18.2 MΩ×cm Ultrapure Water.

TÜV CERT DIN EN ISO 9001:2000

Clean for sure! TKA GenPure.

Now also with UV-intensity and TOC monitoring.

TKA WATER PURIFICATION SYSTEMS

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TKA GenPure – with UV-intensity and TOC monitoring.

Ultrapure water quality - with no reservations!

There are areas in which particularly high demands are placed on the water quality.

In chemical organic or inorganic trace analysis, for example, for TOC measurements and instrumental methods such as HPLC, ICP-MS and IC.

And the demands are even higher in the life sciences. Freedom from endotoxines and nucleases is a necessity when preparing, or working with, tissue and cell culture media, PCR, DNA, or monoclonal antibodies.

The Standard, UF, UV and UV/UF versions of GenPure have already convincingly demonstrated the benefits of the new system control and the high-precision, USP-complying conductivity measurement with temperature compensation that can be switched on or off.

The new generation GenPure UV-TOC and UV-TOC/UF offer even more:

Continuous real-time TOC measurement combined with permanent monitoring of the intensity of the UV-lamp.

- No longer the risk of false TOC-values with decreasing UV-intensity!
- The TOC-value shown is correct - you can rely on it!

Technical intelligence for reliable processes!

User assurance is given by the continual availability of process-related information. The most important measurement results are shown in the actual NONSTOP mode display during the dispensing of ultrapure water.

All further displays of values and limiting value settings are on call with the menu-key. Limiting values can be individually set and and protected from unwanted access. A fault message is given should they be exceeded.

Trends or faults can so be timely recognized, and appropriate measures such as cleaning and sanitizing be taken without delay. All automatically at the press of a button, naturally.

System controls

- Digital microprocessor control for fully automatic supervision and control
- Menu-guided operation with clear text displays of all operating functions and performance parameters

Options

- Choice of English, German or French
- Conductivity (in µS/cm) or specific electrical resistance (in MΩ×cm)

Fault storage

- Saving of all faults from the last 4 weeks

GLP-compliant documentation

- Real time clock and code-protected operating system prevent unauthorized changes or resetting
- RS 232 Interface with adjustable send-interval for safe data transfer of all measured data and faults, with date and time, to a PC or log printer

Further benefits ensure best ultrapure water quality!

- Automatic interval-switching of the pump for regular recirculation of the ultrapure water through the purification chain and UV-photooxidation.
- Sanitization of all parts that contact the water for optimal microbiological control!

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User convenience and GLP-compliance

Operating/controlling unit
- Ergonomic form, can be swivelled for best keypad use and dazzle-free read-ability
- IP 54 protection

Easy-to-read display
- Illuminated, 4-line, alphanumeric LCD with 16 characters

Simple operation
- Clearly designed keypad for sure usage and rapid scanning

Exact dispensing
- Finely-controlled PVDF valve allows exact dispensing of the volume required
- Option of fully automatic volume control over 0.01 to 99.9 Litres for large container filling

Particle-free dispensing
- Sterile filtration as water is dispensed
- Protective bell avoids unintentional hand contact of the outlet, e.g. when filling tubes
- 20 cm clearance offers room for tall receiving vessels

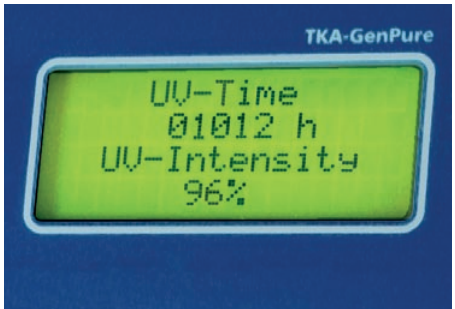
TKA Measurement methods. Highest accuracy and reliability!

Conductivity measurement
The cell constants of the two high-precision conductivity measuring cells are individually measured out and each value deposited in the system. The electronics are automatically calibrated and controlled prior to each measurement.

Temperature measurement
Platinum chip temperature sensors with an accuracy of +/- 0.1° C are used here. The temperature compensation can be switched off. USP requirements are fulfilled and optimal measurement reliability ensured.

Online TOC measurement
Real time TOC-monitoring with continual and accurate measurement of the organic content of the water within the range 1 – 99 ppb.

Monitoring of the intensity of the UV-radiation
A UV-photodiode permanently checks the intensity of the radiation from the UV-lamp. A decrease in the UV-intensity that would result in a false TOC-value is readily identifiable from the % value shown. The UV-lamp must only be changed when really necessary.



