MONORAY™ SERIES

UV DISINFECTION • EFFICIENT AND CHEMICAL-FREE WATER TREATMENT

ULTRAAQUA
UV DISINFECTION SYSTEMS

WE PROTECT YOUR MOST VALUABLE RESOURCE

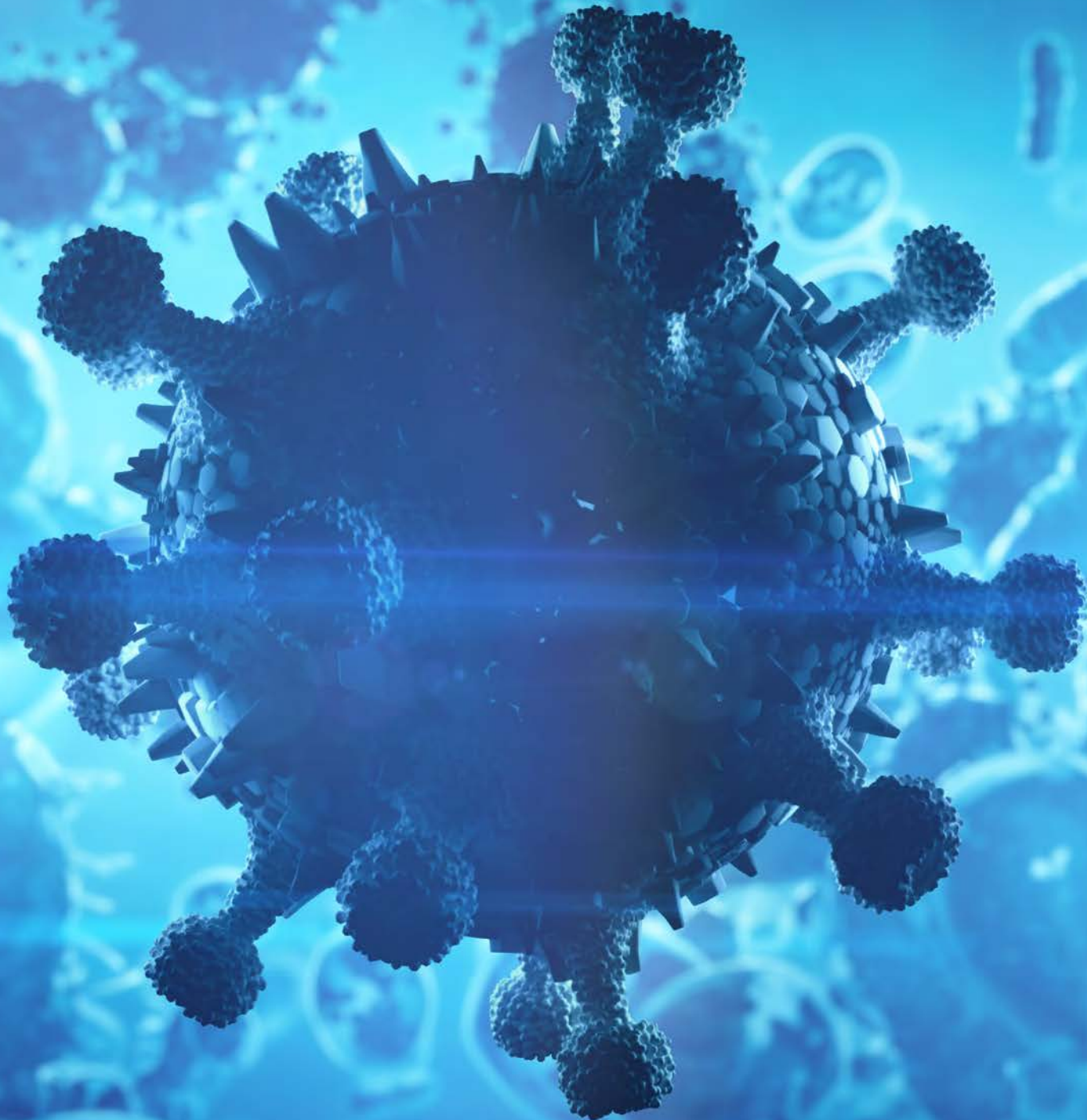# Distributed by Toshiba Lighting & Technology Corporation

