Ultra pure water, 18,2 MΩ×cm.

TKA GenPure.
TKA xCAD.

For Life Sciences, Analyses and Laboratory applications

TKA WATER PURIFICATION SYSTEMS

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TKA GenPure. TKA xCAD.

Ultra pure water 18,2 MΩ×cm, TOC 1 – 5 ppb. Assured quality. Even for the most demanding and sensitive applications.

In the Biosciences
- For molecular biology and microbiology work
- In the preparation of cell and tissue cultures
- In PCR, DNA sequencing
- Electrophoresis

In Analytical Chemistry
- Organic and inorganic trace analysis
- HPLC
- GC-MS, ICP-MS, GF-AAS
- TOC Measurements, IC

In Routine Laboratory Work
- Analytical procedures
- IC, AAS, ICP-ES

Norms
All TKA Genpure systems exceed the norms ASTM type I, ISO 3696 Grade 1, ASTM D 1193, CLSI.

Made-to-measure performance. The right system for any requirements.

TKA GenPure
TKA GenPure is a system to produce Type I, reagent-grade water suitable for all general laboratory applications.

TKA GenPure UF
With ultrafiltration for pyrogen- and nuclease-free water.

TKA GenPure UV
With 185/254 nm UV photooxidation for the reduction of organic compounds.

Each system can be optionally installed space-savingly under the bench or in a lab cupboard, whereby up to three control/dispenser units can be connected at a distance from it, with convenient control at each point-of-use.

TKA GenPure UV/UF
With a combination of ultrafiltration and UV photooxidation.

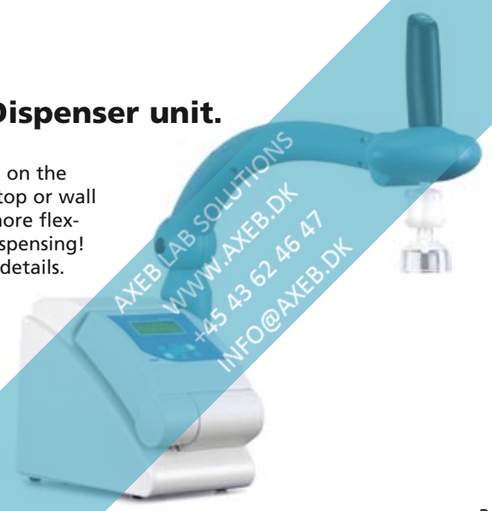
TKA GenPure UV/TOC
With UV photooxidation and TOC value display.

TKA GenPure UV/TOC/UF
With 185/254 nm UV photooxidation, ultrafiltration and TOC value display.

All TKA systems can be qualified acc. to GLP and USP 30 <645> and <643>.

TKA xCAD Control And Dispenser unit.

Gives you more elbow-room on the lab bench. Usable as bench-top or wall mounted system. Provides more flexibility to ultra pure water dispensing! See pages 6 and 7 for more details.



Intelligent technology that simplifies your work. Day for day!

Optimum System Performance!

Visible ultra pure water quality.
The measurements of conductivity and real-time TOC value are made directly prior to the dispensing valve. The display shows the most important measured values during ultra pure water dispensing. For example:

The display shows

Non-Stop:	System ready for ultra pure water dispensing
1 ppb:	TOC value of the ultra pure water
0.055 µS/cm:	Conductivity of the ultra pure water
0.01 Liter:	Adjustable volume to be dispensed
22.7 °C:	Temperature measured for conductivity compensation
UV/TC:	UV lamp and temperature compensation switched on

All other display values and limiting value settings can be called from the menu by keystroke. Limiting values can be individually set, protected from unauthorized access. A fault message to the operator signals any overrun.

Trends and faults can so be recognized early, allowing appropriate measures such as cleaning and disinfection to be immediately carried out.

Automatic interval switching of the pump ensures regular recirculation of system-held ultra pure water through the purification circuit and UV photooxidation. Water remains clean and free from recontamination.

Fully automatic disinfection of all internal components that contact water.

With the greatest accuracy!

Measurement of conductivity
- By two high precision measuring cells. With fully automatic check and calibration prior to each measurement via built-in reference resistance.

Temperature measurement
- By a platinum chip temperature sensor of +/- 0.1° C accuracy. With temperature compensation that can be switched off acc. to USP <645>.

Online TOC measurement at the dispensing point
- Real time TOC monitoring for continual measurement of organic substances in the water acc. to USP 30 <643>.

