 UHPLC+ systems set a new standard of robustness, durability and performance. The EC-optimized line of LC systems provide an inert fluidic flow-path that minimizes noise and unwanted auto-oxidation.

- Pumps and autosamplers designed to achieve the lowest possible electrochemical noise
- SmartFlow™ pump technology for zero pulse delivery, perfect for high sensitivity applications
- Autosampler with flow-through injection technology for sample loss, ideal when sample volume is limited

The EC-compatible nanoViper fitting system provides fingertight, zero-dead-volume connections for any column, at any flow rate, for any valve, and any pressure up to 1000 bar. Its elegant design ensures easy connection of all fluidics for every operator experience level

www.thermofisher.com/ECdetection

Australia +61 3 9757 4486
Austria +43 1 616 51 25
Benelux +31 20 683 9768
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Singapore +65 6289 1190
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