Thermo Scientific Barnstead GenPure xCAD Plus UV/UF-TOC Water Purification System
A & E Specification Sheet

Lab water purification system capable of producing between 1 – 200 L/day of Type 1 ultrapure water on demand with TOC monitoring

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 200L per day on demand at a flow rate of up to 2 liters per minute using pretreated feed water (treated by deionization, distillation, reverse osmosis, or combination RO/DI) as the supply water.

C. Water purification system must function with two separate components. The primary component is the water purification system, which must be able to be mounted on the wall, bench, or under the bench. The secondary component is the remote dispenser that may be mounted on the bench or on the wall.

D. The system must also have built in product water resistivity; incoming feed water, leak detection, and TOC (Total Organic Carbon) monitors.

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 GenPure xCAD Plus UV/UF-TOC water purification system with bench-mounted xCAD Plus remote dispenser – **50136146**

B. Thermo Scientific Barnstead GenPure xCAD Plus UV/UF-TOC water purification system with wall-mounted xCAD Plus remote dispenser – **50136172**

2.2 WATER PURIFICATION SYSTEM PRODUCT WATER SPECIFICATIONS

A. Ultrapure water flow rate of up to 2L/minute
B. Product water must have a resistivity of up to 18.2 megohms-cm at 25°C
C. Less than 5 ppb TOC (Total Organic Carbon) with a visual read out of the TOC levels in the product water
D. Pyrogen (bacterial endotoxin) levels of less than 0.001 EU/ml with in-line integrated ultrafilter
E. Bacterial counts less than 0.01 CFU/ml
F. 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 unit 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.
B. The system will include an inline ultrafilter for the removal of pyrogens with up to a two year lifespan. The system must allow for an extended ultrafilter flush as well as an automatic flush of the ultrafilter. External point-of use ultrafilters are not acceptable.
C. Real-time TOC measurement combined with continuous monitoring of the intensity of the UV lamp will remove the risk of false TOC values due to decreasing UV intensity. A fault message will alert the user when the UV lamp intensity is no longer sufficient for accurate TOC measurements.
D. The system will automatically switch to “Interval” operation after it has been running for 10 minutes. User can modify settings to extend the time before going into “Interval” mode.
E. Systems high purity cartridges must be able to be removed / replaced with quick disconnect fittings with no threads, screws or other mechanisms required to change cartridges.
F. System must have built-in feed water monitor which will alert the end-user if the incoming feed water does not meet the pre-set levels.
    a. Feed water monitor must be able to be adjusted or turned off as end-user requires.
G. System must have built-in leak detector that will automatically alert the end-user if a leak is detected within the system.
H. System must be able to accommodate up to three remote dispensers which can simultaneously dispense water display resistivity, temperature and alert user to an alarm condition..
I. 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.
J. The TOC display is measured by conductivity measurement performed with two high precision measuring cells. A fully automatic check and calibration will occur prior to each measurement via a built-in reference resistance. The cell constants are 0.01 cm^{-1}.
K. Temperature measurements are made by a platinum chip sensor with ± 0.1° C accuracy.

L. Water will re-circulate within the system when operating during the “Interval” mode. The time span for “Interval” mode can be user-modified.
M. Digital microprocessor control automatically monitors and stores faults in Error History in user menu.
N. RS232 interface will be available for data tracking to a printer or PC.

2.4 – REMOTE DISPENSER PERFORMANCE REQUIREMENTS

A. Remote dispenser – 10.2”W x 21”D x 28.5”H (Depth takes into account actual space of dispensing arm). Actual dispenser base is 12”D.
B. Dispensing arm working range up to 32 inches (80cm) from the remote dispenser base and is able to adjust heights to work with a wide range of vessels.
C. Remote dispenser must be able to be mounted up to 9 feet (3m) away from water system. Second dispenser up to 18ft and third dispenser up to 27ft away.
D. Dispenser display must have adjustable angle display to make the display easy to read from any angle.
E. Dispenser display must provide total functionality with the system so that the system does not need to be accessed unless it is time to change a consumable.
F. Display should provide all system status data plus access to user menu.
G. Dispenser can operate in volumetric mode to prevent repetitive motions or flooding of lab and/or on/off by pressing the dispense button.
H. Dispenser comes in two configurations: bench-mounted or wall-mounted.
I. Dispenser must provide the ability to connect up to two more remote dispensers to create three workstations.

2.5 – ACCESSORIES

A. OPTIONAL

a. **50136505** - Additional wall-mount xCAD Plus remote dispenser
b. **50136494** - Additional bench-mount xCAD Plus remote dispenser
c. **AY1137X1** - Log printer for connection to RS232 port
d. **06.5038** - 30L storage reservoir for supply of pretreated water to feed system if none available in the lab
e. **09.2201** - Disinfection cartridge for use when the system requires disinfection cycle

    a CMX25 – Disinfection Solution

B. REPLACEMENT CONSUMABLES

a. **09.2005** - Ultrapure polishing cartridge
b. **09.2002** - UV lamp
c. **50133980** - Ultrafilter
d. **09.1003** - 0.2 micron final filter

ADDITIONAL SPECIFICATIONS

DIMENSIONS (System)	14.6” W x 13” D x 24” H (372mm x 330mm x 615mm)
DIMENSIONS (Remote Dispenser)	Bench-mount – 10.2” W x 21” D x 28.5” H (260mm x 530mm x 725mm) Wall-mount - 10.2” W x 21” D x 28.5” H (260mm x 530mm x 655mm)
ELECTRICAL REQUIREMENTS	100 – 240 V, 50/60 Hz, 2A, up to 5 ft from unit
WATER CONNECTIONS	¾” NPTF provided. Customer supplied manual shut off valve recommended
MIN/MAX INLET PRESSURE	1.4 – 87 PSI (0.1 – 6 bar)
RECOMMENDED FEED TEMPERATURE	2 – 40ºC
RECOMMENDED FEED WATER TYPE	Pure water (Type 2 water recommended. Lower quality will result in shorter cartridge life)
DRAIN	An atmospheric drain must be available within 5 feet of the final mounting location