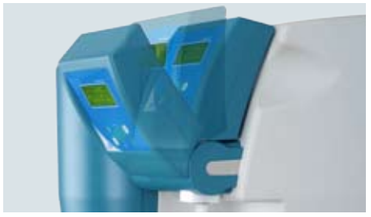
Intensity monitoring
- A photosensor continually checks the intensity of the UV lamp. A decrease in the measured UV radiation that would lead to an incorrect TOC measurement result is directly indicated in %.

The display shows

UV time 01012 h:	UV Lamp operating time
UV intensity 96 %	UV Intensity comparison value

With much comfort!

Easily readable
- The ergometrically designed control/dispenser unit can be tilted for optimal key pressing and dazzle-free readability.



- Illuminated four-line alphanumeric display.
- Display of conductivity (in µS/cm) or specific electrical resistance (in MΩxcm).

Simple to use
- Menu-driven operation with clear text displays of all functions and performance parameters.
- Choice of English, German or French.

Exact dosing
- High precision PVDF drawoff valve for dispensing with sterile filter
- Electronic dosing programme for fully automatic volume control of 0.01 – 65.0 litres.
- More than 30 cm free space for dispensing, even suitable for high vessels.

Fully automatic functioning
- Digital microprocessor control for automatic monitoring and control, with storage of faults from the last four weeks. Integrated in the operating and control unit, protection type IP 54.
- Real-time clock and code protected operating system prevent unauthorized changes and settings.

GLP Documentation
- RS 232 Interface with adjustable sending intervals, for safe data transmission of all measured values and faults, with date and time, to a PC or printer.

Rapid cartridge replacement
- The Aquastop quick-connects of the ultra pure water set allow replacement within seconds during operation.

TKA GenPure. TKA xCAD.

For flexible operation in the lab!

No one laboratory is quite like the other and the jobs to be done are also different, just as are the wants for the place and position of an ultra pure water system that is to supply one or more workplaces. GenPure offers here a wide spectrum of set-up possibilities for the optimum choice.

Ultra pure water. There where you need it.

With a footprint about the size of an A 4 portrait, GenPure can be stood on the lab bench or, if preferable, it can be hung on a wall (without the need for extra mounting material).

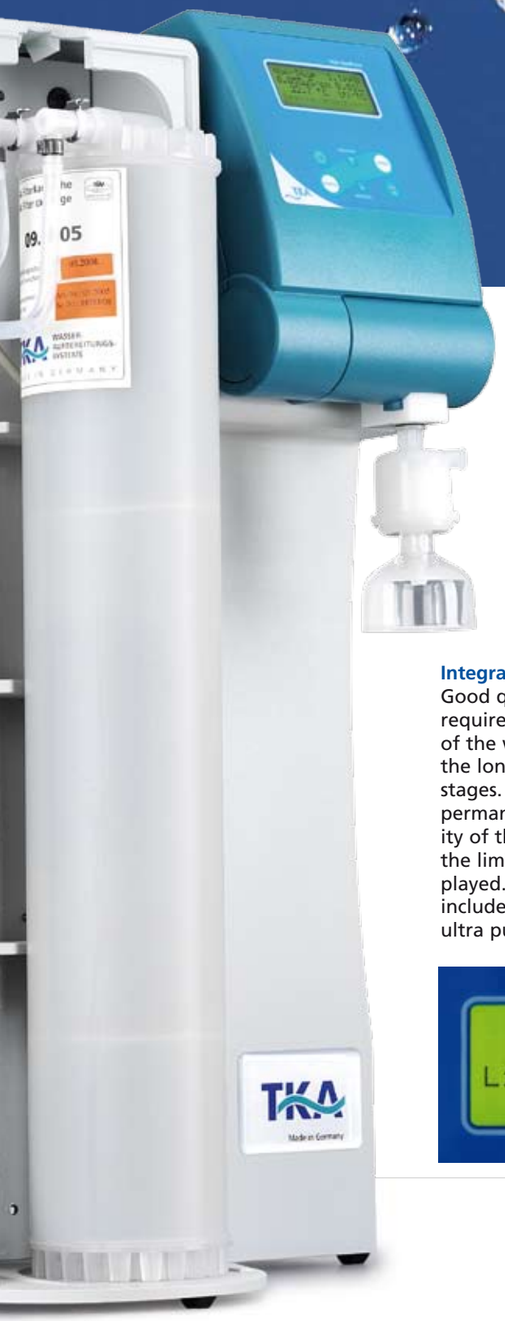
The space-saving under bench version can have up to three flexible control/dispenser units fitted to it for use at up to 3 m distance from it.

