

HYDRO WELL®
UV disinfection system
Type: S 3, 6, 15, 25

Application

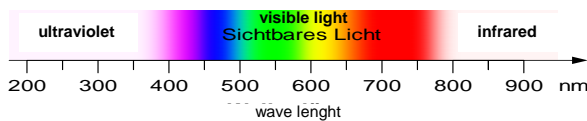
Our HYDRO WELL® UV disinfection system of type S is used for disinfection of iron and manganese free drinking water. A save and environment-friendly disinfection according to § 11 of the drinking water regulation is guaranteed for the use of our systems. The systems are certified according to W 294-1.

UV light has much energy and is very effective for disinfection at a wavelength between 250 and 260 nm. In this range the DNA of dangerous micro organisms (e.g. germs, legionella bacteria, pseudomonas and coli) is changed so that they lose their ability to reproduce themselves and get inactivated.

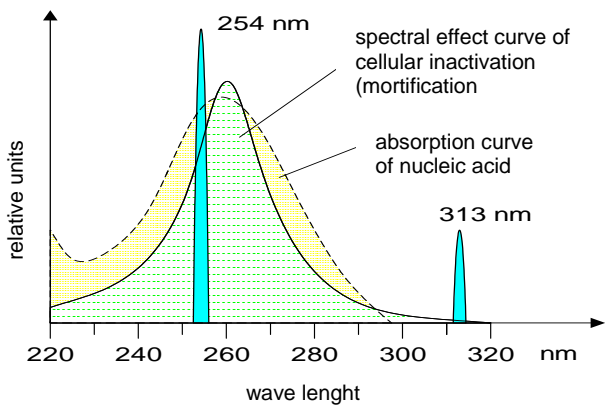
Our HYDRO WELL® UV disinfection systems are designed and used for drinking water applications at irradiation intensity of 400 J/m² at the end of the operating life of lamps. The maximum effect of the UV disinfection system is given at the disinfection spectral range with 254 nm (wave length).



UV-light



...and its effect



The efficiency of UV systems is determined by the light transmission of the water. 96% transmission should be observed for UV systems, but the aim should be at 98%. Impairments of light transmission of the water are possible because of turbid substances, iron content etc.

The risk of formation of dangerous by-products (e.g. trihalomethanes (THM) at the chlorination) does not exist because there are no chemical substances to be used.

Advantages of UV disinfection:

- low operating costs
- easy use
- fast disinfection
- no change of water quality in terms of odour and taste
- no use of chemicals
- operational safety

Use of the UV disinfection in the following areas of application:

- private and local drinking water supplies
- process water in the industry
- beverage and food industry
- rainwater utilisation
- pool water
- cooling water

Information about the operating location and the operating mode as well as a water analysis is required to determine the use of our systems for the specific application.

System description / scope of supply

Irradiation of the water is by means of a flow-through reactor.

UV reactor

cylindrical stainless-steel reactor (1.4404) with removable flow optimization
 surface is stained inside / electro polished outside
 mounting position horizontal or vertical
 connection: connection piece with external thread or flange
 gaskets: o-rings made of FKM
 reactor temperature sensor
 flush valves and connection for sampling

High performance UV lamp

cylindrical low pressure UV lamp (high efficiency within UV range, optimal operating temperature, low energy and operating costs)
 centric arranged,
 easy to remove for maintenance and repair works

Lamp protection tube

one-way locked and easy to remove, made of pure quartz glass, endwelded

UV sensor

gauged UVC measuring equipment with sensor and LED display to display in W/m²
 calibration according to DVGW 294-3
 accuracy $\pm 4\%$
 selectivity $> 99\%$ at 254 nm
 resistant to ageing
 temperature-resistant at continuous operation until 70° C

Control unit

Housed in sheet-steel housing (lacquered) for wall mounting, EMC-tested, mounted ready for connection with 10 m power cable.

Components consisting of:

main switch, filter fan
 controller with lighted four-line keypad display with main-, user- and service level, selectable in 7 languages
 electronic ballast with integrated soft start ignition system
 electrical UV irradiance monitoring with 2 limit values
 time-recording fault memory
 monitoring of reactor temperature
 monitoring of an external flow rate signal
 input and output signals

➤ LC display

UV irradiance
 2 operating hour meters (radiation hours / total hours)
 number of activations
 LED displays „operation“, „pre-alarm“ „alarm“
 status messages
 monitoring of reactor temperature
 monitoring of external flow rate signal

➤ Inputs

on-/off
 UV sensor
 reactor temperature
 water flow (0/4-20 mA)

