

RELIABLE WATER TREATMENT

# AQpure water treatment systems



MODULAR AND  
AUTOMATED ULTRAFILTRATION  
WATER TREATMENT FOR  
**SUSTAINABLE DRINKING WATER**

# REDUCING COMPLEXITY FOR ROBUST AND RELIABLE DRINKING WATER TREATMENT

Grundfos AQpure water treatment systems are optimised for producing drinking water for local communities in developing countries, also in remote areas where establishing a reliable and affordable production of drinking water from lakes and rivers can be extremely challenging.

Grundfos AQpure is an ultrafiltration based water treatment system that produces drinking water quality by filtering bacteria, viruses and particles from raw source water.

Thanks to the modular concept, each AQpure system can easily be customised to the specific raw water quality of your site. Simply identify which of the four categories best characterises your raw water and configure your water treatment system from the 11 standardised modules.

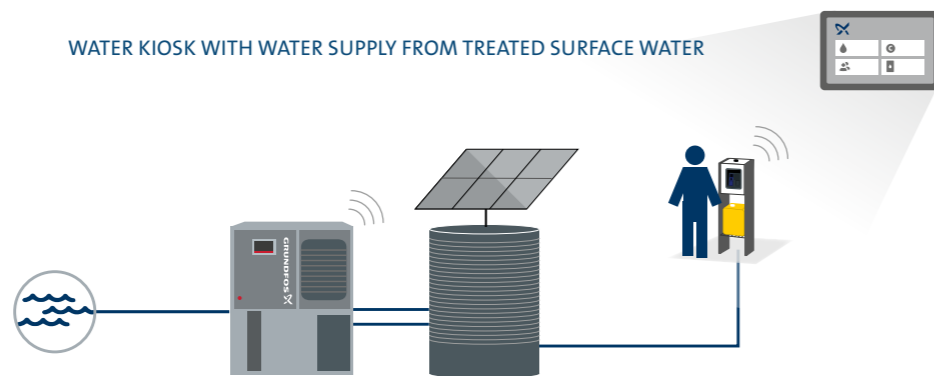
This is easily done by following our categorisation and configuration schemes.

Grundfos AQpure is delivered pre-fabricated and pre-wired, almost as a plug-and-play water treatment system. Operation costs are reduced to a minimum, and Grundfos AQpure offers low consumption of energy and chemicals, long lifetime of the UF membrane and other wear parts, and without the need for a full-time operator.

## FOR YOUR COMMUNITY, BUILDING OR SMALL INDUSTRY

Grundfos AQpure can operate as a stand-alone water treatment system, or be combined with Grundfos AQtap water dispensers in water kiosk applications.

The water treatment system can also be used in apartment buildings, resorts and industries.



## SAY YES TO

- Modularity and adaptability
  - Optimised reliability
  - Self-adaptive control
  - Remote monitoring
  - Solar powering
- SAY NO to complexity
  - SAY NO to downtime
  - SAY NO to inferior performance
  - SAY NO to poor system control
  - SAY NO to excessive operating costs

## FULL ADAPTABILITY FROM A MODULAR CONCEPT

The modularity and architecture of Grundfos AQpure is a key strength of the system. Each Grundfos AQpure is built from prefabricated modules, meaning that complexity is removed when fitting a water treatment system precisely to your

purpose. We have identified four raw water categories that make the choice of the water treatment modules required easy for you. Configuration of your Grundfos AQpure system is a **THREE-STEP PROCESS**:

### STEP 1

Identify which of the four water categories best characterises your raw water

	WATER QUALITY PARAMETER	BLUE WATER Ground water, rain water or public water	GREEN WATER Pond water	BROWN WATER River water in wet season	ORANGE WATER Rivers and lakes in tropical areas
Solids	Turbidity (NTU)	< 3	3 - 10	10 - 100	10 - 100
	TSS (mg/l)	< 5	5 - 10	> 10	5 - 50
	SDI <sub>15</sub>	< 5	< 5	< 5	> 5
Dissolved organics	DOC (mg/l)	< 5	5 - 10	< 5	10 - 20
	UV <sub>254</sub> (1/m)	< 0.1	0.1 - 0.3	> 0.5	0.3 - 0.5
	COD (mg/l)	< 15	15 - 30	< 15	30 - 50
	Oil (mg/l)	< 0.1	0.1 - 0.3	< 0.1	0.3 - 0.5
Dissolved inorganics	Fe/Mn (mg/l)	< 0.05	0.05 - 0.2	> 1	> 0.5
	Water hardness (mg/l)	< 60	< 60	> 60	> 60
	Conductivity (µS/cm)	< 500	< 500	500 - 1,000	500 - 1,000