The display on the left shows:

Non-Stop:	System ready to dispense ultrapure water
1 ppb:	Ultrapure water TOC-value
0.055 µS/cm:	Ultrapure water conductivity
23.2 °C:	Temperature measured for conductivity compensation
UV/TC:	UV-lamp and temperature compensation switched on

(Empty space (Line 4) is reserved for fault messages)

This display shows

UV-Time 01012 h:	UV-lamp time used
UV-Intensity 96%:	Actual UV-intensity in percent

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Technical data and accessories

Ultrapure water system	TKA GenPure UV-TOC	TKA GenPure UV-TOC/UF
Typical applications:	Chemical analysis (trace analysis, HPLC, IC, ICP-MS, TOC-measurements)	Life sciences (cell and tissue culture media, PCR, DNA, monoclonal antibodies)
Flow rate in l/min:	up to 2.0	up to 2.0
Conductivity in µS/cm:	0.055	0.055
Resistance in MΩ×cm at 25 °C:	18.2	18.2
TOC-value in ppb:	1 – 5	1 – 5
Endotoxines in EU/ml:	—	0,001
Bacterial content in CFU/ml:	< 1	< 1
Particles > 0.22 µm/ml:	< 1	< 1
Oper. pressure in bar, min./max.:	0.1 – 6	0.1 – 6
Electrical requirements:	230 V/ 50 Hz	230 V/ 50 Hz
Power consumption:	0.1 kW	0.1 kW
Connectors:	R 3/4" male thread	R 3/4" male thread
Ambient temperature:	+2 °C – +35 °C	+2 °C – +35 °C
Serial interface:	RS 232	RS 232
Dimensions WxDxH in mm:	372 x 330 x 615	372 x 330 x 615
Weight in kg:	24	25
Article No.:	**08.2206**	**08.2207**

TKA GenPure

as under-bench version, complete with holder (see photo below).

Action radius:	up to 0.4 m
Angle of swivel:	up to 60°
Stand height, length:	acc. to user requirements
Distance from main unit:	max. 3 m

Replacement materials

09.2000 Pretreatment unit, complete
09.2001 Replacement cartridge for pretreatment unit
09.2002 Replacement UV-lamp
09.2005 Filter cartridge
09.1003 Sterile filter, 0.2 µm
09.2201 Disinfection cartridge
09.2202 Disinfection tablets, pack of 50

Log printer

For connection to high purity and ultrapure water purification systems with RS 232 interface. Ensures safe recording of all measured values and faults, complete with date and time, as required by GLP Guidelines.
Article no.: 09.2207

Feedwater required:

We recommend pretreatment with the TKA ion exchange pretreatment system or UP/UPW Pacific system, or the use of distilled water.

Feedwater specifications:

Conductivity:	< 5 µS/cm
Free chlorine:	max. 0.05 ppm
TOC-value:	max. 50 ppb
Turbidity:	< 1.0 NTU
Carbon dioxide:	max. 30 ppm
Silicate:	max. 2 ppm
Pressure:	0.1 – 6 bar
Ambient temperature.:	+2 °C – +35 °C

Space saving cupboard installation. The control unit with PVDF dispensing valve can be positioned above for utmost convenience.

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TKA Technology

Ultrapure water from purified water

The purified water quality required as feedwater

- Tap water subjected to ion exchange, reverse osmosis or distillation
- Optimally, the purified water supplied by a TKA Pacific system

The contents of organic and inorganic substances in the feedwater are reduced to values approaching their detection limits by the serial combination of high-efficiency TKA purification technologies described below.