MONORAY™ SERIES

THE MONORAY SERIES OFFERS RELIABLE AND EFFICIENT UV DISINFECTION FOR A WIDE RANGE OF INDUSTRIAL AND MUNICIPAL WATER APPLICATIONS.

KEY HIGHLIGHTS

- ULTRATHERM™ lamp   Lifetime 16,000-hours

- Optimized for maximum efficiency

- Easy maintenance and installation

- Easily integrated in complex environments

- Complete control with ULTRATOUCH™ control cabinets

- Automated ULTRAWIPER™ quartz cleaning with tailored brush heads

MARKET LEADING ENERGY EFFICIENCY

CORE BENEFITS OF UV

UV TECHNOLOGY IS A GLOBALLY ACCEPTED SOLUTION FOR WATER DISINFECTION, EFFECTIVELY INACTIVATING BACTERIA, VIRUSES, AND PROTOZOA.

The demand for cost-efficient solutions to provide clean water are at an all-time high and will only increase in the future. UV disinfection solves this complex challenge, being able to meet the strictest requirements regarding bacteria and virus protection.

Due to recent developments, UV disinfection is now an effective alternative in a wide range of water qualities and applications. Improved technological and design configurations has made UV a viable OPEX and CAPEX solution for disinfection processes as well as in more advanced applications such as AOP processes.

Choosing UV as the disinfection method ensures optimal CAPEX and OPEX compared to its alternatives, making UV the best solution for a wide range of installations.

ULTRAAQUA UV disinfection systems are easy to install, maintain and thoroughly cost-optimized. The third-party approvals for performance and quality ensures complete peace of mind, employing the best available solution for complete biosecurity.

ULTRAAQUA
UV DISINFECTION SYSTEMS

AUTOMATIC DOSE PACING
The automatic dose pacing ensures optimized efficiency by reducing power consumption while ensuring a stable dose under operation. The ability to control the power increments ensures that issues related to overdosing and temperature issues are well mitigated.

COMPLETE CONTROL WITH ULTRATOUCH™ CONTROL CABINETS
The market leading ULTRATOUCH™ PLC is the very latest in control and touch-screen HMI technology. Full data logging provides complete control to the operator, on site or remotely.

The PLC controls are easily integrated into SCADA layouts, and can be modified by our in-house software engineers. Multiple PLC options combined with various communication protocols makes the ULTRATOUCH highly versatile.

HIGH GRADE 316L STAINLESS STEEL
The internal reflection of the electropolished system provides efficiency improvements of up to 30% at high UVT's.

