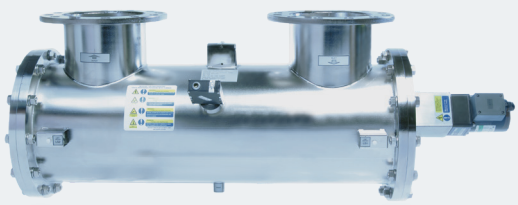
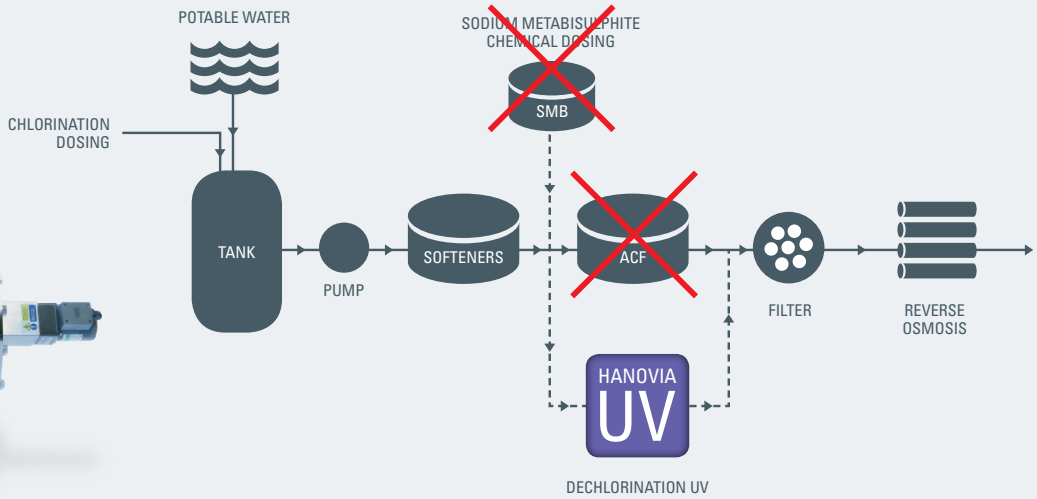
PharmaLine DC™

Hanovia

# UV TECHNOLOGY FOR PHARMACEUTICALS

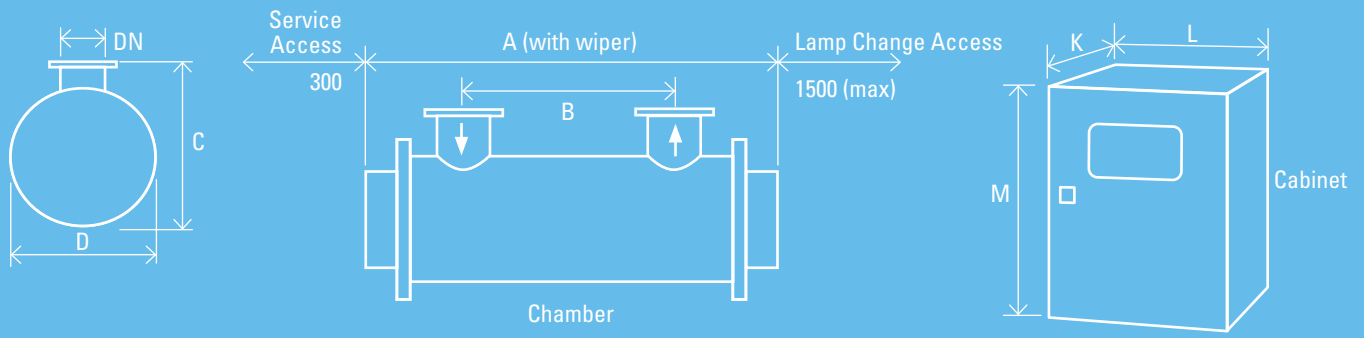





## UV DECHLORINATION FOR PHARMACEUTICALS

Hanovia's PharmaLine DC UV systems deliver guaranteed high UV doses for effective free chlorine removal and disinfection for the pharmaceutical and cosmetic industries. By using UV to remove the free chlorine we protect RO membranes and ion-exchange technologies (EDI) from both residual chlorine and bio-fouling. Hanovia UV dechlorination provides distinct advantages over traditional technologies such as Activated Carbon Filtration (ACF) or Sodium Metabisulphite dosing (SMB). These proven chlorine removal methods are prone to microbial contamination and require significantly more operator involvement and plant room space than UV leading to higher lifetime costs.

