

# AVIDITY™ SCIENCE

cascada™  

Integrated Laboratory Water Purification System



*Enabling science to improve the quality of life*



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## ***Integrated. What you see is what you get.***

The Cascada II.I Laboratory Water Purification System is fully integrated to produce up to 30 L/hr of Type II water directly from tap-water. It dispenses up to 2 L/min of both Type II pure water and Type I ultrapure water from a flexible dispenser. Real-time water quality and operating conditions are displayed on the dispensing interface. A compact dispensing stand (28x30 cm) offers true flexibility to users to maximize bench space utilization and to locate the dispenser at the most convenient point of use.



- ▶ **Type II water output** from the Cascada II.I system meets or exceeds Type II water standards as specified by ASTM, CAP, ISO 3696, CLSI, JIS K0557 and Purified Water as described in USP, EP and ChP. Type II water is required for more sensitive laboratory applications such as:
  - Buffers
  - pH solutions
  - Microbiology media preparations
  - Chemical reagent preparations for analysis and synthesis
  - As feed water for:
    - Type I ultrapure water systems
    - automated glassware washers
    - clinical analyzers
    - sterilizers
- ▶ **Integrated controls** on the Cascada II.I system enable Type II water to be available from the reservoir. Water quality is maintained by optimizing re-circulation, UV sterilization and vent filtration to minimize re-contamination from CO<sub>2</sub>, volatile organic compounds, bacteria and particles.
- ▶ **Flexible dispensing options** on the Cascada II.I system allow you to draw Type II water in 3 ways: directly from the reservoir tap, from a flexible dispenser on the system, or from two additional remote dispensers each placed up to 2.9 m away (up to 5.8 m in serial).
  - **Real-time water quality is displayed on both the dispenser and the main monitor ... what you see is what you get.**
  - Dispense rates of > 2 L/min from the tap, or up to 2 L/min from the remote dispenser, ensure > 120 liters availability for peak hour usage.
  - Routine system control functions are fully available on the dispenser including “Print Report” for Good Laboratory Practices. This allows maximum bench space utilization. For example, main system, pre-treatment module and reservoir may all be placed under the bench.



► **Type I water output** from the Cascade II.I system meets or exceeds Type I water standards as specified by ASTM, CAP, ISO 3696, CLSI, JIS K0557 and high-purity water as described in USP, EP and ChP. Type I water is required for critical laboratory applications such as:

- Analytical instrumentations: HPLC, UPLC, AA, ICP, LC-MS, GC-MS, ICP-MS, Ion Chromatography, Electrochemistry, Particle Counter, TOC Analysis
- Life science instrumentations: PCR, DNA sequencing, electrophoresis
- Preparations for cell culture, molecular biology and monoclonal antibody applications

► **Choice of final filters** to match your application needs:

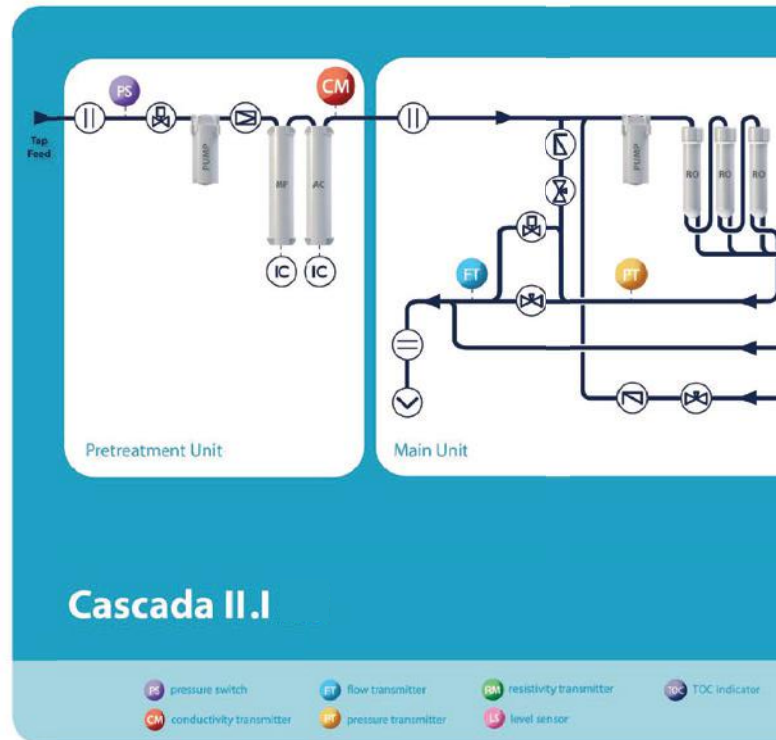
- 0.2  $\mu\text{m}$  for bacteria removal
- 0.1  $\mu\text{m}$  for particulate removal
- Positively-charged capsule for RNases, DNases and endotoxin removal

