# Integrity series

Crystal Integrity systems produce ultrapure water directly from tap water. Ultrapure water produced by the Crystal Integrity system complies with the requirements for Grade 1 water in accordance with relevant standards (ISO 3696, ASTM, CLSI).

The Crystal Integrity systems are recommended for laboratories with relatively low consumption of ultrapure water (about 5 litres per day).

Crystal Integrity systems are available in the following configurations:

- **Integrity HPLC System** *(P/N CB-1503)* produces water with very low organic carbon (TOC) content. This meets the requirements for liquid chromatography methods. Integrity HPLC water can also be used for some microbiological and molecular biology applications.
- **Integrity Bio System** *(P/N CB-1505)* produces water with very low organic and RNase/DNase content. This is intended for use in molecular biology, including RNase-sensitive applications.

Crystal Integrity water is intended for the most demanding applications including, but not limited to:

- inorganic trace analysis
- liquid chromatography
- cell culture
- molecular biology

Ultrapure water produced by an Integrity system, with resistivity of 18.2 MegaOhm*cm (0.055 µS/cm), exceeds requirements of all relevant standards (ISO 3696 Grade 1, ASTM Type I, CLSI Type I).

Purified water is collected in an integrated storage tank. The recirculation system ensures consistent quality of water and reduces total organic carbon (TOC) to very low levels: <2ppb.

Space-saving, integrated, 5L tank is made of high density polyethylene to minimize contamination. The storage tank is accessible for cleaning.

All Integrity systems have a controller with a graphic LCD display for water quality indication. The LCD display provides all necessary information about system status, remaining pre-filter life, and polishing module performance. The smart polishing module monitoring system provides a reduction in running costs. Users are instructed to replace the polishing module only when the module is close to the end of its service life.

If a Bluetooth option (P/N 10103) is installed, the controller can be detached. The Integrity system can be controlled remotely for more convenient operation.

All cartridges and filters are easily accessible and no tools are required to replace them. The Integrity system can be installed on a laboratory bench or mounted on the wall to save space.

The Crystal Integrity has important safety functions, including:

- tank filling control
- tap water pressure control

## Applications

| Application | Integrity HPLC | Integrity 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 | – | ● |