| KEY FEATURES | WHAT IT GIVES YOU | BENEFITS FOR YOU |
|---|---|---|
| **INTELLIGENCE** | | |
| UV intensity monitor | Continuous verification of performance with in-built low intensity alarm | Easy to monitor and log system performance |
| **OPTIMISATION** | | |
| Medium pressure lamp | Provides high intensity UV light at 200 to 400 nm wavelengths ideal for the destruction of free chlorine (HOCl and $OCl^-$) | Prolongs the life of RO and EDI equipment by removing free chlorine |
| | Chemical free reduction of free chlorine | No risk of contamination or running out of chemical |
| | Unlike ACF does not require backwashing or media replacement | Saves on water and maintenance costs |
| | Provides high intensity germicidal wavelengths to disinfect the water | Prolongs the life of RO and EDI equipment compared to ACF by reducing the bio-burden |
| Designed for pre-treatment processes in the pharmaceutical industry | Flanged connections, standard internal finish | Reduced system costs when cGMP design not required |
| | FDA-approved materials used for all wetted parts | Industry compliant materials |
| Option of sanitary design for the pharmaceutical industry based on cGMP principles | Sanitary design with <0.38 µm internal surface finish and tri-clamp connections as standard | Industry compliance; reduced risk of microbiological contamination; enhances control of your process as part of a multi-barrier system |
| **INTEGRATION** | | |
| Compact design | Can be fitted to skids | Easy integration |
| | Can be retrofitted to existing process | |
| Robust design | Maximum of 2 service visits annually | Easy to maintain compared to ACF and SMB dosing |




| | | | Dimensions (mm) | | | | | | | | Approx weight (Kg) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Model | Maximum Power (kW) | Min $T_{10}$(%) | A | B | C | D | DN | K* | L | M** | Chamber (Empty) | Control Cabinet |
| PharmaLine DC 50 | 1.6 | 85 | 850 | 200 | 319 | 240 | 40 | 330 | 750 | 850 | 45 | 80 |
| PharmaLine DC 100 | 2.7 | 85 | 1300 | 682 | 319 | 240 | 40 | 330 | 750 | 850 | 50 | 85 |
| PharmaLine DC 200 | 4.2 | 85 | 1300 | 674 | 319 | 240 | 40 | 330 | 750 | 850 | 50 | 85 |
| PharmaLine DC 250 | 5.8 | 85 | 1300 | 674 | 319 | 240 | 40 | 330 | 900 | 1100 | 50 | 165 |
| PharmaLine DC 300 | 5.8 | 85 | 1300 | 674 | 319 | 240 | 50 | 330 | 900 | 1100 | 50 | 165 |
| PharmaLine DC 320 | 12.5 | 85 | 1300 | 674 | 420 | 290 | 80 | 330 | 1100 | 1600 | 65 | 265 |
| PharmaLine DC 360 | 16.5 | 85 | 1300 | 674 | 420 | 290 | 100 | 330 | 1100 | 1600 | 65 | 282 |
| PharmaLine DC 400*** | 25.2 | 85 | 1300 | 674 | 505 | 410 | 50 | 330 | 900 | 1100 | 140 | 165 |
| | | | | | | | | 330 | 1100 | 1600 | | 282 |
| PharmaLine DC 500*** | 25.2 | 85 | 1300 | 674 | 505 | 410 | 100 | 330 | 900 | 1100 | 140 | 165 |
| | | | | | | | | 330 | 1100 | 1600 | | 282 |

