TANKS

System Feed	
Volume	Minimum 500 Gallons

DI Water	
Volume	Minimum 500 Gallons

SKID MOUNTED COMPONENTS

Feed Pump	
Horsepower	1 HP
Motor Control (Optional)	Variable Frequency Drive

Standard Pre-Treatment	
Backwash	Manual Control
Vessel Construction	PE Lined Fiberglass
Media	Granular Activated Carbon
Volume per Vessel	1 ft^3

Bag Filters	
Number	Two (2)
Filter Rating	5-micron

Macrolite Prefilter Exchanges	
Number	Two (2)
Construction	PE Lined Fiberglass
Media Type	Macrolite 20/40 Mesh
Volume per Vessel	1 ft^3

Cation & Anion Exchangers	
Number Cation	Two (2)
Number Anion	Two (2)
Vessel Size	10" x 40"
Construction	PE Lined Fiberglass
Cation Resin	Strong Acid
Anion Resin	Strong Base
Volume per Vessel	1.4 ft^3

Controls	
Inlet Conductivity	Signet 2850
Outlet Conductivity	Signet 2850
Outlet Flow	Signet 2537
Outlet pH	Signet 2750
Controller	CompactLogix
Touchscreen	5.7" PanelView 7+
Drum Low Level Sensors	One (1) of Each

DI Supply Pump	
Horsepower	1 HP
Motor Control (Optional)	Variable Frequency Drive
UV Sterilization	Tank-size dependent

OPERATING SPECIFICATIONS

Feed Water Quality	
Temperature	55°F-105°F
pH	3-10 SU
TSS	<50 mg/L
TDS	<450 mg/L
Chlorine	<2 mg/L

Product Water Quality	
TDS	<3 mg/L
Conductivity	<5 uS
Silica	<20 µg/L
System Flow	5 gpm

REGENERATION SPECIFICATIONS

Flow Configuration	Alternating Duplex
Regeneration	Countercurrent
Waste Flow Cycle Time	1-5 gpm
Cycle Time	50 minutes

Cation Exchangers	
HCl per Cycle	2 gallons
Waste per cycle	50 gallons
Grains Capacity	28,000

Anion Exchangers	
NaOH per cycle	1 gallon
Waste per Cycle	50 gallons
Grains Capacity	25,200

UTILITIES

Electrical Voltage	208-230/460
Full Load Amps	20/10
Make-up Water	3 gpm

PHYSICAL DATA

Footprint (LxWxH)	111" x 45" x 91"
Shipping/Operating Wgt	1,750/2,000 lbs
Frame/Coating	304SS/Polyurethane
Piping	Schedule 80 PVC

Operating Profile - Removes dissolved solids from compatible feed water with TDS <450-mg/l using pre-treatment by back-washable carbon & replaceable bag filtration followed by two-stage, separate-bed cation & anion exchange. Produces a near-continuous supply of deionized water with duplex components with 50% of the resin in reserve or in regeneration. Water quality of less than 5 µS is produced when operated within design parameters

System Feed Tank - Constructed of HDLPE and sized based on system operating capacity. Analog level control provides for automatic water make-up supply, system operation, high level alarm, and to prevent the feed pump from running dry. PVC tank fittings for inlets & outlets pipes including tank isolation valve are included. As applicable, includes required seismic anchoring with PE certification

System Feed Pump - Sized to provide full rated-service flow even during periodic resin regeneration. Constructed of 316 SS, Viton® & ceramic wetted-parts. Centrifugal-drive 230/460VAC TEFC motor with optional variable Hz drives for soft-start to optimize operating efficiency. Includes pump inlet isolation & outlet check valves for service

Carbon Filters - Includes duplex parallel vessels sized for minimum service flow of 8-gpm per ft2 of bed surface area. Utilizes flow control valves for manual up-flow backwash to remove accumulated particles of one vessel during service without need to take system off-line. Backwash is required based upon pressure differential across vessels as measured by in-line gauges.

Macrolite® Prefilter- Filtration media is specified when fine pre-filtration is critical. This innovative media is used to remove particles as small as five microns. Provides effective elimination of iron and other particulates.

Bag Filters - There are two (2) bag filter housings each rated for 15-gpm flow piped in parallel with isolation valves allowing filter change-out during ongoing service. The housings are constructed of reinforced polypropylene with polypropylene filter bags with a nominal rating of 5 microns

Cation & Anion Exchanger – Both are two-vessel units alternating between service & regeneration controlled by Kinetico's proprietary patented regeneration control valve. Service flow as pressurized by the feed pump is down-flow with internal upper slotted and bottom diffuser. The in-service vessel produces the pressurized DI water required by the regenerating vessel for its chemical draw.

Regenerations – Initiated in Feed-forward mode based on resin loading as calculated separately for the Cation and Anion in-service vessel by measuring the feed water quality and flow. Feed-back regenerations are triggered based on the outlet water quality and with cation or alternatively anion regeneration triggered based on outlet water pH as an indicator of relative exhaustion.

Deionization Media - Each cation vessel shall utilize high-capacity, strong acid, macroporous cation resin, with an exchange capacity of >20,000 grains per cubic foot when regenerated with 4 pounds of hydrochloric acid per cubic foot of resin. The cation resin will have a minimum of 10% cross-linking. Each Anion vessel shall include high-capacity, weak and strong base anion resins, with an exchange capacity of >18,000 grains per cubic foot when regenerated with 6 pounds of sodium hydroxide per cubic foot of resin. The weak and strong base resin bead sizes are designed to keep the two layers separate. Inert plastic beads shall be used to pack both the Cation and Anion resin vessels while still allowing the resin minimum space for expansion and contraction.

Chemical Draw - The regenerating vessel will draw regeneration chemicals from a customer provided 55-gallon drum or bulk tank. The feed is educted by the Kinetico valve with internally pressurized water feed with concentration verified with a hydrometer and adjusted with proportional valving to control the flow of chemical regulated from 0-10 lbs/ft^3.

DI Water Storage Tank - Constructed of HDLPE and sized based on system operating capacity and production demand. Analog level control provides for automatic system operation, high level alarm, and to prevent the feed pump from running dry. PVC tank fittings for inlets & outlets pipes including tank isolation valve are included. As applicable, includes required seismic anchoring with PE certification. DI water is continuously recirculated through an UV Sterilizer at 3-4 tank turn-overs per hour to retard biological growth.

DI Water Supply Pump - Constructed of 316 SS, Viton® & ceramic wetted-parts. Centrifugal-drive 230/460VAC TEFC motor with optional variable Hz drives for soft-start to optimize operating efficiency. Skid outlets to service with a diaphragm valve for flow control. The DI water supply loop recirculates to the tank with a pressure-retaining valve to ensure adequate supply pressure

System Skids - Components other than tanks are skid-mounted, pre-piped, & pre-wired limiting installation to interconnect piping & electrical connections. Construction is of 304- SS with sandblasting prior to a polyurethane coating. Skids include feet for securing skids to the floor and lugs for electrical grounding of electrical components.

Piping - Piping is Schedule 80 PVC with both solvent welded and threaded connections.

System Controls - Operation, monitoring, and control of the integrated system utilizes an Allen-Bradley CompactLogix programmable automation controller (PAC) with Human-machine interface (HMI) through a Panelview Plus color touch screen. System operation while highly automated also employs manual control with an intuitive operator-friendly interface. Product water to process is assured with recirculation of "off-spec" water to the feed tank if above an operator-adjustable set point. System operating set points and alarms are set at the touch screen which is password protected to limit access to the operator, supervisor, maintenance, or engineer based on necessity and relative expertise.

91"

111"

45"