



DARSUN
SCIENTIFIC
PRECISE | RELIABLE | ACCURATE

S m a r t series
Laboratory water purification system

Darsun Scientific

S Smart series (SU)

Integrated Pure Water/Ultrapure Water System



Breakthrough design to highlight the aesthetics of science and technology.

S series, using the innovative automatic control system and LCD display, embedding new purification cartridges with patented structure, stable and reliable RO system with higher ion rejection rate, and DI ion-exchange cartridges with larger capacity, equipping with built-in 1.8-liter pressure water tank, more economical and cost-effective, is the economic choice for lab pure water.

System output ranges up to 60 liters/h and It can simultaneously produce ultrapure water (18.2MQ.cm), high pure water (>17.5MQ.cm) or pure water(<5 μ s/cm)^[1]. The quality of pure water fully meets or exceeds the requirements of water quality standard, specified by ASTM D1193-06, GB/T 11446.1-2013, GB/T 33087-2016, GB/T 6682-2008, CP, EP, USP, JP, CAP, CLSI, etc.

^[1] SU series products can produce single RO water (ion rejection rate $\geq$ 98%).

Application Area:

- HPLC、UPLC、LC-MS
- ICP-MS、ICP-AES、AAS、GC-MS
- MALDI-TOF-MS、IC、TOC analysis
- Electrochemical, spectrophotometric determination
- Preparation of microbial media and reagents
- Cell culture, PCR, IVF
- Protein purification, electrophoresis, biochemistry
- Proteomics, genomics, immunoassay
- Feed water of laboratory instruments, such as: autoclave, bottle washing machine, environmental test chamber, water bath, etc.

Smart and Concise System Design Create Excellent Quality Both Internally and Externally



Easy-to-use automatic control system

- White LCD display, size up to 68*87mm, shows intuitive and easy-to-read running status.
- Real-time running status display of flushing, producing water, water full, water shortage and maintenance.
- 2 water quality sensors (RO water, DI water or UP water) can monitor water quality and alarm real-timely.
- 4 (PP/PC/RO/DI) consumables life management function, can real-timely display remaining life of consumables, automatically remind expiration replacement, and avoid water quality declines.
- Acrylic touch panel, with 3-button layout, achieving fast system setup, RO forced flushing and easy 2-way water dispensing function, brings efficient and convenient operating experience.



Powerful 12-inch pretreated cartridge

- 2 in 1 composite cartridge- high performance activated carbon fiber and deep folding membrane, accuracy of 5μm, eliminates suspended solids and residual chlorine efficiently, to avoid carbon powder precipitation maximumly.



RO system

- RO system can remove up to 99% soluble inorganic ions, 99% soluble organics, microorganisms and particles.
- Compared with single RO system, the double RO water quality can be stable <5μs/cm (feed water conductivity <1500μs/cm), and the life of the ultrapure unit is longer.
- Auto-flushing function of RO module, to effectively prevent scale and prolong the life of the membrane.
- The unqualified RO water discharge function makes RO water quality is suitable to enter the back-end module.
- Integral package of discarded RO module, easy to install and maintain.



High performance purification cartridge^[1]

- Patented cartridge structure uses full droop flow mode to prevent the stratification of resin and ensure the exchange capacity of cartridge.
- The resin filling capacity per cartridge is up to 1.36 liters, and up to 2 cartridges can be equipped every host, with a total filling capacity of 2.72 liters, achieving greater ion exchange capacity and significantly reducing the running cost.
- All DuPont resin and high purity material of column ensure absolute 18.2MΩ.cm of ultrapure water resistivity and reduce TOC precipitation.

^[1] According to different model, cartridge configuration is different. For details, refer to the product manual.



Double wavelength UV module^[1]

- Long-life ultraviolet lamp (185&254nm), combined with SUS316 flowshell, can reduce the value of TOC to $\leq 2\text{ppb}$ ^[2], and can achieve efficient sterilization and inhibit bacterial growth, suitable for HPLC, UPLC, LC-MS and other precision instruments.

^[1] Applicable to ultrapure water systems equipped with UV module.

^[2] The values vary depending on the nature and concentration of contaminants in source water.



Ultrafiltration module^[1]

- With PES membrane and MWCO>5000D, effectively removes pyrogen/endotoxin, RNase, DNase, and produces bacteria-free, proteinase-free, and suitable for life science applications, such as cell culture/IVF.

^[1] Applicable to ultrapure water systems equipped with UF module.



MF terminal microfilter^[1]

- $(0.45\pm0.2)\mu\text{m}$ double-layer PES membrane ensures microbial retention, effectively removes particles and bacteria, and meets critical application requirements.

^[1] Applicable to ultrapure or high-pure water system. For details, refer to the product manual.



