

# Trovion *iWP* - Electrolytic Water Purifier for RFIC™

The Trovion *iWP* is the first point-of-use electrolytic water purification system designed specifically for Dionex Reagent-Free™ Ion Chromatography (RFIC) system. The *iWP* produces ionically pure water for electrolytic eluent generation and suppression at analytical flow rates, using Trovion's patent pending CIRA electrolytic purification technology. Using the Trovion *iWP* system improves RFIC™ performance by reducing background conductivity, gradient blanks and baseline shifts resulting in lower detection limits, improved reproducibility and reliability.

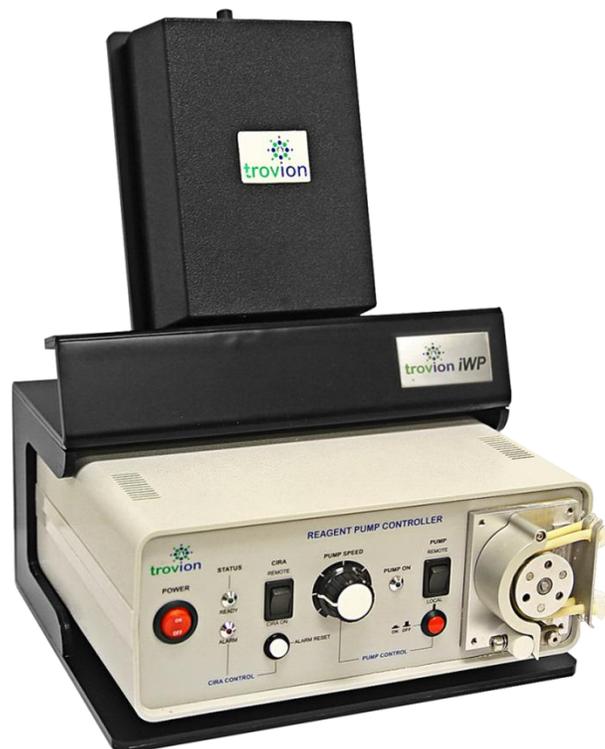
## How it works

The Trovion *iWP* system uses reverse osmosis, distilled or deionized water from the IC eluent bottles. Using the Reagent Pump Controller (RPC), water from the eluent bottles is pumped to the CIRA EP. In the CIRA EP, the feed water is purified electrolytically and then pumped directly to the RFIC™ system for electrolytic eluent generation and electrolytic suppression. The RPC features a variable speed dual channel peristaltic pump, a constant current power supply for the CIRA EP and relay or TTL control from the RFIC™ system.

Ionic contamination in the feed water is continuously removed by the CIRA EP using an applied electric field. The ion exchange materials in CIRA are simultaneously regenerated as the feed water is purified. Maintaining the ion exchange materials in the fully regenerated form improves ion removal efficiency. The CIRA EP uses homogeneous and composite ion exchange materials for

removal of weakly ionized species such as carbonate and silica. Continuous regeneration of the CIRA EP ensures that the product water is ionically pure, regardless of changes in the feed water quality.

Conventional ion exchange purification uses static ion exchange resin beds for deionization. Every volume of water which passes through the static ion exchange resin bed reduces the purification capacity. Recycling water in static systems consumes the ion exchange capacity of the mixed bed purification cartridges due to the continuous absorption of ambient carbon dioxide. This results in inconsistent water quality and frequent replacement of the mixed bed purification cartridge.



In contrast, CIRA EP water purification using continuous electrolytic regeneration removes contaminates ions and maintains the ion exchange materials in the fully regenerated form. Feed water, containing carbonate and other trace ions, can be recycled with no loss in capacity. The CIRA EP is always ready to deliver the ionically pure water required for RFIC™ eluent generation and suppression.

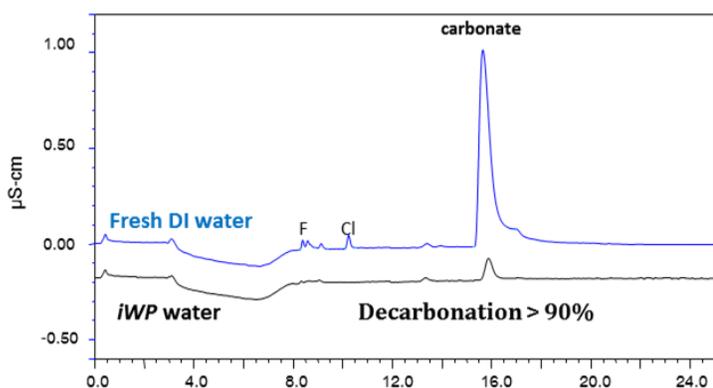


Figure 1: Comparison of deionized water and Trovion *iWP* water. (Conditions: Dionex AS18 separator (4 mm), 25 mM KOH @ 1.0 mL/min, ASRS®)