MULTIPLE FLANGE OPTIONS
The MONORAY series is available in multiple flange sizes to accommodate custom requirements for installation and flow rates.
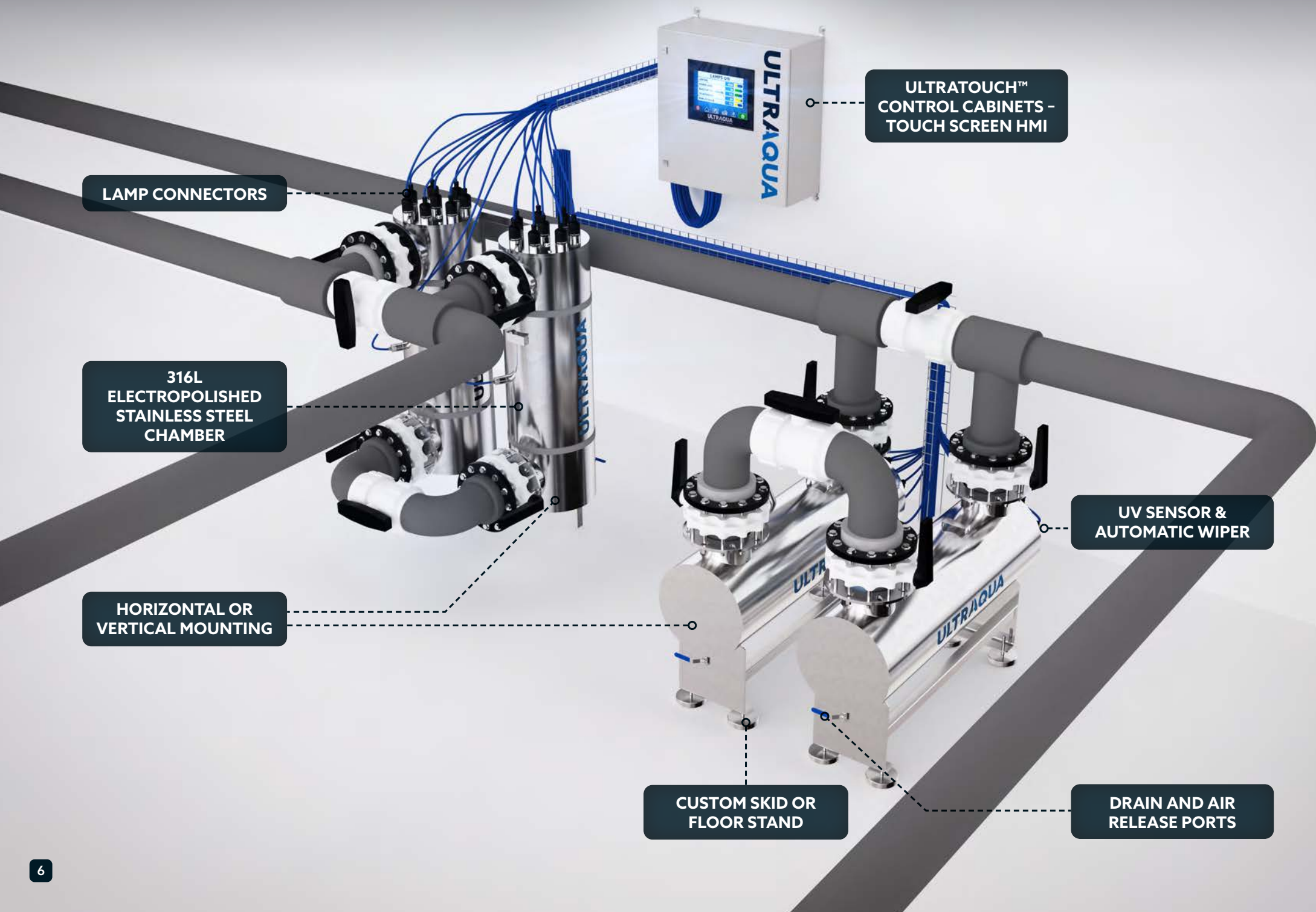
EASY MAINTENANCE AND INSTALLATION
With a design that allows for easy maintenance and single sided access, the system is easily installable and can be serviced using no special tools.

The unique interlocking electrical and mechanical lamp connectors make servicing of the system safe, quick, and fool proof.

LAMP LIFETIME   16,000hours
The integrated ULTRATHERM™ lamps offers the very latest low pressure Amalgam UV lamp technology, being optimized for energy efficiency and robustness.

ULTRATOUCH™ CONTROL CABINETS – TOUCH SCREEN HMI

LAMP CONNECTORS

316L ELECTROPOLISHED STAINLESS STEEL CHAMBER

HORIZONTAL OR VERTICAL MOUNTING

UV SENSOR & AUTOMATIC WIPER

CUSTOM SKID OR FLOOR STAND

DRAIN AND AIR RELEASE PORTS

CUSTOMIZED SOLUTIONS

ULTRAAQUA EMPLOYS AN ENTIRE DEPARTMENT OF ENGINEERS WHO ARE SPECIALIZED IN THE DESIGN AND CONSTRUCTION OF UV SYSTEMS.