TKA xCAD: extended Control And Dispenser unit

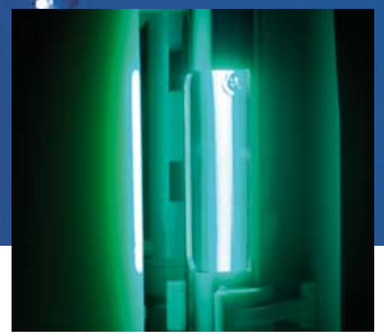
High performance in compact format! Leaves more elbow-room on the lab bench!

- Can be stood on a bench or be even more space-savingly wall mounted
- Inclinable operator module for practical handling and good viewing
- Complete system control and steering via the operator module
- Turnable and height adjustable dispenser arm with extendable joystick. Action radius 80 cm
- Ergonomically shaped dispensing pistol provides highly precise volume dosing at the press of a button

Economical.
By long-lasting replacement parts.



Integrated feedwater monitoring
Good quality feedwater is a basic requirement for the degree of purity of the water produced, as well as for the long service lives of all purification stages. An additional measuring cell permanently monitors the conductivity of the feedwater. Any exceeding of the limiting value is immediately displayed. The feedwater must always be included in a proper validation of an ultra pure water system.



UV Photooxidation 185/254!
An optional, high performance UV unit serves for a reliable reduction in the content of microorganisms and their metabolites. The top-grade UV lamp is of synthetic quartz glass for the greatest light yield of exactly the right wavelengths. It is held in a robust and corrosion-resistant ANSI 316 L stainless steel housing.

Intensity monitoring included!
The intensity of the the UV radiation is permanently monitored and displayed in %. The UV lamp must therefore only be replaced when really necessary.

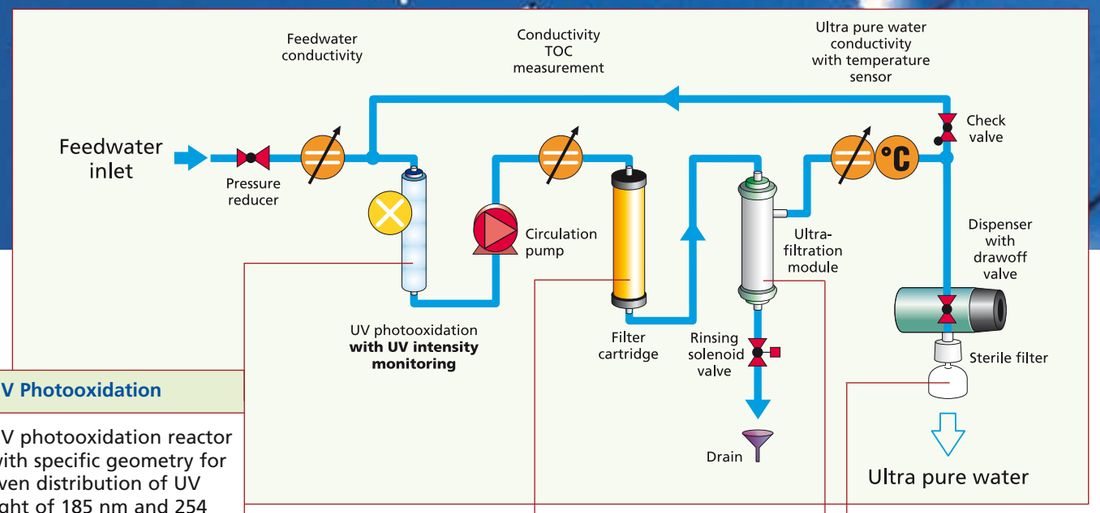
Long-lasting ultrafilter!
A high efficiency ultrafilter reduces the level of endotoxines. The large ultrafiltration area and the surface-cleaning automatic rinse ensure both a high flow rate and a long service life.

Powerful ultra pure water set!
The ultra pure water set is very generously dimensioned. It so combines a long service life with cost-saving. The display gives notice of when it should be replaced.

TKA Technology.

TKA technology effectively combines various highly efficient purification stages and so minimizes organic and inorganic compounds to their detection limits.

Flow chart: TKA GenPure UV-TOC/UF



UV Photooxidation

UV photooxidation reactor with specific geometry for even distribution of UV light of 185 nm and 254 nm wavelengths.