Figure 1 compares the anionic impurities of conventional deionized water from a laboratory water purification system (18.3 MΩ-cm) and the same water purified using the Trovion *iWP* system. The water (1 mL/min) was injected as a sample. Note the large reduction in the carbonate peak using the *iWP* system.

A major contaminant in anion RFIC is carbonate. Figure 2a shows the trend in carbonate (20 hours) using a 2L bottle of deionized water as the feed for RFIC™ and the same water after it was purified by the *iWP* (Figure 2b).

Without the *iWP* (Fig. 2a), the carbonate continues to increase while with the *iWP*, the carbonate is dramatically decreased and remains low. Reducing carbonate in anion RFIC™ improves quantitation and lowers detection limits

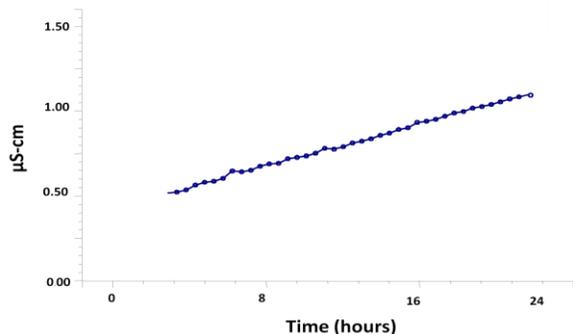


Figure 2a. Measured carbonate (peak height) by anion RFIC in deionized water (20 hours).

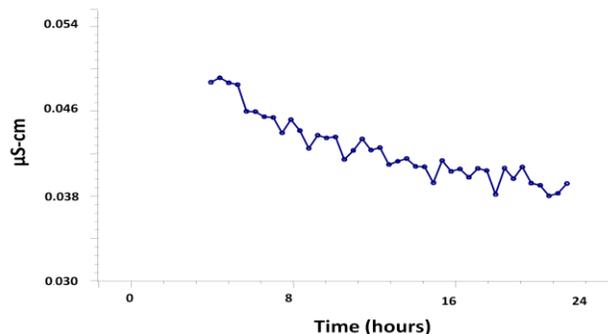


Figure 2b. Measured carbonate (peak height) by anion RFIC in iWP water (20 hours).

Conditions: Dionex AS18 separator (4 mm), 25 mM KOH @ 1.0 mL/min, ASRS®

## Low maintenance and simple operation

The CIRA EP eliminates the replacement and disposal of conventional ion exchange purification cartridges. The only disposable in the Trovion *iWP* is the pump tubing filter assembly.

Installation of the Trovion *iWP* is simple. The eluent bottle feed line connects to the Reagent Pump Controller (RPC) and the outlets of the CIRA EP connects to the RFIC™ pump inlet. Relay control from the RFIC™ system can turn the RPC on and off.

The Trovion *iWP* includes the Reagent Pump Controller, the CIRA EP electrolytic water purifier and an installation kit. The Trovion *iWP* system comes ready to use for single or dual channel RFIC™ operation.

## Features and Benefits

- Lower background and smaller baseline shift in gradient operation
- Continuous production of ionically pure water at analytical flow rates – no water waste
- Utilizes electrolytic ion removal and regeneration- No replacement of expensive cartridges
- Enhanced removal of weakly ionized species such as silica and carbonate (compared to static mixed bed deionization).
- Consistent water quality even as feed water source varies due to carbon dioxide absorption and leachates
- Improves CR-ATC performance by reducing carbonate load
- Improves analytical performance and reliability
- Single or dual channel capability (nothing extra to buy)
- Compatible with all Dionex RFIC™ systems, 4 mm, 2mm and the new capillary system (ICS 5000)
- Simple to install and operate - controlled by IC system (TTL or relay)
- Compact - no large reservoirs required

## Ordering Information

Part Number	Description
591402	<i>iWP</i> Water Purification System (includes the Reagent Pump Controller, CIRA EP and install kit)
591226	CIRA EP for RFIC™
590111	Replacement pump tubing/filter assemblies (12 pcs)

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