Multiple years of experience within relevant applications makes it possible to adjust any standard UV system to accommodate specific requirements.

The customization requirements can vary from adjustments such as reactor shape or flange size, to adding new advanced features. This makes the ULTRAAQUA design department function as a consulting agency, working towards an optimized customized solution. This means that we can ensure on site validation to various standards, fitting your exact requirements.

The following possibilities are available for all customized UV units:

Customized services
- Integrated CFD Analysis
- Particle tracing modeling analysis
- Determining fluence rate
- Physical testing
- Onsite validation testing
- Advanced UV disinfection support

Customized products
- Custom UV systems for advanced applications
- Packaged plant equipment
    - Including mobile treatment container
    - Skid packages

Comprehensive technical knowledge makes the engineers able to assist with installation details such as weir design, water level control devices, and many other project-specific matters.

SERVICE & SUPPORT

ULTRAAQUA IS A GLOBAL COMPANY OFFERING WORLDWIDE SERVICE AND SUPPORT, WITH ITS HEAD OFFICE BASED IN DENMARK.

With operations in over 120 countries and an install base of 10.000 systems, ULTRAAQUA is able to offer extensive support regarding installation and maintenance with the extensive network of regional offices.

The technical support team in our head office provides 24-hour remote service upon agreement, ensuring complete protection to avoid potential emergencies.

At ULTRAAQUA, we wish to provide a complete product experience for our customers, from the very start of determining requirements to the ongoing operational maintenance. This means that our responsibility does not stop after the UV system reaches its destination. By establishing a close collaboration with all clients, a streamlined process is effectively ensured throughout all post installation activities.

Our support services include, but are not limited to:

- General technical support
- Spare part ordering and shipping services
- Commissioning
- On-site training
- On-site technical support

If needed, qualified engineers are available for on-site training and technical support, being able to assist in setting up the entire system. Extensive information and technical knowledge is always provided, to ensure maximum performance and system reliability.

Specifications are subject to change without notice. Version: 22.0

UV SYSTEM	MR1-75SS STD	MR1-75SS ADV
Product ID	21080	21082
Approvals	CE (Option UL/ cUL)	

UV LAMPS & MONITORING		
Lamp Number	1	
ULTRATHERM™ LPHO Lamp	75W	
Lamp Lifetime	9 000 Hours	
UV Monitoring	N/A	UV Intensity sensor SS316L
Variable Power	N/A	50-100%

UV CHAMBER		
Connection Size	1½" BSP	
Connection Type	PN10	
Design Pressure	10 Bar	
Chamber Material	SS316L / 1.4404 (Option Super Duplex)	
Internal & External Finish	Electropolished Inside/Out	
Lamp/Wiper Access Single Ended	Yes	
Quartz Type	High Purity Fused Quartz Transmittance >95%	
Mounting	Free Standing (Option Horizontal Duplex Stand)	
ULTRAWIPER™ System	N/A	
Temperature Probe	1x PT100	
Vent & Drain Ports	No	
Ingress Protection	IP65	
Installation	Horizontal / Vertical	
Minor Wetted Parts	FDA approved PTFE, PVDF, VITON	

CONTROL CABINET		
Cabinet Material	GFRP (Option SS304/SS316)	
Cabinet Sizes (H x W x D)	400x300x210mm	400x600x210mm
Cable Length	4 Meters (Max. 30 Meters)	
Installation & Ambient	Wallmount 0-40 °C	
Ingress Protection	IP65	
Thermal Control	Passive Dissipation (Option Fan / AC / Heat Exchanger)	
Control Logic	Microprosessor	
Interface/HMI	Status LED indicators & hour counter	4 Line LCD with System State Indication
External Wiring	Remote ON/OFF, System Status, Alarm and warning	
Power Consumption	0,08 kW	
Power Supply	230VAC +/- 10% +N+PE 50/60Hz	