254 nm UV light kills bacteria by destroying the DNA in their cells. The bacterial content within the system is minimized. The combination of the two wavelengths produces hydroxyl free radicals that are extremely reactive. They oxidize and cleave small organic substances that are otherwise difficult to remove. The cleavage products are removed in the next purification stage.

Adsorption + Ion exchange

Purification set with a combination of high purity adsorptive material and an ion exchanger. The quality attained is monitored and displayed by continuous measurements of TOC and conductivity.

The combination of adsorption and ion exchange removes the smallest organic molecules, such as the UV photooxidation cleavage products, as well as remaining inorganic ions.

Ultrafiltration

The asymmetric structure of the polysulphone ultrafilter and the tangential flow across the surface of it ensure a long sevice life. Retained substances are led to drain with the concentrate flow.

Ultrafiltration separates off suspended and dissolved high molecular weight water compounds. It predominately serves here, however, to produce ultra pure water free of endotoxines and nucleases.

Membrane filter

Validated sterile filter of 0.2 µm pore size in a large area capsule with vent valve and protective bell. Sterile filter for the reliable removal of bacteria and particles directly prior to ultra pure water dispensing. Suitable for sterilization.

The result: Ultra pure water of ASTM Type 1 quality.

Conductivity in µS/cm:	0.055
Resistivity, MΩxcm at 25 °C:	18.2
TOC value in ppb:	1 – 5
Bacteria in CFU/ml:	< 1
Particulates, > 0,22 µm/ml	< 1
Endotoxines in EU/ml:	0.001
RNase in ng/ml:	0.01
DNase in pg/µl:	4
Flow rate:	Up to 2 l/min

TKA GenPure. TKA xCAD

Technical specifications

	TKA GenPure	TKA GenPure UF	TKA GenPure UV	TKA GenPure UF/UV	TKA GenPure UV-TOC	TKA GenPure UV-TOC/UF
Applications:	AAS, IC, ICP, standard buffer	Molecular biology, microbiology, PCR, IVF, monoclonal antibodies	Inorganic and organic trace analysis, HPLC, ICP-MS, IC, TOC analysis	Molecular biology, PCR, DNA, monoclonal antibodies, cell culture media	Chemical analysis (trace analysis, HPLC, IC, ICP-MS, TOC measurements)	Biosciences (cell and tissue culture media, PCR, DNA, monoclonal antibodies)
Flow rate in l/min:	up to 2	up to 2	up to 2	up to 2	up to 2	up to 2
Conductivity in µS/cm:	0.055	0.055	0.055	0.055	0.055	0.055
Resistivity (MΩxcm at 25 °C):	18.2	18.2	18.2	18.2	18.2	18.2
TOC Value (ppb):	5 – 10	5 – 10	1 – 5	1 – 5	1 – 5	1 – 5
Bacterial level (CFU/ml):	< 1	< 1	< 1	< 1	< 1	< 1
Particles (0.22 µm/ml):	< 1	< 1	< 1	< 1	< 1	< 1
Endotoxines* (EU/ml):	—	0.001	—	0.001	—	0.001
RNase* (ng/ml):	—	0.01	—	0.01	—	0.01
DNase* (pg/µl):	—	4	—	4	—	4
Operating pressure:	0.1 – 6 bar	0.1 – 6 bar	0.1 – 6 bar	0.1 – 6 bar	0.1 – 6 bar	0.1 – 6 bar
Mains voltage:	230 V/ 50 Hz	230 V/ 50 Hz	230 V/ 50 Hz	230 V/ 50 Hz	230 V/ 50 Hz	230 V/ 50 Hz
Power consumption:	0.1 kW	0.1 kW	0.1 kW	0.1 kW	0.1 kW	0.1 kW
Connector size:	R ¾" male	R ¾" male	R ¾" male	R ¾" male	R ¾" male	R ¾" male
Ambient temperature:	+2 °C – + 35 °C	+2 °C – + 35 °C	+2 °C – + 35 °C	+2 °C – + 35 °C	+2 °C – + 35 °C	+2 °C – + 35 °C
Dimensions W x D x H, in mm:	372 x 330 x 615	372 x 330 x 615	372 x 330 x 615	372 x 330 x 615	372 x 330 x 615	372 x 330 x 615
Weight (kg):	22	23	23	24	24	25
Cat. no.:	**08.2202**	**08.2203**	**08.2205**	**08.2204**	**08.2206**	**08.2207**

