ULTRAPURE WATER SYSTEMS

Crystal B series

Crystal B ultrapure systems are multi-purpose water purification systems. The Crystal B systems produce ultrapure and pure water directly from tap water.

Crystal B Ultrapure systems are available in the following configurations:

- **Crystal B Trace** *(P/N CB-1015)* produces water for inorganic trace analysis. Water can be used for atomic absorption spectrometry (with graphite furnace atomizer), ICP-OES analysis, ICP-MS and other inorganic analytical methods.
- **Crystal B HPLC** *(P/N CB-1101)* produces water with very low organic carbon (TOC) content meeting requirements of liquid chromatography methods. Crystal B HPLC water can also be used for some microbiological and molecular biology applications.
- **Crystal B Bio** *(P/N CB-1201)* system produces water with very low organic and RNase/DNase content that is intended for the use in molecular biology, including RNase-sensitive applications.

Any configuration of a Crystal B ultrapure system produces both ultrapure and pure water. Ultrapure (Grade 1) water is dispensed through the point-of-use filter on the front panel. Pure (Grade 2) water is dispensed directly from the storage tank.
Crystal B ultrapure water can be used for the most demanding applications including, but not limited to:
- inorganic trace analysis
- liquid chromatography
- cell culture
- molecular biology

With resistivity of 18.2 MegaOhm*cm (0.055 µS/cm) ultrapure water produced by a Crystal B system exceeds requirements of all relevant standards (ISO 3696 Grade 1, ASTM Type I, CLSI Type I). Purified water is collected in a storage tank. An integrated recirculation system ensures consistent quality of water and reduces total organic carbon (TOC) to very low levels: <2ppb for "HPLC" and "Bio" configurations and 5-10 ppb for the "Trace" configuration.

Pure water produced by the Crystal B systems complies with the requirements of ISO 3696 Grade 2 water and can be used for labware washing, wet chemistry methods, flame spectrophotometers, etc. The dispense rate of ultrapure water is 2 L/min. Whereas the dispense rate of pure water is 4 L/min.

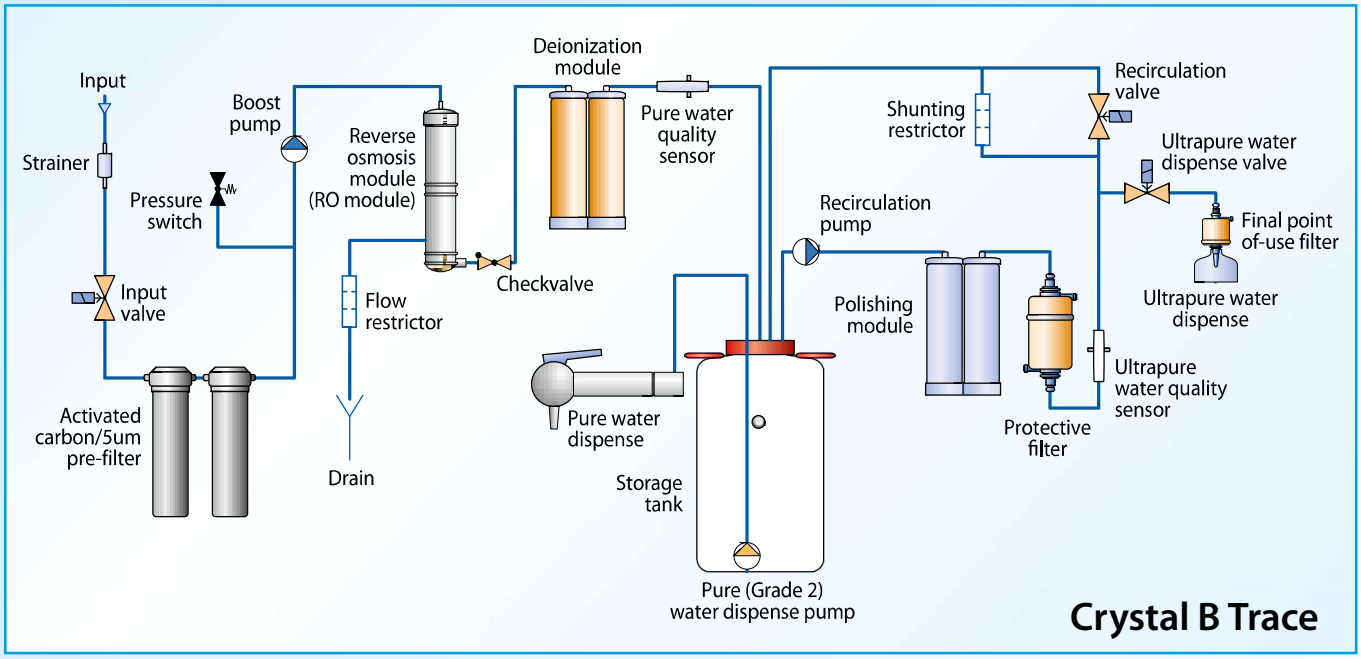
All Crystal B systems have a controller with a graphic LCD display for water quality indication. The LCD display provides all necessary information about system status, as well as the remaining pre-filter life and deionization (DI) module performance. The smart DI module monitoring system also provides a reduction in running costs. A user is instructed to replace the DI module only when the module is near the end of its service life.