ADV. CONTROLLER FEATURES		
SCADA Communication		MODBUS RTU
Analogue 4-20mA I/O		Flow Input/UV Irradiance Output
ULTRADOSE™		
Event Log		Alarms
UV Dose		On Display, UV Intensity
UV Dose Alarm		UV Intensity Pre-Alarm & Alarm

UV SYSTEM	MR1-220SS STD	MR1-220SS ADV	MR3-220SS	MR4-220SS	MR6-220SS	MR8-220SS
Product ID	21210	21211	21212	21214	21216	21218
Approvals	CE (Option UL/ cUL)					

UV LAMPS & MONITORING						
Lamp Number	1	1	3	4	6	8
ULTRATHERM™ LPHO Lamp	220W					
Lamp Lifetime	16 000 Hours					
UV Monitoring	N/A	UV Intensity Sensor ÖNORM M5873 Certified SS316L				
Variable Power	N/A	50-100%				

UV CHAMBER						
Connection Size	DN80	DN80	DN150	DN150	DN150	DN200
Connection Type	EN-1092 Type 01A PN10 (Option PN16)					
Design Pressure	10 Bar (Option 16 Bar)					
Chamber Material	SS316L / 1.4404 (Option Super Duplex)					
Internal & External Finish	Electropolished Inside/Out					
Lamp/Wiper Access Single Ended	Yes					
Quartz Type	High Purity Fused Quartz Transmittance >95%					
Mounting	Free Standing (Option Horizontal Duplex Stand)					
ULTRAWIPER™ System	N/A	(Option Automatic Mechanical With PTFE/Fiber Rings (Electrical))				
Temperature Probe	1x PT100					
Vent & Drain Ports	½"					
Ingress Protection	IP65					
Installation	Horizontal / Vertical					
Minor Wetted Parts	FDA approved PTFE, PVDF, VITON					

CONTROL CABINET						
Cabinet Material	GFRP (Option SS304/SS316)					
Cabinet Sizes (H x W x D)	400x300x210mm	400x600x210mm	800x600x300mm	800x600x300mm	800x600x300mm	800x600x300mm
Cable Length	4 Meters (Max. 20 Meters)					
Installation & Ambient	Wallmount 0-40 °C		Wallmount 0-40 °C Non-Condensing			
Ingress Protection	IP65		IP54 (Option IP65/NEMA4X)			
Thermal Control	Passive Dissipation (Option Fan / AC / Heat Exchanger)		Fan with Filter (Option AC / Heat Exchanger)			
Control Logic		Microprocessor	PLC			
Interface/HMI	Status LED indicators & hour counter	4 Line LCD with System State Indication	7" ULTRATOUCH™			
External Wiring	Remote ON/OFF, Safety ON/OFF, System Status, Alarm					
Power Consumption	0,2 kW	0,2 kW	0,7 kW	1,0 kW	1,4 kW	1,9 kW
Power Supply	230VAC +/- 10% +N+PE 50/60Hz					

ADV. CONTROLLER FEATURES						
SCADA Communication		MODBUS RTU	MODBUS TCP/IP (Option PROFINET)			
Analogue 4-20mA I/O		Flow Input/UV Irradiance Output	Flow Input/UV Dose Output (Option UVT Input)			
ULTRADOSE™			Automatic UV Dose Pacing 50-100%			
Event Log		Alarms	UV Dose, UV Intensity, Flow			
UV Dose		On Display, UV Intensity	On HMI, Actual UV Dose & Target UV Dose			
UV Dose Alarm		UV Intensity Pre-Alarm & Alarm	Pre-Alarm & Alarm			