Built-in 1.8-liter pressure water tank

- With dual functions of water storage and pressurization, FDA approved, its fully enclosed structure effectively isolates air, and prevent the touching of CO₂ and other pollutants with pure water. Up to 100 liters is optional volume.
- 60 or 120 liters pure water tank with liquid level sensor, equipped with air filter, is optional to achieve more professional pure water storage.



UF terminal ultrafilter^[1]

- With PES membrane and MWCO>15000D, effectively removes pyrogen/endotoxin, RNase, DNase, and produces bacteria-free, proteinase-free and bacterial-free ultrapure water, suitable for life science applications, such as cell culture/IVF.

^[1] Optional accessory for ultrapure water system only.

Combination Of Technology & Aesthetics Creating highlights both inside and out



All injection molded housing

- New and advanced manufacturing process bring compelling customer experience.
- With geometric surfaces and simple lines, to show rich three-dimensional sense. With extraordinary imagination, to highlight the aesthetics of science and technology. Beautiful & Easy to use.

Innovative design of cartridge structure

- Patented compatible 3rd party design of PP/PC/RO/DI cartridge, to ensure consistency.
- Patented clamping mechanism, easier and more efficient to install and replace the cartridge. Patented error-proofing design, effective to avoid installation errors of different cartridges.
- 12.1L capacity brings 1.88 times bigger ion exchange capacity and more effective filtration.
 - Encrypted long serial number verification code can identify the authenticity of cartridges, record the use and replacement of cartridges, and ensure the safety of the system.



Powerful HiDis water dispenser arm (Optional)

- Color display, to monitor dispensing resistivity, water temperature, flow rate, single and cumulative water quantity.
 - General, quantitative, instant - 3 water dispensing modes cycle, meeting with needs of different water dispensing mode.
- It can be fixed on the bracket in any direction of 360 degrees horizontally, making dispensing water more flexible in different directions.
- Function of circulating with the host can always ensure the quality of pure water.
- Equipped with 0.2 μ m MF terminal microfilter or UF terminal ultrafilter, to produce bacterial-free, nuclease-free, proteinase-free ultrapure water.
 - Up to 5 sets of HiDis water dispenser arm can be connected to one host, fully covering the pure water usage range on the laboratory table.

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Dispensing Mode	18.2 $\text{M}\Omega\cdot\text{cm}$ @25°C
	3.2 ppb 25.2 °C
General	Flux 0000 min/min
Amount	500 ml



Professional PE pure water tank (Optional)

- Material: HDPE, double layer design. Anti-UV inhibitor is added to the outer layer to prevent the growth of algae inside and improve the durability of the tank. Pure PE raw material is used in inner layer to reduce material precipitation and ensure water quality safety.
- Drainage valve is installed at the cone bottom, which can empty the water tank and ensure thorough cleaning.
- Feeding from the bottom can reduce CO₂ absorption.
- The enlarged cover with seal can prevent air from entering and facilitate manual cleaning.
- Compound air filter is in the standard configuration, containing special packing and microporous membrane, to absorb CO₂ and organics, and filtrate bacteria and particles.
- UV disinfection module is optional to sterilize tank and inhibit the growth of bacteria in the tank.
- Equipped with an independent pressure sensor, independent level control module and LCD display, it can display the liquid level, storage (L) and storage percentage (%) of the water tank in real-time in the form of dynamic icons. A clear glance for storage status.

