

**Thermo Scientific™ Barnstead™ Smart2pure™ Pro UV/UF Water Purification System
with Barnstead Pretreatment and 60 L Storage Reservoir**

A & E Specification Sheet

Lab water purification system capable of producing between 1 – 70 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 and Type 2 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 70L per day at a reservoir filling production rate of up to 16 LPH and dispensing flow rate of up to 1 liter per minute using tap/potable feed water as the supply water.

C. Water purification system must function as one system using external accessories of Barnstead Pretreatment and an external storage reservoir. The pretreatment and water purification system must be able to be mounted on the bench or on the wall with provided wall bracket. The storage reservoir must also be able to be mounted on bench or on the wall with optional storage reservoir wall bracket.

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.

1.4 WARRANTY

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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 UV lamps shall apply.

PART 2 – PRODUCT

2.1 MANUFACTURER

- A. Thermo Scientific Barnstead Smart2Pure Pro UV/UF water purification system with Pretreatment, System wall bracket and 60 Liter tank— **50157872**

2.2 WATER PURIFICATION SYSTEM PRODUCT WATER SPECIFICATIONS

- A. Ultrapure water flow rate of up to 1 L/minute
- B. Type 2 product water must have a resistivity of up to 15 megohm-cm at 25 °C
- C. Type 1 product water must have a resistivity of up to 18.2 megohm-cm at 25°C and:
 - a. 1-5 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 0.01 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. System must come with a 60L storage reservoir and recirculation pump.
- D. Dispensing ports for type 2 water must be from the reservoir, either from the front spigot or the side to allow for flexible dispensing options.
- E. An optional hand dispenser must be available for the dispensing of type 1 water from the Smart2Pure Pro system and/or 2 water from the storage tank.
- F. Storage reservoir must communicate with system to maintain a continual supply of type 2 water in the reservoir and display the % tank water level on the display.
- G. System starts and stop the filling of the storage reservoir can be adjusted the amount of stored water based on lab usage.
- H. System display must have adjustable angle display to make the display easy to read from any angle.
- I. System will include internal leak detector which shuts down system pumps and closed feed water solenoid if an internal leak is detected.
- J. The system will include a UV lamp with up to 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.
- K. The system will include an inline ultrafilter for the removal of pyrogens with up to a two year lifespan.
The unit must also automatically flush the ultrafilter. External point-of-use ultrafilters are not acceptable.
- L. The system will automatically switch to “Standby” operation after the reservoir is completely filled.
- M. The system will automatically recirculate the water stored in the reservoir for 10 mins every 2 hours of being idle to protect the high purity water during standstills and maintains the low conductivity value.
- M. Systems cartridges must be able to be removed / replaced with quick disconnect fittings with no threads, screws or other mechanisms required to change cartridges.

N. System cartridges must be two discreet canisters. One cartridge containing the RO membrane and the second cartridge containing the resin required to produce type 1 water. One housing for all is not acceptable.

O. An absolute 0.1µm 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.

P. Temperature measurements are made by a platinum chip sensor with ± 0.1° C accuracy.

2.4 – ACCESSORIES

- a. 06.5016 – 60L reservoir wall mounting bracket to affix reservoir to wall
- b. 50138221 – Hand dispenser

B. REPLACEMENT CONSUMABLES

- a. D502113 Prefilter
- b. D502114 Hardness stabilizer pretreatment
- c. D502115 Carbon cartridge pretreatment
- d. 09.1020 - Ultrapure polishing cartridge
- e. 09.1002 - UV lamp
- f. 50133980 - Ultrafilter
- g. 50157375 0.1 micron final filter
- h. 09.1003 - 0.2 micron final filter for remote hand dispenser
- i. 50157608 – RO membrane
- j. 06.5002 – Sterile filter and CO2 absorber for reservoir

ADDITIONAL SPECIFICATIONS

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|-----------------------------------|---|
| DIMENSIONS (System) | 12" W x 15.7" D x 21.5" H (305mm x 400mm x 545mm) Width with wall bracket 8.75" (222 mm) |
| DIMENSIONS (Pretreatment) | 11"W x 7" D x 15.6"H (294 mm x 178 mm x 396 mm) |
| DIMENSIONS (60L Reservoir) | 35.9" H x 15" D (912mm x 380mm) Height with CO2 vent filter: 42.99 (1092) Wall bracket: 13.58" H (345 mm) |
| ELECTRICAL REQUIREMENTS | 100 – 240 V, 50/60 Hz, 2-1A, up to 5 ft. from unit |
| WATER CONNECTIONS | ½" or ¾" NPT with manual shut off valve recommended |
| MIN/MAX INLET PRESSURE | 29 – 85 PSI (2 – 6 bar) |
| RECOMMENDED FEED TEMPERATURE | 2 – 35°C |
| RECOMMENDED FEED WATER TYPE Water | Tap/Potable |