* Allow dimension L in front of cabinet for door opening and panel access.
** M dimension includes the space for the cabinet mounting brackets but you need to allow space below the cabinet for cable entry and access (minimum of 250 mm).
*** System consists of two cabinets; separate dimensions K, L, M and weights are given for each cabinet.
All dimensions are approximate for clearance purposes only. Hanovia has a policy of continuous product development, exact drawings are available on request. All specifications are subject to change without notification. Your distributor or Hanovia account manager can advise on correct sizing and specification requirements.

| UV CHAMBER | |
|---|---|
| Material: | Stainless steel 316L / 1.4404 |
| Internal finish: | As made pipe and tube, welds as laid, electropolished and passivated |
| External finish: | Sateen polish (120 grit) electropolished and passivated |
| Process (mating) connections: | Flange EN 1092-1 PN16 |
| Drain connection: | Tri-clamp to ISO 2037 |
| End plate: | Removable end plate |
| Degree of protection: | IP65 equivalent to NEMA 4 but not for outside use |
| Arc tube (lamp): | Medium pressure |
| Arc tube enclosure: | Pure quartz |
| Number of arc tubes (lamps): | 1 (DC 50-300), 3 (DC 320), 4 (DC 360), 6 (DC 400-500) |
| Expected lamp life: | 8000 hours, 4000 hours DC 250 and 300 |
| Temperature sensor: | Yes |
| UV monitor: | Wet UV monitor |
| Working fluid temperature: | 5°C to 60°C (80°C unwiped) |
| Maximum CIP temperature: | 95°C with cabinet electrically isolated |
| Hydrostatically pressure tested: | Yes to PED requirements EN 13445 |
| Chamber mounting: | Horizontal only |
| Operating pressure: | 6 bar |
| Seals: | EPDM, FDA 21 CFR 177.2600, USP Class VI 121°C approved |

| OPTIONS |
|---|
| Document Support Pack |
| Cabinet material: Stainless steel 304 |
| Operation and Maintenance manual and printed Installation and Commissioning manual in Chinese, English, French, German and Spanish |
| Wiper: Automatic (electrically driven) |
| Flange options: ANSI 150, JIS, Table 'E' and tri-clamp |
| Chamber internal finish: <0.38 µm welds polished out, electropolished and passivated |
| Lead length: 20 m, 30 m or 50 m cabinet to chamber |
| Maximum CIP temperature: 130°C (panel switched off) |
| Welder Document Pack for chamber construction |
| Bleed valve: Hygienic valve with tri-clamp connection |
| Skid mounting |
| Operating pressure: 10 bar |
| Vent valve: Manual valve hygienic design |

| OPTIONS (continued) |
|---|
| Cabinet IP rating: Carbon steel air to air heat exchangers IP 66, NEMA 4 or stainless steel version IP 66, NEMA 4X. If fitted no UL listing |
| Aggressive water package: For 400 ppm to 20000 ppm chloride water |
| UVShield™: Power cut-out for lamp access (except DC 320 to 500) |
| Water leak detection: Detects water leaks from quartz sleeve |
| Arc tube enclosure: Doped quartz |

| CABINET | |
|---|---|
| Material: | Polyester coated carbon steel |
| Degree of protection: | IP54 NEMA 12 |
| Supply voltages (nominal): | DC 50-100 95 V to 260 V<br>DC 200-300 190 V to 480 V<br>DC 320-500 380 V to 480 V 50/60 Hz<br>(voltage tolerance ± 10% of nominal) |
| Operating temperature range: | 5°C to 40°C |
| Relative humidity: | <95% non-condensing |
| Cooling fans: | Yes |
| Interconnecting cable lengths: | 10 m cabinet to chamber |

| CUSTOMER OUTPUTS | |
|---|---|
| 4-20 mA passive or active output: | UV intensity % |
| VFC outputs: | System warning, lamp ready, low UV intensity, common trip, remote reset, ELCB or water leak, system available, local or remote mode |

| CUSTOMER INPUTS | |
|---|---|
| 4-20 mA passive or active input: | Flow meter |
| VFC inputs: | Remote stop/start and remote reset |

| CUSTOMER COMMUNICATIONS PORT |
|---|
| None |

| APPROVALS |
|---|
| CE marked, UL listed E 149108 |

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