

Ultrafiltration system ultraliQ:MA

Intended use

The ultrafiltration system ultraliQ:MA is designed for fully automatic reduction of solid particles, turbidities and micro-organisms in the raw water.

The ultraliQ:MA system is suitable for use in private water supply systems.

If the ultraliQ:MA is used for drinking water treatment, the provisions of DIN 1988, DIN EN 1717 as well as EN 2001-1 must be met.

Application limits

Turbidity (on average)	NTU	< 15.0
Turbidity (short-term)	NTU	< 30.0
TOC	mg/l	< 5.0
Oils/greases/hyd rocarbons		not detectable

For all other substances contained in the water, with the exception of the microbiological parameters, the limit values of the German Drinking Water Ordinance (TrinkwV 2001) do apply.

Any required preliminary treatment stages (such as the oxidation filter system fermaliQ:MA for the reduction of iron, manganese and ammonium) are available upon request.

Function

Filtration

Raw water is pressed through the pores of the semi-permeable membranes (cut-off 0.02 µm) of the ultrafiltration modules. Almost all undissolved substances contained in the water are thus retained on the membranes and a particle-reduced and germ-reduced filtrate is generated.

As the filtered particles are deposited on the membrane surface, the differential pressure (transmembrane pressure) between the raw water and the filtrate side increases.

Flushing the system

This surface layer grows as the filtration time progresses, and is automatically flushed from the membrane surface in 2 phases:

- Backwash with filtrate from a diaphragm expansion tank installed in the ultraliQ:MA: filtered particles and micro-organisms are removed from the membrane
- Forward flush with raw water: During the forward flush with raw water: removed particles and micro-organisms are flushed to the drain

During longer downtimes, additional forced flushing prevents the stagnation of raw water in the ultrafiltration module.

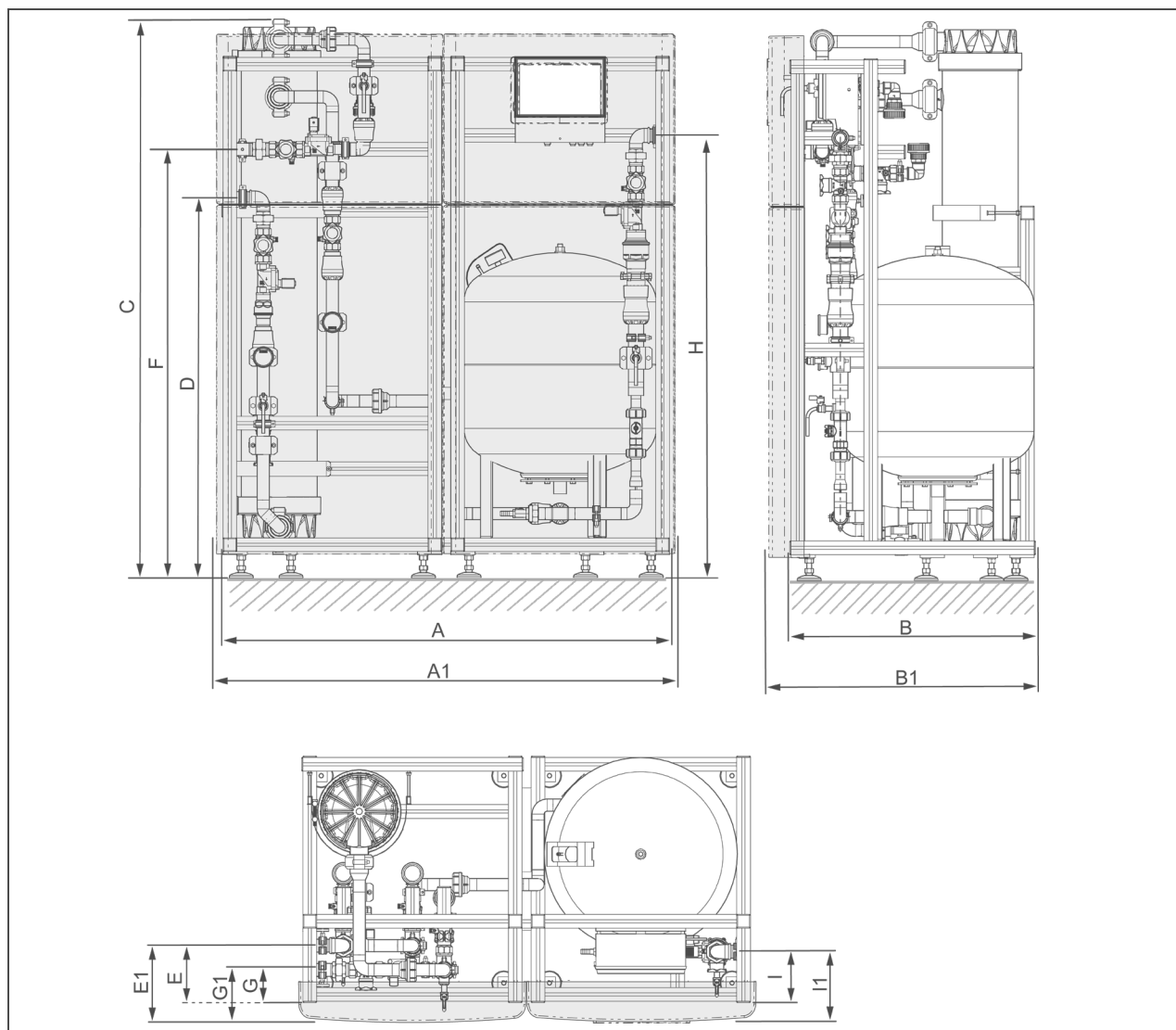
Structure

- Ultrafiltration module(s)
- Anodised aluminium rack with adjustable feet
- Internal piping made of PE/PP (suitable for drinking water) including installed control fittings
- Solenoid valves to control the water flow
- Diaphragm expansion tank(s) for backwash processes with filtrate
- Flame-sterilisable sampling valves
- Pressure indicator for raw water inlet and filtrate outlet pressure (transmembrane pressure)
- Vortex flow sensor (wear-free) to show the actual flow and to archive the total flow
- Electric switch box with control electronics and display for fully automatic control of the ultraliQ:MA as well as indication of the operating state