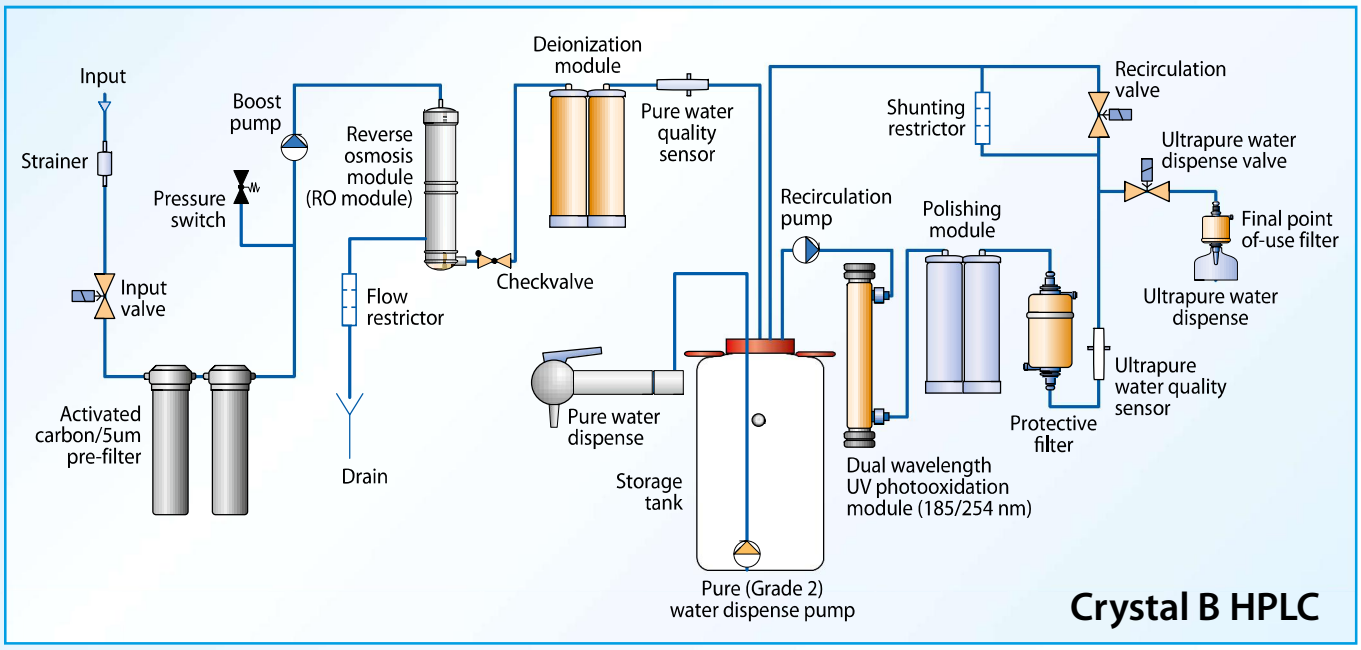
If a Bluetooth option (P/N 10103) is installed, the controller can be detached, so the Crystal B system can be controlled remotely. If space-saving is crucial, wall-mounting the Crystal B, and the use of a remote control is the right choice. All cartridges and filters are easily accessible and no tools are required to replace them. The Crystal B system can be installed on a laboratory bench or mounted on a wall.

