

**Thermo Scientific Barnstead Smart2Pure UV/UF 3LPH Water Purification System
A & E Specification Sheet**

Lab water purification system capable of producing between 1 – 20 L/day of Type 1 ultrapure water on demand from a tap/potable feed water supply

PART 1 – GENERAL

1.1 DESIGN AND PERFORMANCE CRITERIA

- A. Water purification system must provide 18.2 megohm quality (Type 1) water to be utilized in a laboratory environment. Type 1 water quality meets standards as defined by ASTM D1193-6, ISO 3696 and CLSI™-CLRW.
- B. Water purification system will be capable of delivering up to 20L per day at a production rate of 3LPH and a flow rate of 1 liter per minute using tap/potable feed water as the supply water.
- C. Water purification system must function as one component with a built-in storage reservoir. The water purification system must be able to be mounted on the wall or bench.
- D. The system must also have built in a product water resistivity monitor.

1.2 SUBMITTALS

Product Brochure
Water Purification System Operating Manual (includes installation instructions)
Product Guidelines for Site Installation
Drawings

1.3 QUALITY ASSURANCE

- A. Each water purification system will be certified by CE and CSA for electrical safety and integrity.

1.4 QUALIFICATION

- A. Manufacturer – Company must have 10 years documented experience in the construction of water purification systems.
- B. Water Purification System – Shall be CE and CSA certified and meet ASTM D1193 standards.

1.5 WARRANTY

- A. Manufacturer's warranty against defects in material and workmanship covering parts and labor must be available for a period of one year. Standard exceptions for cartridges, filters, and lamps shall apply.

PART 2 – PRODUCT

2.1 MANUFACTURER

A. Thermo Scientific Barnstead Smart2Pure UV/UF 3LPH water purification system – **50129688**

2.2 WATER PURIFICATION SYSTEM PRODUCT WATER SPECIFICATIONS

- A. Ultrapure water flow rate of 1L/minute
- B. Type 2 product water must have a resistivity of 10-15 megohms-cm at 25 °C
- C. Type 1 product water must have a resistivity of up to 18.2 megohms-cm at 25°C and:
 - a. Less than 5 ppb TOC (Total Organic Carbon) in the product water
 - b. Pyrogen (bacterial endotoxin) levels of less than 0.001 EU/ml with in-line integrated ultrafilter
 - c. Bacterial counts less than 1 CFU/ml
 - d. RNase levels <0.003 ng/ml, and DNase <0.4 pg/μl with in-line integrated ultrafilter

2.3 WATER PURIFICATION SYSTEM PERFORMANCE REQUIREMENTS

- A. The system must be able to produce both type 1 and type 2 quality water and both types must be accessible by the end-user to meet different application requirements. Systems producing Type 1 and RO quality water are not acceptable.
- B. Dispensing of type 1 water must be from the front of the water system with a variable flow control knob.
- C. Dispensing ports for type 2 water must be from the side of the unit to allow for bench mounting. Dispensing ports on bottom of the reservoir is not acceptable.
- D. An optional hand dispenser must be available for the dispensing of type 2 water from the system.
- E. System must come with built-in 6L reservoir for the storage of the type 2 water. External reservoirs are not acceptable.
- F. System display must have adjustable angle display to make the display easy to read from any angle.
- G. System display should provide all system status data plus access to user menu.
- H. The system will include a UV lamp with a two-year lifespan that will emit both 185 nm and 254 nm wavelengths, designed to ensure organic removal as well as maintaining a bacteria-free environment.
- I. The system will include an inline ultrafilter for the removal of pyrogens with a two year lifespan. The system must allow for an extended ultrafilter flush as well as a 1 minute ultrafilter flush, which is initiated by the controls. The unit must also automatically flush the ultrafilter. External point-of-use ultrafilters are not acceptable.
- J. The system will automatically switch to “Interval” operation after the reservoir is completely filled.
- K. The system will automatically recirculate for 14 mins after every 16 min of being idle to ensure product water is always fresh and ready for use.
- L. Systems cartridges must be able to be removed / replaced with quick disconnect fittings with no threads, screws or other mechanisms required to change cartridges.
- M. System cartridges must be two discreet canisters. One cartridge containing the RO membrane and carbon and the second cartridge containing the resin required to produce type 1 water. One housing for all is not acceptable.
- N. An absolute 0.2μm polysulfone membrane filter is required as the final purification step as the water is being dispensed. The final filter will be sterilizable using an autoclave.
- O. Temperature measurements are made by a platinum chip sensor with ± 0.1° C accuracy.

2.4 – ACCESSORIES

A. REQUIRED

- a. **09.4003** – 1 micron pretreatment filter to protect RO membrane from particulate damage

B. OPTIONAL

- a. **09.4001** – 5 micron filter and hardness stabilizer to protect RO membrane from scaling in areas where high levels of hardness occur
- b. **09.2212** – Wall mounting bracket to affix system to wall
- c. **50138221** – Hand dispenser

C. REPLACEMENT CONSUMABLES

- a. **09.1020** - Ultrapure polishing cartridge
- b. **09.1002** - UV lamp
- c. **50133981** - Ultrafilter
- d. **09.1003** - 0.2 micron final filter
- e. **09.2003** – RO membrane with integrated carbon pretreatment

ADDITIONAL SPECIFICATIONS

DIMENSIONS (System)	12" W x 15.47" D x 21.5" H (305mm x 400mm x 545mm)
ELECTRICAL REQUIREMENTS	100 – 240 V, 50/60 Hz, 2-1A, up to 5 ft from unit
WATER CONNECTIONS	¾" NPT with manual shut off valve recommended
MIN/MAX INLET PRESSURE	15 – 85 PSI (0.1 – 6 bar)
RECOMMENDED FEED TEMPERATURE	2 – 35°C
RECOMMENDED FEED WATER TYPE	Tap/Potable Water
DRAIN	An atmospheric drain must be available within 5 feet of the final mounting location