GenPure systems incl. xCAD dispenser	TKA GenPure	TKA GenPure UF			TKA GenPure UV-TOC	TKA GenPure UV-TOC/UF
	with dispenser **bench** version	with dispenser **bench** version			with dispenser **bench** version	with dispenser **bench** version
Cat. no.:	**08.2212**	**08.2213**	—	—	**08.2216**	**08.2217**
	TKA GenPure	TKA GenPure UF			TKA GenPure UV-TOC	TKA GenPure UV-TOC/UF
	with dispenser **wall** version	with dispenser **wall** version			with dispenser **wall** version	with dispenser **wall** version
Cat. no.:	**08.2222**	**08.2223**	—	—	**08.2226**	**08.2227**

* Depending from the concentration of contaminants in the feedwater

UF = with add. ultrafilter
UV = with 185/254 nm photooxidation

UV-TOC = with UV lamp 185/254 nm photooxidation and TOC display
UV-TOC/UF = with UV lamp 185/254 nm photooxidation, TOC display and ultrafiltration

Log printer

Log printer for connection to purified water and ultra pure water systems with RS 232 interface. For safe documentation of all measured values and faults with date and time in compliance with GLP-Guidelines.

Cat. no.: **09.2207**

Replacement items and accessories

09.2002	Replacement UV-lamp
09.2005	Ultra pure water cartridge
09.1003	Sterile filter, 0.2 µm
09.2201	Disinfection cartridge
09.2202	Disinfection kit, pack of 12
09.2210	Volume dosing (standard for GenPure systems with xCAD)
09.2900	Qualification documents acc. to GLP

TKA xCAD

External dispensing with control unit

Actions radius:	up to 0.8 m
Tilting radius:	180°
Dispensing rate:	up to 1.2 l/min
Distance from main system:	up to 3 m
Connectable number of dispenser units:	up to 3

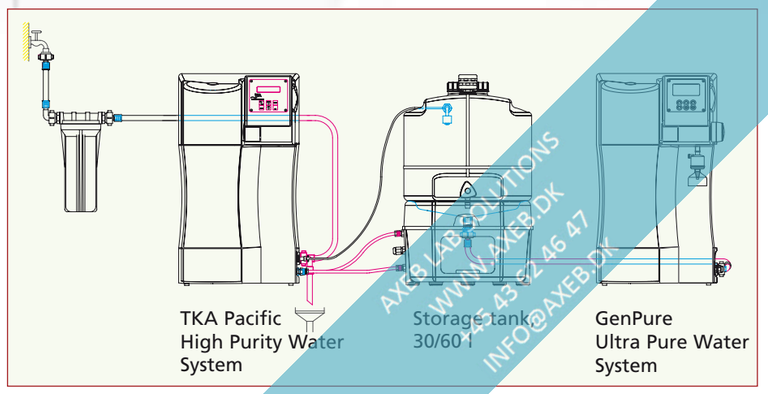
Feedwater requirements for TKA GenPure

TKA Pacific. Changes tap water to ASTM Type II water, the ideal feedwater for GenPure.

We recommend distilled water or tap water that has been pretreated by flow through a DI type TKA ion exchanger or a TKA Pacific water purification system with connected 30 or 60 litre storage tank. Please request our TKA Pacific UP/ UPW and TKA ion exchange brochures.

Feedwater specifications:

Colloid index (SDI):	max. 1
Conductivity:	< 5 µS/cm
TOC value:	max. 50 ppb
Free chlorine:	max. 0.05 ppm
Turbidity:	< 1.0 NTU
Carbon dioxide:	max. 30 ppm
Silicate:	max. 2 ppm
Pressure:	0.1 – 6 bar
Ambient temp.:	+2 °C – +35 °C



Qualification and Maintenance

Technical support in the qualification of your TKA GenPure system

The assembly, installation, start-up , operation and maintenance of the system are explained in detail in the Operating Instructions. Proper operation ensures a constant production of ultra pure water within the given specifications for a long time. The Operating Instructions are also an extremely important basis for the qualification of the system.

The TKA Qualification Manual

This is designed to assist you in qualifying your system. A series of steps lead through Design Qualification (DQ), Installation Qualification (IQ) and Operating Qualification (OQ) to the final evaluation of the qualification documents.

Maintenance

We recommend that you sign a maintenance contract with your TKA authorized customer service company for the carrying out of all calibration and maintenance work.
You then have the assurance that the GLP-conformity and high operational safety and reliability of your system will be maintained.

Your TKA authorized specialist distributer:

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