► **Flexible dispensing options** on the Cascade II.I system allow you to draw Type I water either directly from a flexible dispenser on the system, or from two additional remote dispensers each placed up to 2.9 m away (up to 5.8 m in serial). Each dispenser may also be placed on a stand or used freely from up to 0.8 m away.

- **Real-time Resistivity and Total Organic Carbon (TOC) levels are monitored and displayed “in your hand” ...what you see is what you get.**
- Choice of dispensing modes:
  - constant flow rates with choices from drops to 2.0 L/min.
  - fixed volume (up to 90 L).
- Routine system control functions are fully available on the dispenser including “Print Report” for Good Laboratory Practices. This allows maximum bench space utilization.

## ***Integrated. Maximum purification power at each stage.***

The Cascada II.I Laboratory Water Purification System is a state-of-the-art platform designed to suit your unique feed water conditions, application needs and functional requirements. It maximizes purification power at each stage so that the pure and ultrapure water outputs are consistently high in quality. In addition, unique system monitoring and water leakage protection functions offer peace of mind on your laboratory's pure and ultrapure water supply.



### **Integrated Pre-Treatment Module**

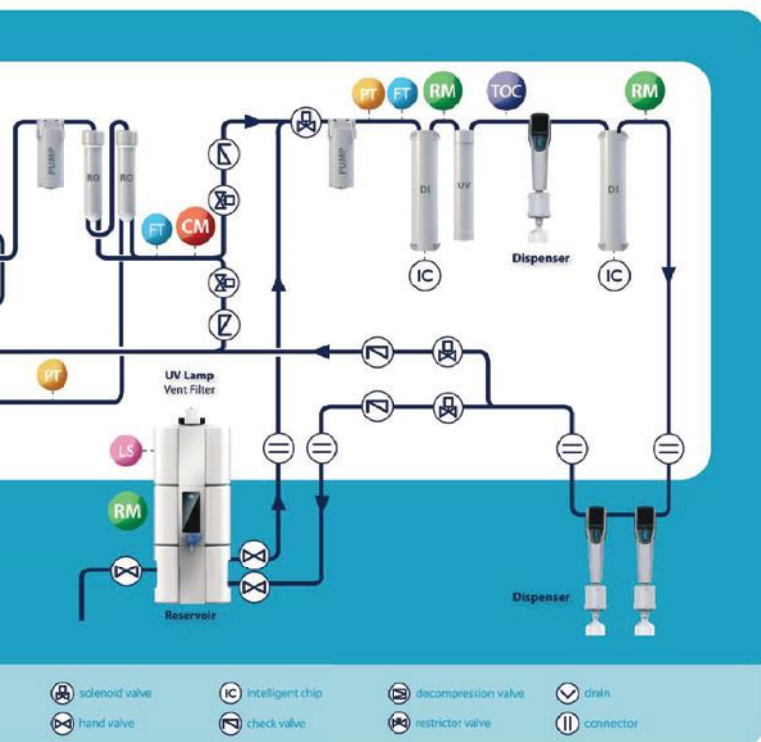
- ▶ Integrated controls on inlet water pressure and monitoring of flow rates to optimize system operations. Optional booster pump available.
- ▶ 3.2" screen displays color-coded operating condition of each component.
- ▶ Choice of cartridges based on local tap water condition:
  - Silt Density Index (SDI)
  - Chlorine
  - Bacterial
- ▶ IC chip onboard the cartridges ensures proper installation and operation.
- ▶ Easy cartridge replacement.

### **Integrated Reverse Osmosis Technologies**

- ▶ Patented 2-stage reverse osmosis technology enables superior and stable output quality. Output conductivity of 5  $\mu\text{S}/\text{cm}$  is typical from tap water as challenging as 2,000  $\mu\text{S}/\text{cm}$ .
- ▶ Superior RO purification with up to 99% ion rejection rate. This improves life expectancy of DI cartridges and final filters.