UV SYSTEM	MR1-350SS STD	MR1-350SS ADV	MR3-350SS	MR4-350SS	MR6-350SS	MR8-350SS	MR12-350SS
Product ID	21310	21311	21315	21320	21325	21330	21335
Approvals				CE (Option UL/ cUL)			

UV LAMPS & MONITORING							
Lamp Number	1	1	3	4	6	8	12
ULTRATHERM™ LPHO Lamp				350W			
Lamp Lifetime				16 000 Hours			
UV Monitoring	N/A			UV Intensity Sensor ÖNORM M5873 Certified (Option Non-Corrosive PTFE)			
Variable Power	N/A			50-100%			

UV CHAMBER							
Connection Size	DN100	DN100	DN150	DN150	DN200	DN250	DN250
Connection Type				EN-1092 Type 01A PN10 (Option PN16)			
Design Pressure				10 Bar (Option 16 Bar)			
Chamber Material				SS316L / 1.4404 (Option Super Duplex)			
Internal & External Finish				Electropolished Inside/Out			
Lamp/Wiper Access Single Ended				Yes			
Quartz Type				High Purity Fused Quartz Transmittance >95%			
Mounting				Free Standing (Option Horizontal SS316 Stand)			
ULTRAWIPER™ System	N/A			(Option Automatic Mechanical With PTFE/Fiber Rings (Electrical))			
Temperature Probe				PT100			
Vent & Drain Ports				½"			1"
Ingress Protection				IP65			
Installation				Horizontal / Vertical			
Minor Wetted Parts				FDA approved PTFE, PVDF, VITON			

CONTROL CABINET							
Cabinet Material				GFRP (Option SS304/SS316)			
Cabinet Sizes (H x W x D)	400x600x210mm	400x600x210mm	800x600x300mm	800x600x300mm	800x600x300mm	1000x750x320mm	1000x750x320mm
Cable Length				4 Meters (Max. 30 Meters)			
Installation & Ambient	Wallmount 0-40 °C		Wallmount 0-40 °C Non-Condensing				
Ingress Protection	IP65		IP54 (Option IP65/NEMA4X)				
Thermal Control	Passive Dissipation (Option Fan / AC / Heat Exchanger)		Fan with Filter (Option AC / Heat Exchanger)				
Control Logic	Microprocessor		PLC				
Interface/HMI	Status LED indicators & hour counter	4 Line LCD with System State Indication	7" ULTRATOUCH™				
External Wiring			Remote ON/OFF, Safety ON/OFF, System Status, Alarm				
Power Consumption	0,4 kW	0,4 kW	1,1 kW	1,5 kW	2,3 kW	3,0 kW	4,5 kW
Power Supply	230VAC +/- 10% +N+PE 50/60Hz					3x400VAC +/- 10% +N+PE 50/60Hz	

ADV. CONTROLLER FEATURES							
SCADA Communication		MODBUS RTU	MODBUS TCP/IP (Option PROFINET)				
Analogue 4-20mA I/O		Flow Input/UV Irradiance Output	Flow Input/UV Dose Output (Option UVT Input)				
ULTRADOSE™			Automatic UV Dose Pacing 50-100%				
Event Log		Alarms	UV Dose, UV Intensity, Flow				
UV Dose		On Display, UV Intensity	On HMI, Actual UV Dose & Target UV Dose				
UV Dose Alarm		UV Intensity Pre-Alarm & Alarm	Pre-Alarm & Alarm				

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UV SYSTEM	MR16-350SS	MR18-350SS	MR20-350SS
Product ID	21340	21342	21344
Approvals	CE (Option UL/ cUL)		

UV LAMPS & MONITORING			
Lamp Number	16	18	20
ULTRATHERM™ LPHO Lamp	350W		
Lamp Lifetime	16 000 Hours		
UV Monitoring	UV Intensity Sensor ÖNORM M5873 Certified (Option Non-Corrosive PTFE)		
Variable Power	50-100%		