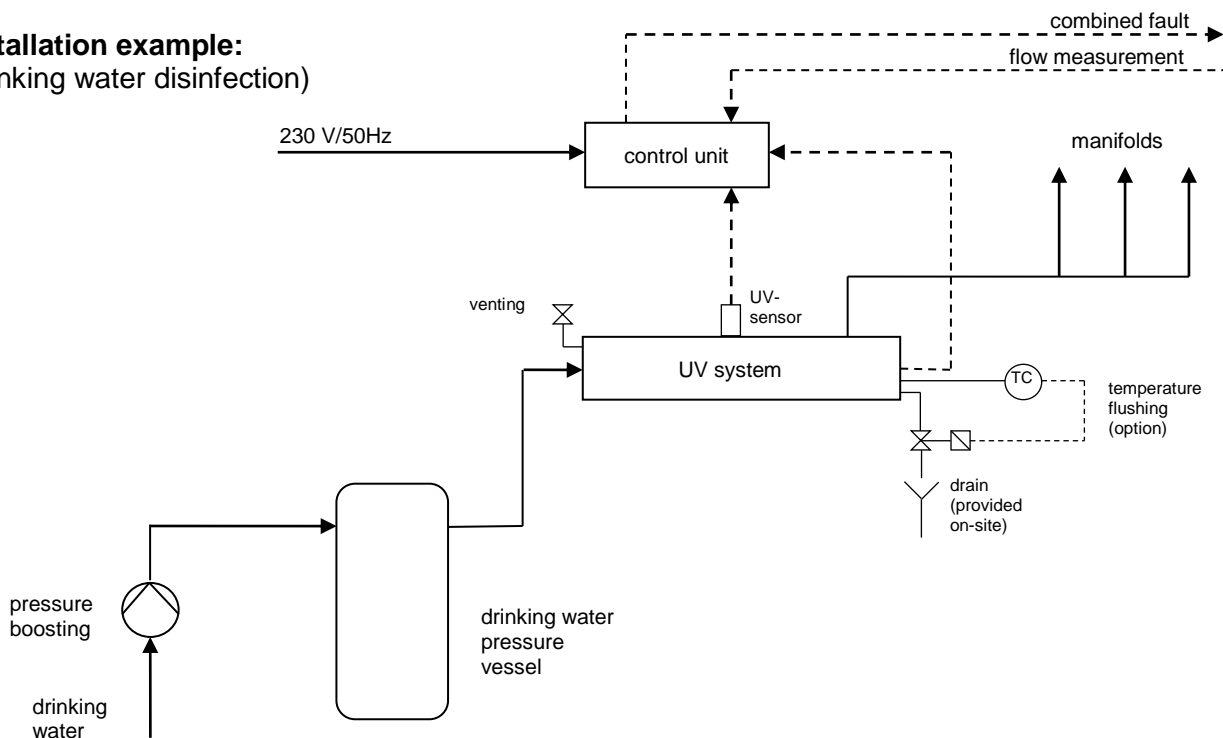
➤ Outputs

UV irradiance (0/4-20 mA)
 potential-free contacts:
 operation, cleaning, combined fault,
 excessive temperature reactor and control board
 release flow rate
 Interval flushing (valve actuation as temperature protection of the reactor)