### STEP 2

Select the appropriate combination from 11 standard modules – follow the configuration table (page 4)

### STEP 3

Add optional modules – if you have identified specific local requirements



**STEP 2 AND 3** Select the appropriate combination and add optional modules

AQpure configuration according to water quality:

	UF PROCESS ONLY	BLUE WATER Ground water, rain water or public water				GREEN WATER Pond water		BROWN WATER River water in wet season		ORANGE WATER Rivers and lakes in tropical areas	
		C1 <sup>1)</sup>	C2	C3	C4	C5	C6	C7	C8	C9	C10
COMBINATION NO.	C1 <sup>1)</sup>	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11
Self-cleaning prefilter	-	-	-	-	-	✓	✓	✓	✓	✓	✓
Standard UF	✓ <sup>2)</sup>	✓ <sup>2)</sup>	✓ <sup>2)</sup>	✓ <sup>2)</sup>	✓ <sup>2)</sup>	✓	✓	✓	✓	✓	✓
Air scouring	-	-	-	✓	✓	-	✓	✓	✓	✓	✓
Chlorination	-	✓	-	✓	-	✓	✓	✓	-	✓	✓
Internal CIP	-	-	-	-	-	✓	✓	-	-	✓	✓
Level sensing	□	□	□	✓	✓	□	✓	□	✓	□	✓
Activated carbon filter	-	-	-	✓	✓	-	✓	-	✓	-	✓
UV disinfection	□	-	✓	-	✓	□	□	-	✓	□	✓
Distribution	□	□	□	✓	✓	□	✓	□	✓	□	✓
Solar package	□	□	□	□	□	□	□	□	□	□	□
Remote management	□	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

✓ Built-in module □ Optional module - Not selectable <sup>1)</sup> Must be combined with auxiliary equipment <sup>2)</sup> Includes 300 µm strainer

# AQpure water treatment modules

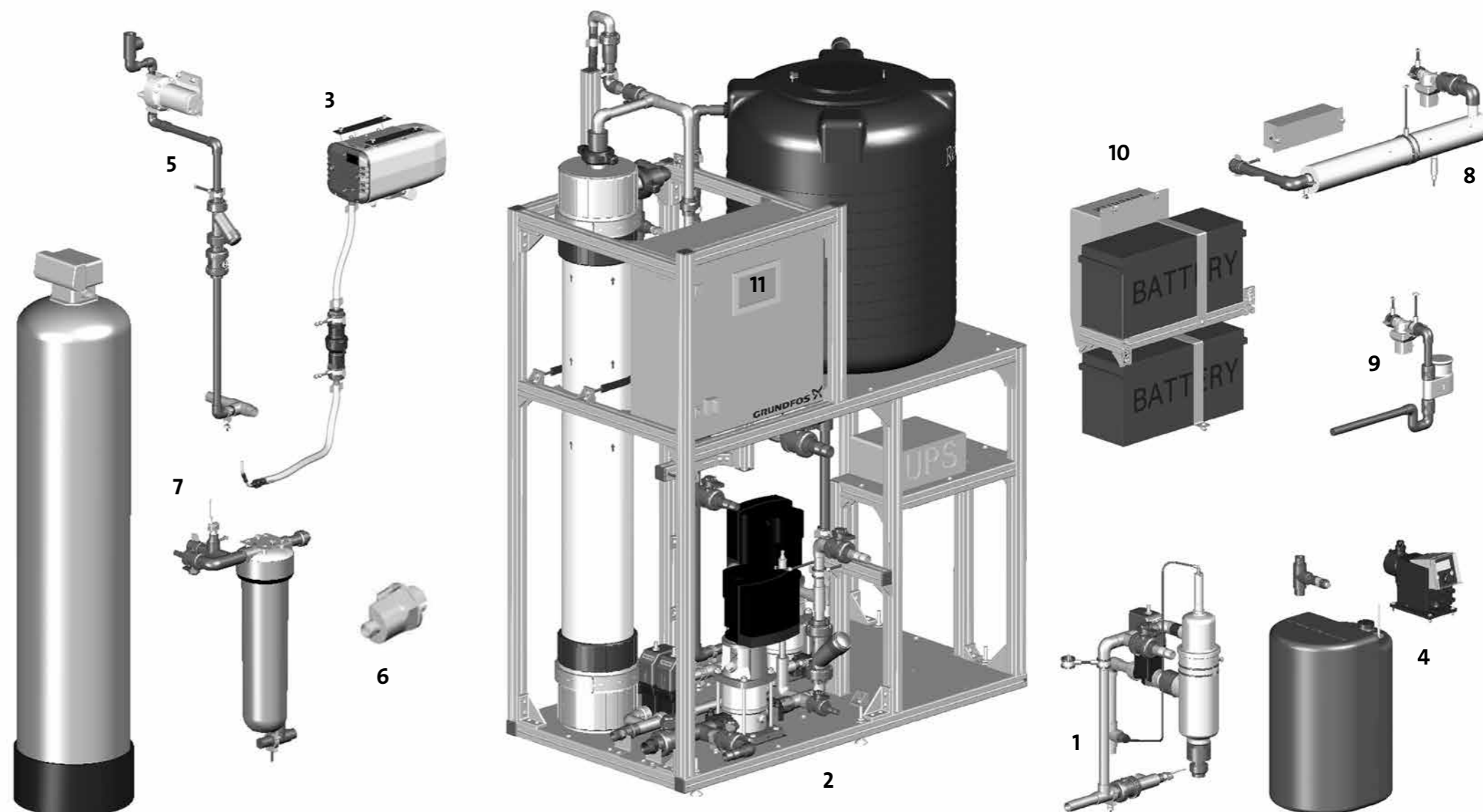
Common to each customised Grundfos AQpure system is the ultrafiltration (UF) based water treatment operation, using membrane technology with a pore size of 0.03 micrometer.