### **Integrated Reservoir**

- ▶ Reservoir controls such as UV exposure timing and conductivity levels are integrated with the main system.
- ▶ Vent filter is fitted to reduce environmental contaminants such as  $\text{CO}_2$ , particles, bacterial and volatile organic compounds.
- ▶ Dual level sensing mechanism offers additional system protection when water exceeds critical levels (10% and 110%).



### Integrated Polishing Technologies

- ▶ Choice of deionization cartridges with IC tag to meet your applications:
  - Standard high volume polishers
  - Low TOC for sensitive analysis
  - Low Boron for ICP analysis
- ▶ UV technology offers effective oxidation of organic materials and enables rapid water quality recovery upon system re-starts.
- ▶ Total Organic Carbon (TOC) monitoring option offers reliable real time results.

### Integrated System Monitoring

- ▶ Complete monitoring of conductivity, pressure and flow rate at up to 6 stages.
- ▶ System conditions are visibly displayed with graphics and color codes.
- ▶ Automated disinfection processes ensure complete system sanitization.
- ▶ Multiple data management options including RS232 and SD card.



### Integrated Water Leakage Protection

- ▶ Unique base cover channels any potential water leakage to a drainage point. Leakage sensor located at the drainage point will detect presence of water droplet 1 mm from the discharge point.
- ▶ An additional leakage sensor may be placed inside the pre-treatment module.

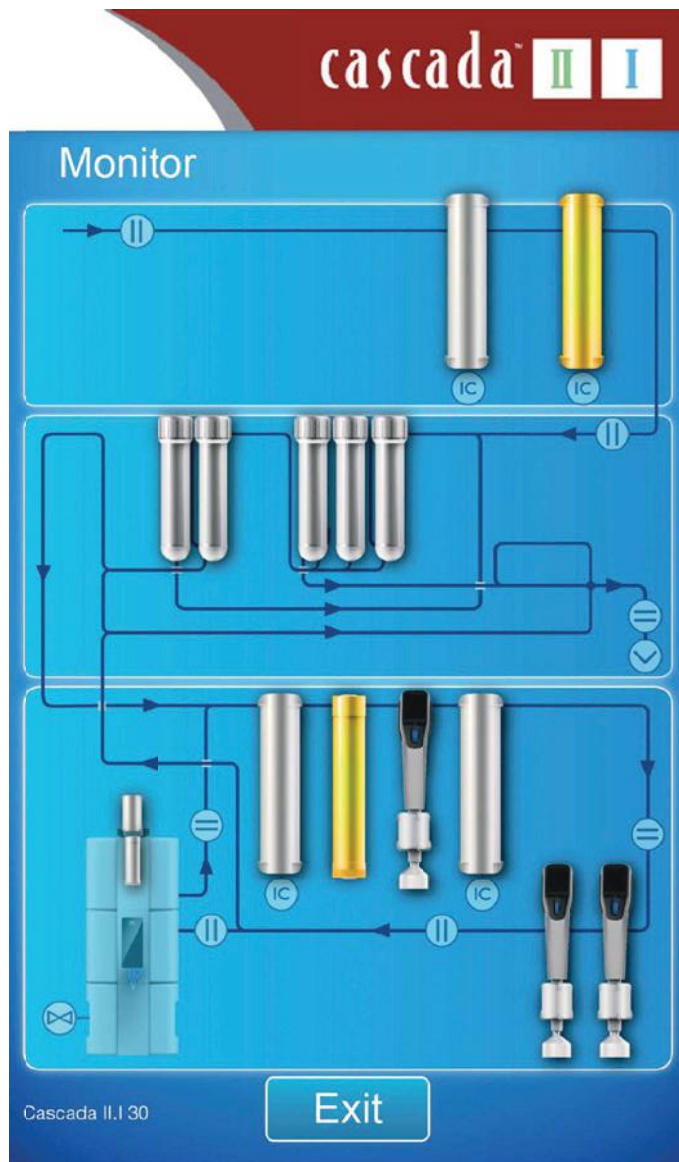


## ***Integrated. Smart system controls at your fingertip.***

The Cascada II.I Laboratory Water Purification System smartly displays only the information you need for effective operations. The 7" touch screen enables user-friendly interactions with icon-based and color-coded displays. Non-routine functions such as *System Maintenance*, *System Set-up* and *Historical Data* are also accessible when needed.