Notes / Installation conditions

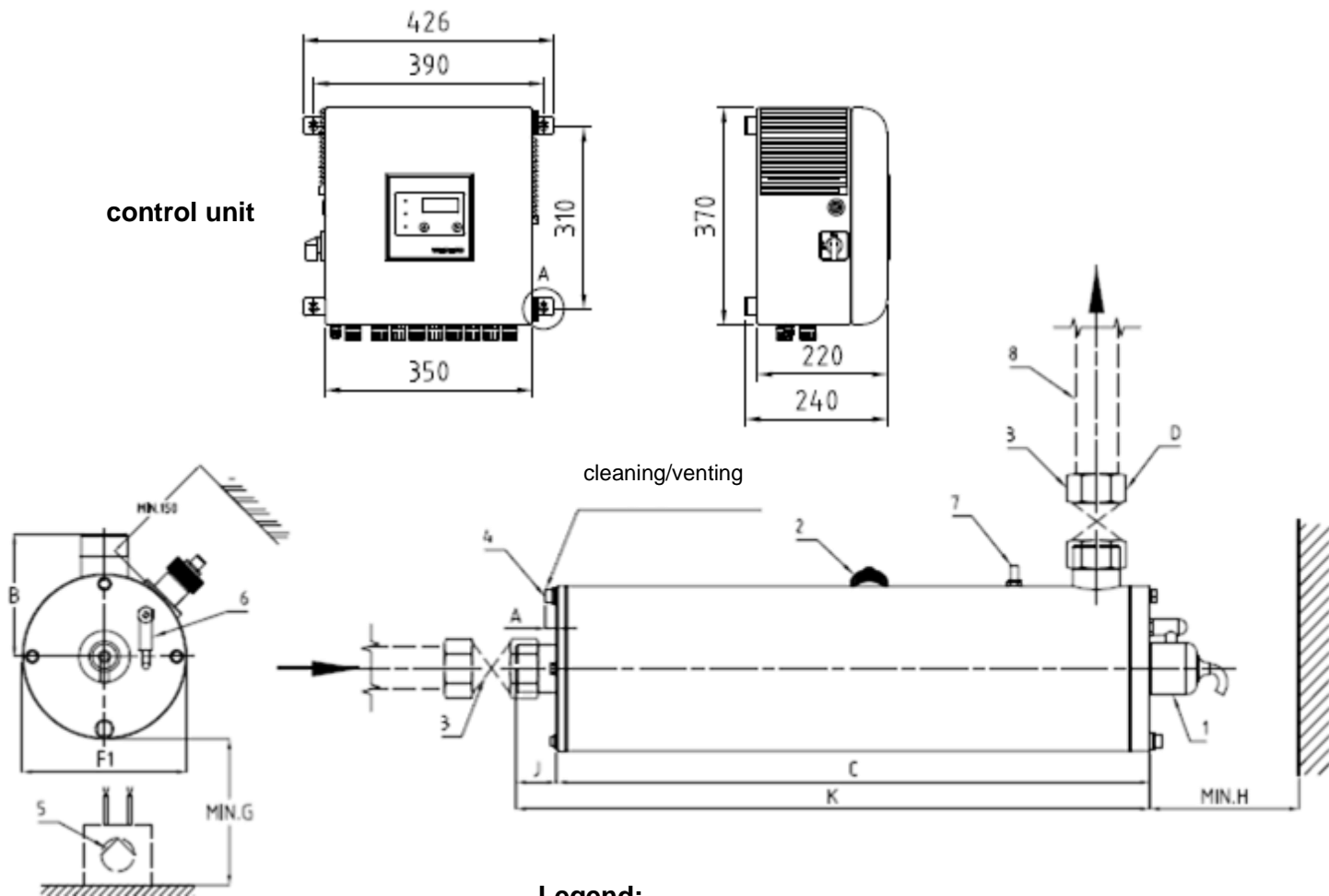
- Water quality at feeding of the UV system:
 - turbidity < 0,3 NTU
 - iron < 0,2 mg/l
 - manganese < 0,05 mg/l
- Technical data and general technical standards as well as the local installation conditions must be observed.
- The UV reactor is mounted between the pipelines. Therefore it is to be ensured that there is enough space available according to the dimensional drawing.
- It is imperative that the reactor will not run dry.
- The ambient temperature and possibly occurring radiation heat may not exceed 40° C.
- The installation site has to be frost-resistant.
- The installation site has to be free from solvent, colorant, varnish and chemical vapours.
- A water meter is to be installed for monitoring the flow rate.
- It is to be ensured that the operating pressure will not be exceeded. Vacuum is to be avoided as well.
- Pressure surges in piping system are to be avoided.
- Pipelines and reactor are to be connected voltage free. Mounts must be designed for the corresponding weight.
- It is to be ensured that no pollutants find their way into the reactor.
- A floor drain must be provided. (Consider reactor volume!)

Installation example: (drinking water disinfection)



Technical data

System		HYDRO WELL® S 3	HYDRO WELL® S 6	HYDRO WELL® S 15	HYDRO WELL® S 25
UV dose (biodosimetrically determined minimum dose at the end of the UV lamp lifetime)	J/m ²	400			
UV transmission T _{1cm, 254 nm}	%	98			
Flow rate max.	m ³ /h	2,6	5,8	17,6	31,0
Reactor					
Reactor volume	Ltr.	4	13	19	24
Operating pressure max.	bar	16		10	
Protection type		IP 65			
Water temperature	°C	max. 45			
Ambient temperature	°C	5 - 35			
Reactor connection		R 1 ½"	R 2"	DN 65	DN 80
Dimensions (W x H x D)	mm	650x209x168	1,000x209x168	1,340x254x168	1,660x259x168
Empty weight ca.	kg	5	10	20	25
UV lamp					
Number of lamps	pcs.	1			
Power	W	40	70	210	330
UV-C power at 254 nm (water temperature 18° C)	W	14	26	73	120
UV lamp lifetime	h	10,000		12,000	
UV sensor (monitoring)					
Accuracy		± 4 %			
Selectivity		> 99 %			
Signal UV intensity		0/4 – 20 mA			
Control unit					
Operating voltage		230 V / 50 Hz			
Connection power ca.	kW	0.055	0.09	0.25	0.38
Protection class		IP 54			
Dimensions (W x H x D)	mm	350 x 370 x 240			
Weight ca.	kg	7			
Art.-No.		303.209	303.211	303.205	303.207



Legend:

- 1 = radiator connection
- 2 = UV sensor
- 3 = stop valves (provided on-site)
- 4 = flush valves
- 5 = flushing aggregate
- 6 = thermostat
- 7 = grounding
- 8 = pipeline inlet /outlet (provided on-site)

Dimensions and weights

system		HYDRO WELL® S 3	HYDRO WELL® S 6	HYDRO WELL® S 15	HYDRO WELL® S 25
A	mm	55	61	-	-
B	mm	125	125	170	175
C	mm	608	958	1,256	1,567
D		R 1 ½" /PN16 DIN 2999	R 2" /PN 16 DIN 2999	flange DN 65 /PN10 EN 1092-1 Type 02	flange DN 80 /PN 10 EN 1092-1 Type 02
flush valve		1/4"	1/4"	1/4"	1/4"
F1	mm	168	168	168	168
G	mm	min. 480	min. 480	min. 630	min. 630
H	mm	min. 600	min. 950	min. 1,380	min. 1,640
J	mm	42	42	84	93
K	mm	650	1,000	1,340	1,660