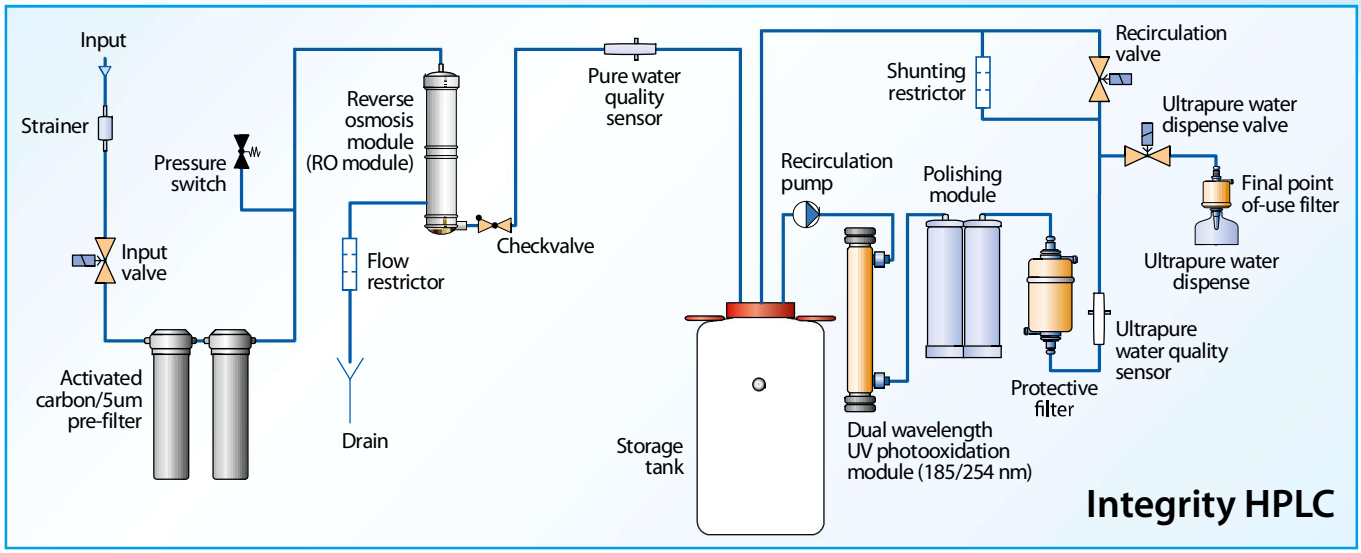
## Components

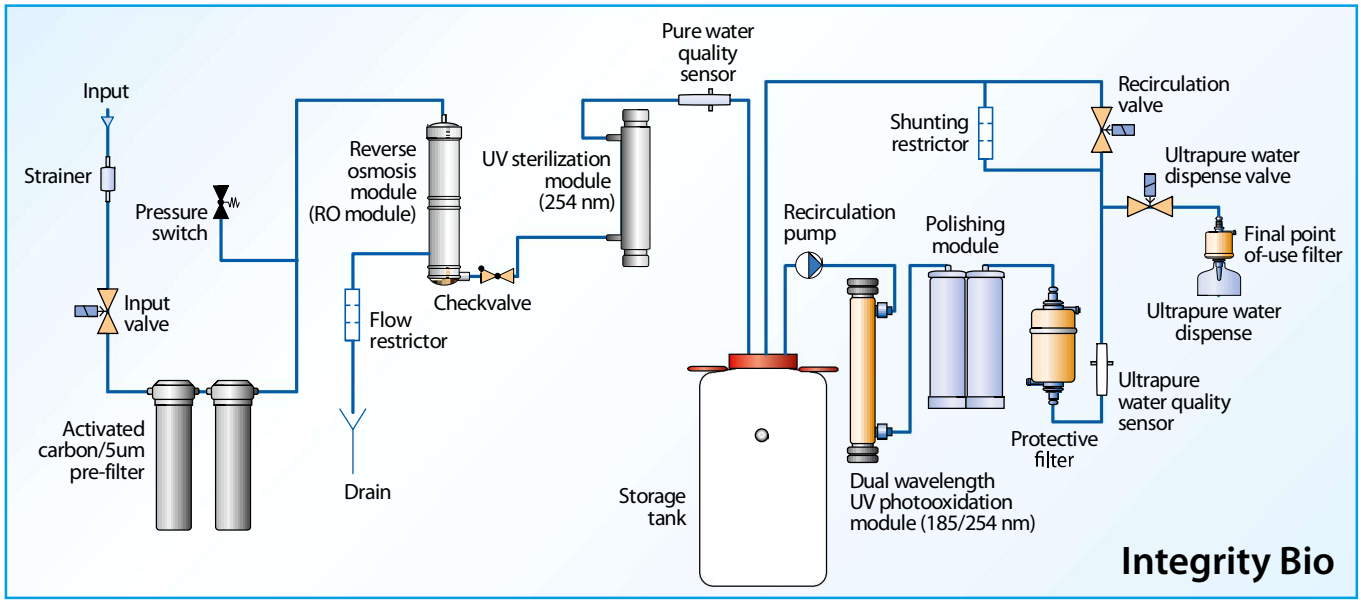
| Part number | Accessory | Integrity HPLC | Integrity Bio |
|---|---|---|---|
| 10019 | Pre-filter set for chlorine and organics reduction reduction | + | + |
| | Reverse osmosis module | + | + |
| 10029 | Polishing module | + | + |
| 10105 | Photo-oxidation module | + | + |
| 10012 | Point-of-use microfilter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

## Consumables

| Part number | Description | Replacement criteria | Comments |
|---|---|---|---|
| 10019 | Replacement pre-filter set, Integrity | Filter life counter is zero or the filter is clogged | |
| 10029 | Replacement polishing module | „DI Err" message is shown, or water conductivity while dispensing is consistently > 0.1 µS/cm | |
| 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 |

# Flow diagrams




## Specifications

| Purified water specifications | Integrity HPLC | Integrity Bio |
|---|---|---|
| Ultrapure (Grade 1) water resistivity | 18.2 MΩ x cm | 18.2 MΩ x cm |
| Ultrapure (Grade 1) water conductivity | 0.055 µS/cm | 0.055 µS/cm |
| TOC | <2 ppb | <2 ppb |
| RNase | – | <0.01 ng/mL |
| DNase | – | <4 pg/µL |
| Bacteria | < 1 cfu/mL | < 1 cfu/mL |
| Endotoxins | <0.15 EU/mL | < 0.001 EU/mL |
| Particles > 0.22 µm | <1/ per mL | <1/ per mL |
| Nominal flow, pure water (to storage tank) | 4 L/h | 4 L/h |
| Nominal dispense flow, ultrapure water | 2 L/min | 2 L/min |
| Polishing module life | 1 $m^3$ | 1 $m^3$ |
| Recovery | >30 % | >30 % |
| Dimensions (WxDxH), cm | 50x40x60 | 50x40x60 |
| Integrated storage tank | 5 L | 5 L |
| Feed water pressure | 1.5 – 5 bar | 1.5 – 5 bar |
| Feed water conductivity | < 900 µS/cm | < 900 µS/cm |

## Ordering Information

| Model | Part number |
|---|---|
| Crystal Integrity HPLC | CB-1503 |
| Crystal Integrity Bio | CB-1505 |