SU S m a r t series

Integrated Ultrapure Water System

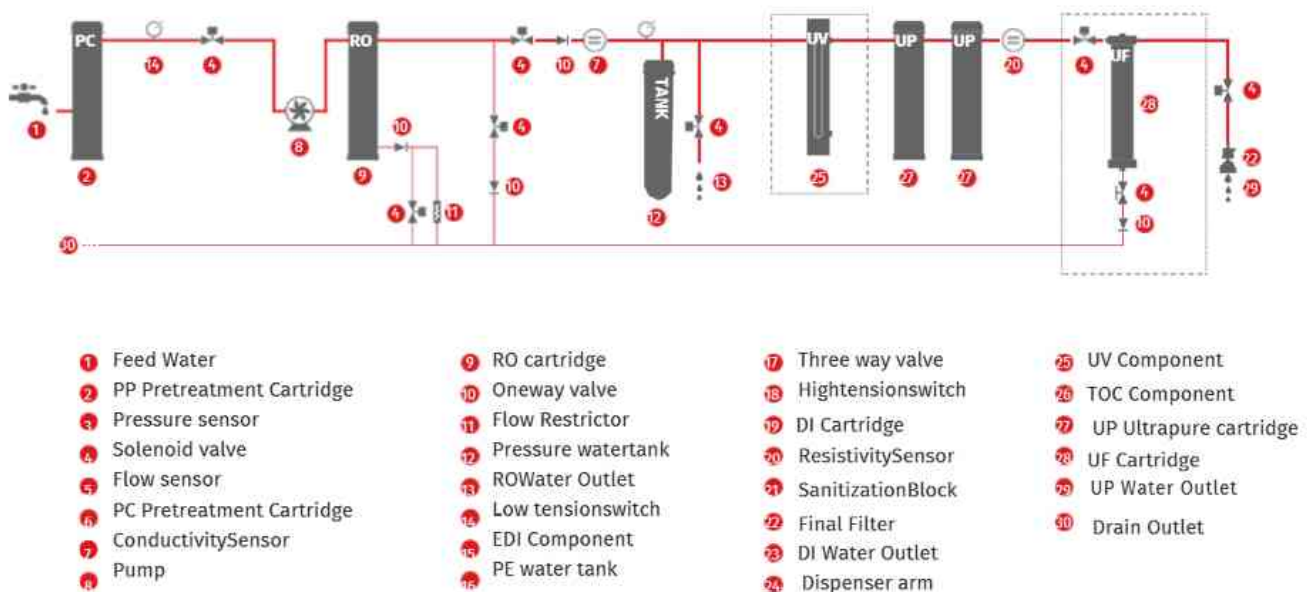
—Ultrapure water, RO Water

With tap water inlet, using the innovative automatic control system and LCD display, embedding new purification cartridges with patented structure, stable and reliable single RO system with higher ion rejection rate, and DI ion-exchange cartridges with larger capacity, equipping with built-in 1.8-liter pressure water tank.

System output: 20, 40, 60 liters/h. It can simultaneously produce ultrapure water (18.2MΩ.cm) and single RO water. The quality of pure water fully meets or exceeds the requirements of water quality standard specified by ASTM D1193-06, GB/T 11446.1-2013, GB/T33087-2016, GB/T6682-2008, CP, EP, USP, JP, CAP, CLSI, etc.



Flow Diagram



SU Specifications

Name	Standard	Low TOC	Eliminating endotoxin	Synthesizing
Model	DSU-21/41/61	DSU-21/41/61UV	DSU-21/41/61UF	SU-20/40/60UVF
Production rate ^[1]	20 series: 20 L/hour, 40 series: 40 L/hour, 60 series: 60 L/hour			
Dispensing rate ^[2]	Up to 2 liters/minute	Up to 2 liters/minute	Up to 2 liters/minute	Up to 2 liters/minute
Ultrapure water quality ^[3]				
Resistivity (25°C) ^[4]	18.2 MΩ.cm	18.2 MΩ.cm	18.2 MΩ.cm	18.2 MΩ.cm
Conductivity (25°C)	0.055 μs/cm	0.055 μs/cm	0.055 μs/cm	0.055 μs/cm
TOC [5]	5 ppb ^[6]	2 ppb ^[7]	5 ppb ^[8]	2 ppb ^[9]
Particles ^[8]	<1 /ml (>0.2μm)	<1 /ml (>0.2μm)	<1 /ml (>0.2μm)	<1 /ml (>0.2μm)
Bacteria ^[9] Endotoxin	<0.01 CFU/ml	<0.01 CFU/ml	<0.01 CFU/ml	<0.01 CFU/ml
^[10] RNases ^[10]	N/A	N/A	<0.001 EU/ml	<0.001 EU/ml
DNases ^[10]	N/A	N/A	1 pg/ml	1 pg/ml
Protease ^[10]	N/A	N/A	5 pg/ml	5 pg/ml
RO ^{1st} water quality ^[3]	N/A	N/A	0.15 μg/ml	0.15 μg/ml
Ion rejection rate				
	98%-99% (with new RO module)	98%-99% (with new RO module)	98%-99% (with new RO module)	98%-99% (with new RO module)
Organic rejection rate	>99% (MW>300 Dalton)	>99% (MW>300 Dalton)	>99% (MW>300 Dalton)	>99% (MW>300 Dalton)
Particles and bacteria rejection rate	>99%	>99%	>99%	>99%
Feed water requirements				
Water source type	Tap water	Tap water	Tap water	Tap water
Pressure	1-6 bar	1-6 bar	1-6 bar	1-6 bar
Temperature	5-40	5-40	5-40	5-40
Conductivity	<2000 μs/cm	<2000 μs/cm	<2000 μs/cm	<2000 μs/cm
	<300 ppm	<300 ppm	<300 ppm	<300 ppm
	<2000 ppb	<2000 ppb	<2000 ppb	<2000 ppb
Total hardness (In CaCO ₃)	<3 ppm	<3 ppm	<3 ppm	<3 ppm
TOC	4-10	4-10	4-10	4-10
Free chlorine	<30 ppm	<30 ppm	<30 ppm	<30 ppm
PH	100-240V, 50/60Hz	100-240V, 50/60Hz	100-240V, 50/60Hz	100-240V, 50/60Hz
	20 series: 48W, 40 series: 72W, 60 series: 120W			
Dissolved CO ₂	Main host: 273×555×568mm	Main host: 273×555×568mm	Main host: 273×555×568mm	Main host: 273×555×568mm
Power supply	About 21KG	About 21KG	About 21KG	About 21KG
Standard configuration	Main host 1 set All cartridges 1 set Built-in 1.8-liter water tank 1 set	Main host 1 set All cartridges 1 set Built-in 1.8-liter water tank 1 set	Main host 1 set All cartridges 1 set Built-in 1.8-liter water tank 1 set	Main host 1 set All cartridges 1 set Built-in 1.8-liter water tank 1 set
Dimension (L×W×H)				