UV CHAMBER	
Connection Size	DN300
Connection Type	EN-1092 Type 01A PN10 (Option PN16)
Design Pressure	10 Bar (Option 16 Bar)
Chamber Material	SS316L / 1.4404 (Option Super Duplex)
Internal & External Finish	Electropolished Inside/Out
Lamp/Wiper Access Single Ended	Yes
Quartz Type	High Purity Fused Quartz Transmittance >95%
Mounting	Free Standing (Option Horizontal SS316 Stand)
ULTRAWIPER™ System	(Option Automatic Mechanical With PTFE/Fiber Rings (Electrical))
Temperature Probe	PT100
Vent & Drain Ports	1"
Ingress Protection	IP65
Installation	Horizontal / Vertical
Minor Wetted Parts	FDA approved PTFE, PVDF, VITON

CONTROL CABINET			
Cabinet Material	GFRP (Option SS304/SS316)		
Cabinet Sizes (H x W x D)	1000x1000x320mm	1000x1250x320mm	1000x1250x320mm
Cable Length	4 Meters (Max. 30 Meters)		
Installation & Ambient	Wallmount 0-40 °C Non-Condensing		
Ingress Protection	IP54 (Option IP65/NEMA4X)		
Thermal Control	Fan with Filter (Option AC / Heat Exchanger)		
Control Logic	PLC		
Interface/HMI	7" ULTRATOUCH™		
External Wiring	Remote ON/OFF, Safety ON/OFF, System Status, Alarm		
Power Consumption	6,0 kW	6,8 kW	7,5 kW
Power Supply	3x400VAC +/- 10% N+PE 50/60Hz		

ADV. CONTROLLER FEATURES	
SCADA Communication	MODBUS TCP/IP (Option PROFINET)
Analogue 4-20mA I/O	Flow Input/UV Dose Output (Option UVT Input)
ULTRADOSE™	Automatic UV Dose Pacing 50-100%
Event Log	UV Dose, UV Intensity, Flow
UV Dose	On HMI, Actual UV Dose & Target UV Dose
UV Dose Alarm	Pre-Alarm & Alarm

COMPANY HISTORY

ULTRAAQUA IS AN INTERNATIONAL MANUFACTURER OF ADVANCED UV WATER DISINFECTION SYSTEMS FOR A WIDE RANGE OF WATER TREATMENT APPLICATIONS.

The company was founded in 1996 by two Danish scientists, with the mission of solving the increasing global water safety challenges, by combining extensive research, innovation, and technology. Today, more than 10.000 UV disinfection systems has been supplied worldwide, to help create a more sustainable world.

ULTRAAQUA operates through a carefully selected partner network, with activity in more than 120 countries. The partner network has been key to the success of ULTRAAQUA, making it possible to deliver cutting-edge UV disinfection systems across the globe.

Continuous research and innovation activities have made it possible to maintain the position of delivering cutting-edge solutions to clients with diverse requirements in different applications.

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The information of this catalog is current as of March 2023.

TECHNOLOGY OVERVIEW & VALIDATIONS

FHI

The **NIPH (Norwegian Institute of Public Health) type approval** ensures that all UV disinfection units meets the requirements for UV dosage. The approval means that ULTRAAQUA is able to distribute selected UV systems in Norway and The Faroe Islands.

DVGW

The **DVGW certification** assures that critical technical requirements are met regarding hygiene, safety, and general functionality. DVGW is an unbiased technical-scientific association based in Germany, specialized in gas and water industries.

AMS

The **AMS (Analog Mixed Signal) verification** ensures that the electronic components are compliant with the latest industry-standard, allowing smooth and quick signal transmission among the electrical components used in data tracking and storage.

ETV

The **ETV-EU verification** is a third-party validation of new innovative environmental technologies, ensuring product credibility for the buyer.

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