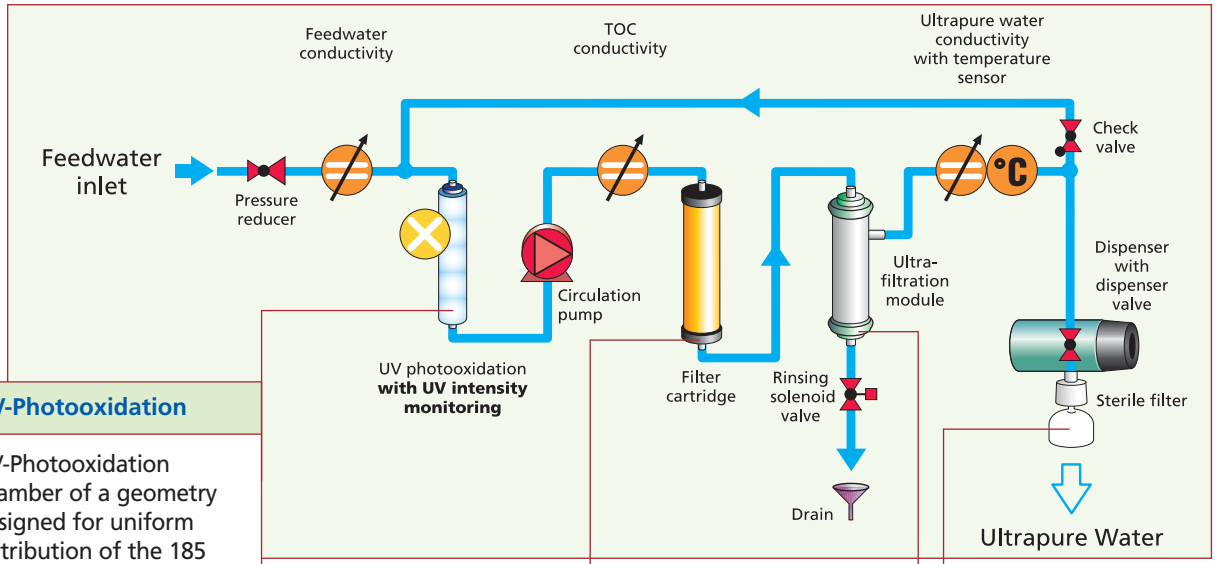
GenPure UV-TOC/UF

Conductivity:	0.055 µS/cm
Electrical resistance:	18.2 MΩ×cm
TOC value:	1 – 5 ppb
Bacterial content:	< 1 CFU/ml
Particle content:	< 1 per ml
Endotoxines:	0.001 EU/ml

GenPure UV-TOC:

Conductivity:	0.055 µS/cm
Electrical resistance:	18.2 MΩ×cm
TOC value:	1 – 5 ppb
Bacterial content:	< 1 CFU/ml
Particle content:	< 1 per ml

TKA GenPure UV-TOC/UF Flowchart



UV-Photooxidation

UV-Photooxidation chamber of a geometry designed for uniform distribution of the 185 nm and 254 nm dual-wavelength UV-light. The intensity of the emitted UV-radiation is continually monitored and can be called to display at any time as percentage of the initial intensity.

The 254 nm wavelength UV-light kills bacteria by destroying the DNA in their cells, and so effectively minimizes the bacterial content within the system. The combination of the two wavelengths produces very reactive free hydroxyl radicals which oxidize and split small organic substances that are otherwise difficult to remove. The cleavage products are removed in subsequent steps.

Adsorption + Ion exchange

Purification set containing a combination of highly pure adsorptive material and ion exchange resins. The quality attained here is monitored by continuous TOC and conductivity measurements. The measured values are displayed.

This polishing step adsorbs and retains low molecular weight organic molecules, such as UV-photooxidation cleavage products, as well as remaining inorganic ions.

Ultrafiltration

(Only for GenPure UV-TOC/UF)

The asymmetric structure of the polysulfone ultrafilter, and tangential flow across the surface of it, ensure a long service life. Retained substances are led to drain in the concentrate.

Ultrafiltration separates suspended and dissolved higher molecular weight contaminants in the water, but serves here mainly to produce water free of endotoxines and nucleases.

Membrane filter

An 0.2 µm pore size membrane filter in large area capsule form, autoclavable and with venting valve and protective bell.

The validated sterilizing filter reliably removes bacteria and particles larger than 0.2 µm directly prior to the ultrapure water outlet.

The result: Ultrapure water quality neat!

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Qualification and Maintenance

TKA Qualification support

The Operating Instructions manual describes in detail the procedures that are necessary for preparing, installing, commissioning, operating and maintaining the system for it to consistently produce water within the given quality specifications. This document is also an important basis for the qualification of the system.

The TKA Qualification Manual

This is designed to assist qualification. The series of steps through Design Qualification (DQ), Installation Qualification (IQ) and Operational Qualification (OQ) leads to a final evaluation of the qualification documentation.

Maintenance

We recommend that you close a service contract with the TKA service company responsible for your area for carrying out the necessary maintenance and calibration work. You will then have the certainty that your ultrapure water system will be continually kept at a high level of operational safety and readiness, GLP-conform.

TKA GenPure without TOC-monitoring

Descriptions of TKA ultrapure water systems without TOC monitoring, as well as TKA reverse osmosis systems for laboratory applications are given in the TKA "Ultrapure Water Systems" brochure.

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