Each of the other 10 modules are optional and must be included according to the water category and specific requirements. Furthermore, Grundfos AQpure can easily be connected to other pre-treatment steps required to treat the raw water. These steps could be sand filtration, sedimentation, aeration and so on.



## 11 MODULES FOR COMBINATION:

- 1 Self-cleaning prefilter**  
Long life membrane.  
Long service intervals.
- 2 Standard UF**  
Self-regulation.  
High energy efficiency.  
Flexible installation.
- 3 Air scouring**  
Long service intervals.  
Reduced chemical consumption for CIP.
- 4 Chlorination**  
Long service intervals.  
Residual chlorine in purified water.
- 5 Internal CIP**  
Stable production.  
Long service intervals.
- 6 Level sensing**  
External tank level control.
- 7 Activated carbon filter**  
Removal of chlorine, dissolved organics, pesticides, taste and odour.
- 8 UV disinfection**  
Inactivation of bacteria and viruses.  
With intensity sensor for more safety.
- 9 Distribution**  
Direct water tapping or pumping to an external tank.
- 10 Solar package**  
Power supply by solar energy.  
Reduction of operational cost.
- 11 Remote management**  
Remote monitoring of operational status and performance.



# MINIMAL DOWNTIME AND OPTIMISED RELIABILITY

## LONG SERVICE INTERVALS

Professional service and support is carried out by local partners certified by Grundfos and is only required 1 to 4 times a year, depending on the raw water quality. The UF membrane is kept clean using anti-fouling procedures, including backwashing, cleaning-in-place (CIP) or air scouring. Our unique and patented control algorithm automatically combines the anti-fouling procedures in an optimal way to ensure robust use and extended intervals between service

## Example of professional maintenance task schedule<sup>1</sup>:

Tasks – Interval in months	6	12	24	60
CIP internal pump check	X			
Air compressor check	X			
Replace Carbon filter	X			
Clean UV sensor	X			
Check level sensor	X			
Replace prefilter		X		
Replace filter of compressor		X		
Replace UV lamp		X		
Replace shaft seal of backwash pump			X	
Replace non-return valves			X	
Replace UF membrane element				X
Replace pump head				X
Replace batteries				X