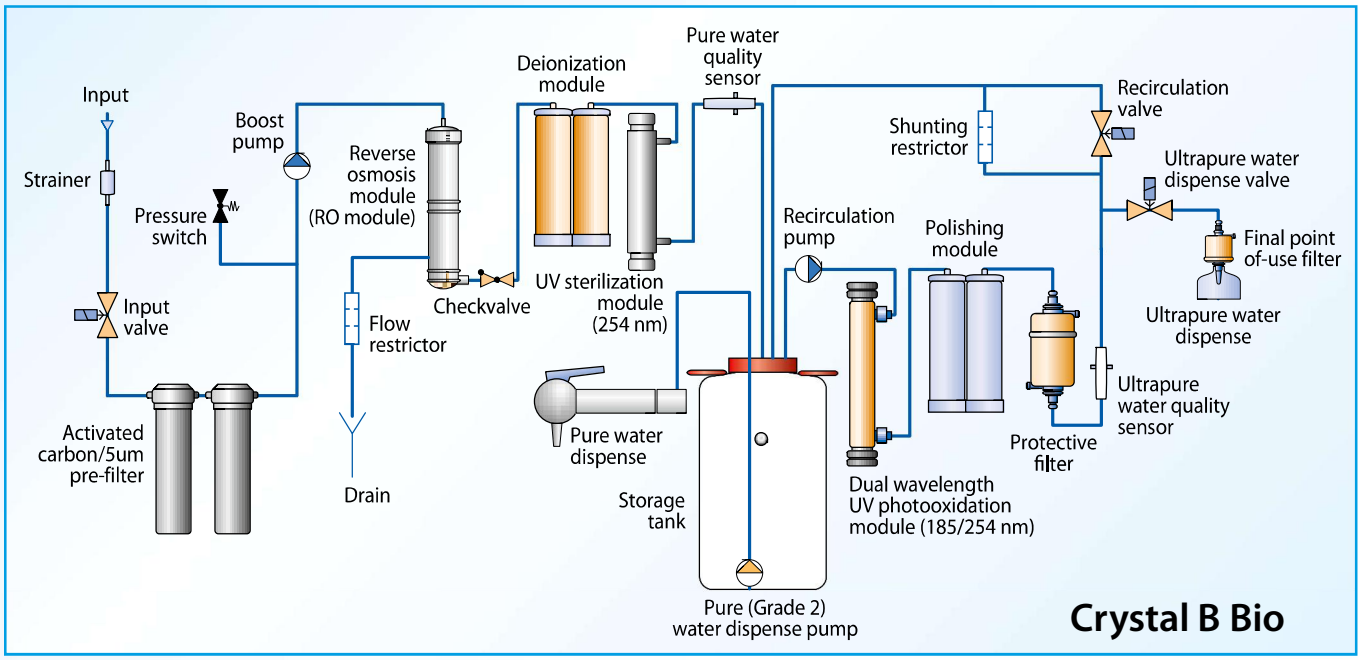
The Crystal B has important safety functions:
- tank filling control
- tap water pressure control
- protection from tank sensor failure

The Crystal B systems include:
- Boost pump
- Pre-filter set
- Reverse osmosis module
- Deionization module
- Final stage polishing module
- 25L storage tank with an integrated Grade II dispensing pump
- Recirculation system
- Point-of-use final filter (0.22 µm microfilter for the Crystal B Trace and HPLC systems)
- Ultrafilter for the Crystal B Bio systems; and/or a photo-oxidation module for elimination of organics (HPLC and Bio configurations)
- UV sterilization module (Bio configuration)