weight

1 Affected by inlet water quality, pressure, temperature and status of RO membrane

2 Affected by the tank status and terminal filter

3 The following values are typical and may vary depending on the nature and concentration of feed water contaminants

4 According to USP requirements, the resistivity can be displayed as a non- temperature-compensated value

5 Affected by the type of organics

6 Inlet TOC<1000ppb, follow professional operating procedures and correct sampling conditions

7 Inlet TOC<50ppb, follow professional operating procedures and correct sampling conditions

8 Equip with terminal microfilter and follow professional operating procedures and correct sampling conditions

9 Equip with terminal microfilter and follow professional operating procedures and correct sampling conditions

10 Equip with terminal ultrafilter and follow professional operating procedures and correct sampling conditions

Ordering Information

Host	Item No	Product description	
	DSU-21	Integrated ultrapure water system,20L/h, Standard, Ultrapure water, RO ^{1st} water	
	DSU-41	Integrated ultrapure water system,40L/h, Standard, Ultrapure water, RO ^{1st} water	
	SU-61	Integrated ultrapure water system,60L/h, Standard, Ultrapure water, RO ^{1st} water	
	DSU-21UV	Integrated ultrapure water system,20L/h, Low TOC, Ultrapure water, RO ^{1st} water	
	DSU-41UV	Integrated ultrapure water system,40L/h, Low TOC, Ultrapure water, RO ^{1st} water	
	DSU-61UV	Integrated ultrapure water system,60L/h, Low TOC, Ultrapure water, RO ^{1st} water	
	DSU-21UF	Integrated ultrapure water system,20L/h, Eliminating endotoxin, Ultrapure water, RO ^{1st} water	
	DSU-41UF	Integrated ultrapure water system,40L/h, Eliminating endotoxin, Ultrapure water, RO ^{1st} water	
	DSU-61UF	Integrated ultrapure water system,60L/h, Eliminating endotoxin, Ultrapure water, RO ^{1st} water	
	DSU-21UVF	Integrated ultrapure water system,20L/h, Synthesizing, Ultrapure water, RO ^{1st} water	
	DSU-41UVF	Integrated ultrapure water system,40L/h, Synthesizing, Ultrapure water, RO ^{1st} water	
	DSU-61UVF	Integrated ultrapure water system,60L/h, Synthesizing, Ultrapure water, RO ^{1st} water	
Cartage	HPC103	Pretreatment cartage C	
	HPC302	RO1st module S2	
	HPC304	RO1st module S4	
	HPC306	RO1st module S6	
	HPC303	RO1st module F3	
	HPC305	RO1st module F5	
	HPC501	DI cartridge	
	HPC601	UP cartridge, standard	
	HPC602	UP cartridge, Low TOC	
	HPC700	Air filter for tank	
	HPC701	185&254nm double wavelength UV lamp	
	HPC702	254nm UV lamp	
	HPC709	UF ultrafiltration module	
	HPC801	TF terminal microfilter	
Accessory	Item No	Product description	
	TANK1018	1.8-liter pressure water tank	
	TANK1015	15-liter pressure water tank	
	TANK1040	40-liter pressure water tank	
	TANK1075	75-liter pressure water tank	
	TANK1100	100-liter pressure water tank	
	TANK1061	60-liter PE pure water tank, equipped with air filter and independent level control module with LCD display	
	TANK1060	60-liter PE pure water tank, equipped with air filter	
	TANK1121	120-liter PE pure water tank, equipped with air filter and independent level control module with LCD display	
	TANK1120	120-liter PE pure water tank, equipped with air filter	
	Item No	Product description	
	DISP2001	HiDis dispenser arm (independent), equipped with 2M connection kit	
	PWA7200	Automatic water softener (salt required)	
	PWA7010	Pretreatment filter for source water	
	PWA7011	PP cartridge for pretreatment filter (5 µm,10 inch)	
	PWA7012	RS cartridge for pretreatment filter (10 inch)	
	PWA7501	Foot switch	
	PWA7502	External leak sensor	
	PWA1303	Wall-mounted mounting bracket for S	



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