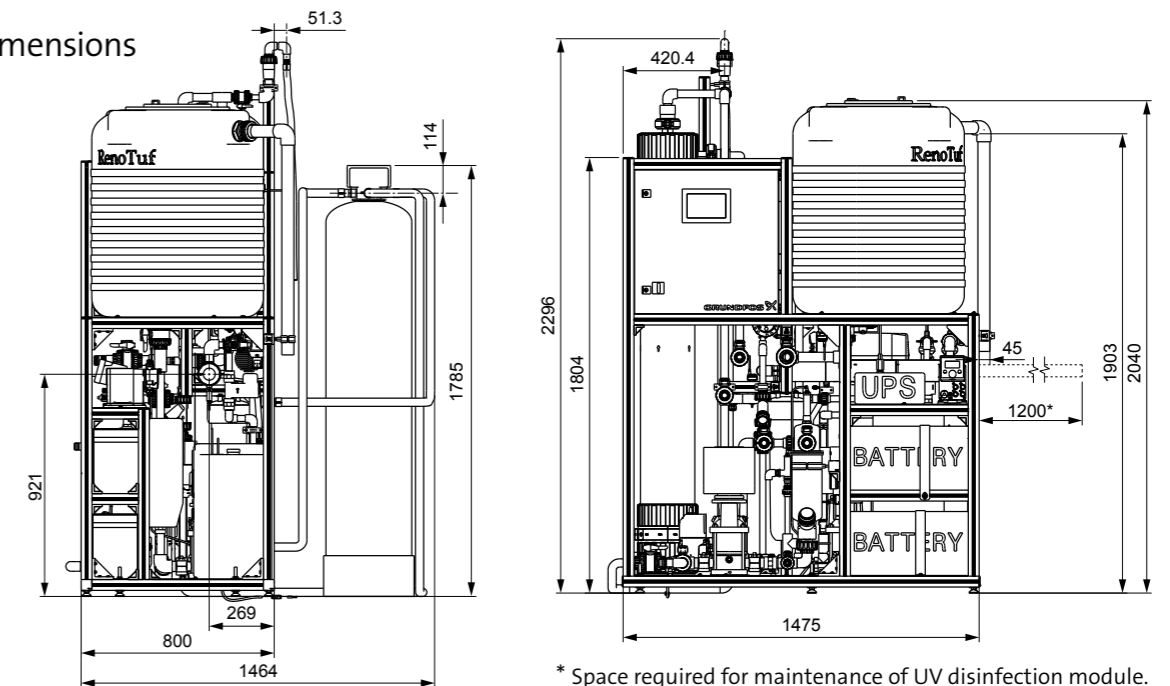
<sup>1</sup>The recommended schedule is based on average operating conditions and can differ from site to site.

## TECHNICAL SPECIFICATIONS



Water production	Up to 2 m <sup>3</sup> /h
Membrane type	Hollow fibre, dead-end, outside-in
Membrane material	PVDF
Membrane pore size	0.03 µm
Control strategy	Parametric to be very flexible
Inlet pressure	Max. 1 bar at 1m <sup>3</sup> /h
Power supply	200-240 V, 1-phase, 50/60 Hz
Control interface	PLC based 7" touchscreen
Weight	Empty: 400-615 kg; Filled: 750-1165 kg
Dimensions	Max. length 1600 mm, max width 800 mm max height 2300 mm

## Dimensions



\* Space required for maintenance of UV disinfection module.

## EASY MAINTENANCE PLANNING THROUGH REMOTE MONITORING

Grundfos Remote Management (GRM) is a secure browser-based system that monitors your installation and keeps planning of your service visits straight-forward and effective for you, reducing downtime and optimising reliability.



## CONTACT GRUNDFOS

Contact your local Grundfos sales representative to find out more about Grundfos AQpure and our holistic Lifelink solutions.

Sustainable water solutions that change lives can only be achieved through long-standing partnerships across sectors. Grundfos Lifelink can help you with:

- Enabling funding
- Advising about feasible business models
- Engaging as a committed technology and know-how partner
- Finding and linking suitable partners for each project from our broad network of trusted partners





## Grundfos Lifelink water solutions

Lifelink is our commitment to provide sustainable water solutions in the developing world that can be customised according to project needs, delivering reliable water supply, supporting revenue collection and efficient operations. Our high quality, intelligent water solutions tailored to the developing world are built on innovative technology and mobile connectivity. Grundfos Lifelink water solutions combine our innovative and reliable technology with professional service networks to support operations on the ground.



[www.grundfos.com/lifelink](http://www.grundfos.com/lifelink)