- ▶ **Operating screen** provides comprehensive operating parameters at one glance:
  - Water quality data from dual output: conductivity, TOC, temperature and dispensing rate
  - Reservoir water level
  - On-line alerts
- ▶ **7" touch screen** offers friendly and intuitive user experience:
  - "Touch" sequences similar to smart phones encourage new users to operate with ease.
  - Color-coding (Red, Amber, Blue) and *Flashing* indicators offer guidance to any non-routine actions needed and their urgency/criticality.
  - Unmatched "width" and "depth" of system control.
- ▶ **Displayed languages** are selectable in English, Chinese, Japanese or Korean to suit user's preference.



► **Monitor screen** provides scientific criteria for consumables management based on:

- Flow rate and pressure sensing
- Usage time
- Water quality monitoring

► Indicates status on all consumables at one glance.

► Two levels of alert with Red, Amber, Blue indicators:

- Individual module level
- System level with background color changes under critical modes

## Cascada II.I Specifications

Output Water Quality		
Water Type	II	I
Resistivity (MΩ.cm @ 25°C)	> 5	18.2
TOC (ppb)	< 30****	< 5****
Bacteria (CFU/ml)	< 0,01*	< 0,01*
Particles (>0.2µm)	< 1/ml*	< 1/ml*
Endotoxin (EU/ml)	< 0.001**	< 0.001**
RNASE (pg/ml)	< 1***	< 1***
DNASE (pg/ml)	< 5***	< 5***
PROTEASE (µg/ml)	< 0.15***	< 0.15***
Output Flow Rate	Up to 2 L/min	Up to 2 L/min

\* With LWFS32302 final filter  
\*\* With LWFS32303 final filter  
\*\*\* With TC004 final filter  
\*\*\*\* With feed water TOC less than 2 ppm

Feed Water Requirements	
Conductivity	< 2000 µs/cm @ 25°C
Pressure	0.5 ~ 6 bar
Temperature	5 ~ 40°C
Free chlorine	< 3 ppm
Silt Density Index	< 12
pH	4 ~ 10

Dimension (mm)	
System	H 575 x W 366 x D 492
Reservoir	H 1200/900/600 x W 390 x D 384
Pre-Treatment	H 463 x W 220 x D 380
Dispensing Station	H 845 x W 280 x D 280
Dry Weight (kg)	
System	23
Reservoir	5 (35 L); 7 (70 L); 9 (105 L)
Pre-Treatment	7
Dispensing Station	6
Electrical Requirements	
Input Voltage	100-240 V 50-60 Hz
Power	200 VA Main Unit 75 VA Pretreatment

Output Flow Rates			
System	RO	Type II	Type I
Cascada II.I 5	5 L/h	≥ 2 L/min *	Up to 2 L/min
Cascada II.I 10	10 L/h	≥ 2 L/min *	Up to 2 L/min
Cascada II.I 20	20 L/h	≥ 2 L/min *	Up to 2 L/min
Cascada II.I 30	30 L/h	≥ 2 L/min *	Up to 2 L/min

\* From tap on reservoir

Ordering Guide	
Part Number	Description
LWFS31205	Cascada II.I system 5L/H
LWFS31205R	Cascada II.I system 5L/H with Reservoir conductivity
LWFS31205T	Cascada II.I system 5L/H with TOC
LWFS31205TR	Cascada II.I system 5L/H with TOC & Reservoir conductivity
LWFS31210	Cascada II.I system 10L/H
LWFS31210R	Cascada II.I system 10L/H with Reservoir conductivity
LWFS31210T	Cascada II.I system 10L/H with TOC
LWFS31210TR	Cascada II.I system 10L/H with TOC & Reservoir conductivity
LWFS31220	Cascada II.I system 20L/H
LWFS31220R	Cascada II.I system 20L/H with Reservoir conductivity
LWFS31220T	Cascada II.I system 20L/H with TOC
LWFS31220TR	Cascada II.I system 20L/H with TOC & Reservoir conductivity
LWFS31230	Cascada II.I system 30L/H
LWFS31230R	Cascada II.I system 30L/H with Reservoir conductivity
LWFS31230T	Cascada II.I system 30L/H with TOC
LWFS31230TR	Cascada II.I system 30L/H with TOC & Reservoir conductivity



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