Flow diagrams







Applications

Application	Crystal B Trace	Crystal B HPLC	Crystal B Bio
Reagent preparation	●	●	●
Ion chromatography	●	●	●
ICP-MS	●	●	●
Atomic absorption spectrophotometry with graphite atomizer	●	●	●
ICP-OES	●	●	●
HPLC	–	●	●
Gas chromatography	–	●	●
Total Organic Carbon measurement	–	●	●
Flow cytometry	–	–	●
Cell and tissue culture	–	–	●
Molecular biology	–	–	●

Components

Part number	Accessory	Crystal B Trace	Crystal B HPLC	Crystal B Bio
10019	Pre-filter set for chlorine and organics reduction	+	+	+
	Boost pump	+	+	+
	Reverse osmosis module	+	+	+
10310	Deionization module, standard	+	+	+
10029	Polishing module	+	+	+
10105	Photo-oxidation module	–	+	+
10012	Point-of-use microfilter	+	+	–
10109	Point-of-use ultrafiltration module	–	–	+
10102	UV sterilization module	–	–	+
10106	Integrated TOC monitor	–	option	–
10103	Removable controller with Bluetooth module	option	option	option

Specifications

Purified water specifications	Crystal B Trace	Crystal B HPLC	Crystal B Bio
Pure (Grade 2) water resistivity	>10 MΩ x cm	>10 MΩ x cm	>10 MΩ x cm
Pure (Grade 2) water conductivity	<0.1 µS/cm	<0.1 µS/cm	<0.1 µS/cm
Ultrapure (Grade 1) water resistivity	18.2 MΩ x cm	18.2 MΩ x cm	18.2 MΩ x cm
Ultrapure (Grade 1) water conductivity	0.055 µS/cm	0.055 µS/cm	0.055 µS/cm
TOC	5 – 10 ppb	<2 ppb	<2 ppb
RNase	–	–	<0.01 ng/mL
DNase	–	–	<4 pg/µL
Bacteria	< 1 cfu/mL	< 1 cfu/mL	< 1 cfu/mL
Endotoxins	<0.15 EU/mL	<0.15 EU/mL	< 0.001 EU/mL
Particles > 0.22 µm	<1/ per mL	<1/ per mL	<1/ per mL
Nominal flow, pure water (to storage tank)	10 L/h	10 L/h	10 L/h
Nominal dispense flow, ultrapure water	2 L/min	2 L/min	2 L/min
Nominal dispense flow, pure water	4 L/min	4 L/min	4 L/min
Deionization module life (standard module)	1 m^3	1 m^3	1 m^3
Recovery	>30 %	>30 %	>30 %
Dimensions (WxDxH), cm	50x40x60	50x40x60	50x40x60
Storage tank	25 L	25 L	25 L
Tank dimensions (WxDxH), cm	30x25x50	30x25x50	30x25x50
Feed water pressure	0.5 – 5 bar	0.5 – 5 bar	0.5 – 5 bar
Feed water conductivity	< 900 µS/cm	< 900 µS/cm	< 900 µS/cm

Ordering Information

Model	Part number
Crystal B Trace	CB-1015
Crystal B HPLC	CB-1101
Crystal B Bio	CB-1201

Consumables

Part number	Description	Replacement criteria	Comments
10019	Replacement pre-filter set, Crystal B	Filter life counter is zero or the filter is clogged	
10310	Replacement deionization module	„DI Err" message is shown, or water conductivity is consistently > 0.5 µS/cm	
10029	Replacement polishing module	Every 1–2 years, depending on operation	
10011	Replacement sterilization UV bulb	As required (on average – every 3 years)	„Bio" systems only
10018	Replacement photooxidation UV bulb	As required (on average – every 3 years)	„HPLC" and „Bio" systems
10012	Replacement 0.22 µm dispense microfilter	Every 6–12 months	„Trace" and „HPLC" systems
10120	Replacement ultrafilter	Every 6–12 months	„Bio" systems only