Scope of supply

- Ultrafiltration system ultraliQ:MA – complete with internal piping, wiring and workshop testing
- Operation manual

Technical specifications I



Dimensions and weights		MA5000	MA10000	
A	System width	mm	1470	
A1	System width including front cover	mm	1500	
B	System depth	mm	800	
B1	System depth including front cover	mm	860	
C	System height	mm	1850	
D	Raw water connection height	mm	1250	
E	Raw water connection depth	mm	185	
E1	Raw water connection depth including front cover	mm	245	
F	Backwash water connection height outlet	mm	1410	
G	Backwash water connection depth outlet	mm	105	
G1	Backwash water connection depth including front cover	mm	165	
H	Filtrate connection height	mm	1455	
I	Filtrate connection depth	mm	165	
I1	Filtrate connection depth including front cover	mm	225	
Operating weight, approx.		kg	420	610
Empty weight, approx.		kg	200	260

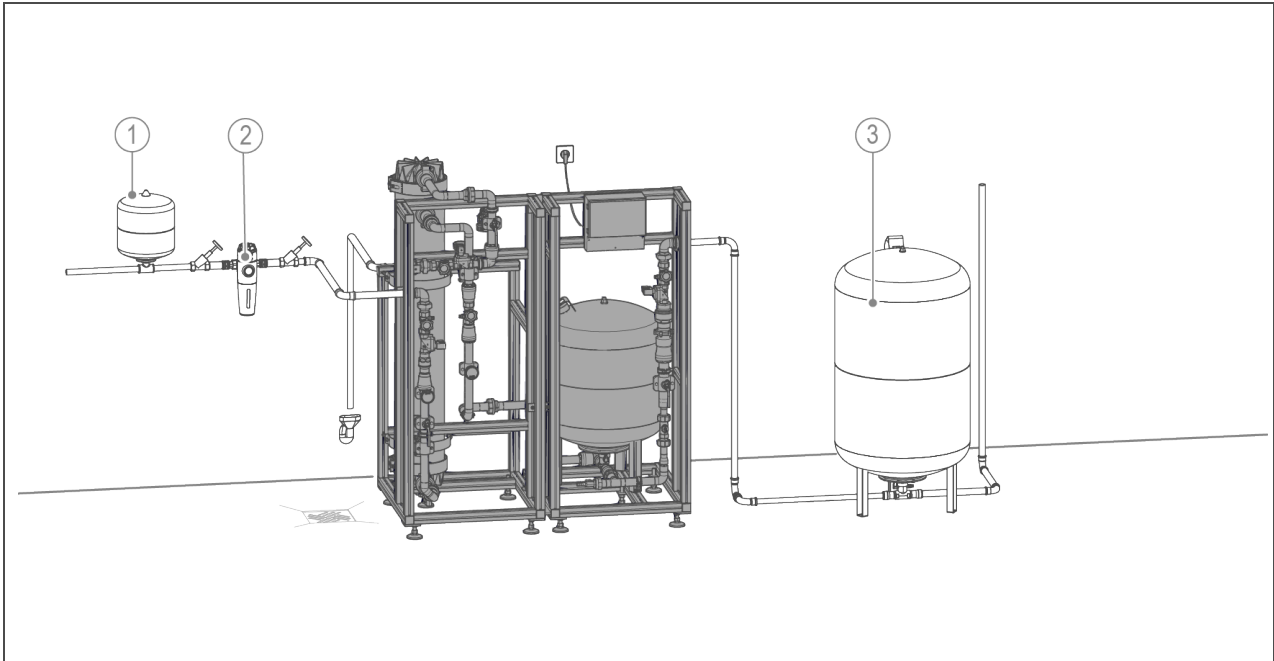
Technical specifications II

Connection data		MA5000	MA10000
Nominal connection diameter of raw water inlet		DN 32 (1¼" male thread)	DN 50 (2" male thread)
Nominal connection diameter of filtrate outlet		DN 32 (1¼" male thread)	DN 50 (2" male thread)
Nominal connection diameter of backwash water (drain)		DN 32 (1¼" male thread)	DN 50 (2" male thread)
Drain connection		≥ DN 150	≥ DN 200
Connected load, approx.	W	120	
Power supply	V/Hz	230/50	
Protection/protection class		IP 54/⊕	

Performance data		MA5000	MA10000
Nominal filtrate capacity	m³/h	5.0	10.0
Operating pressure			
For use with city water	bar	2.5 – 5.0	
Use with downstream non-pressurised tank	bar	3.5 – 5.0	
For use with diaphragm expansion tank/pressurised water tank installed downstream	bar	4.5 – 5.0	
Number of ultrafiltration modules	Piece	1	2
Total active membrane surface	m²	60.0	120.0
Nominal pore size of the membrane (cut-off)	µm	0.02	
Recovery (default setting), approx.	%	93	
Filtration interval (default setting)	min	30	

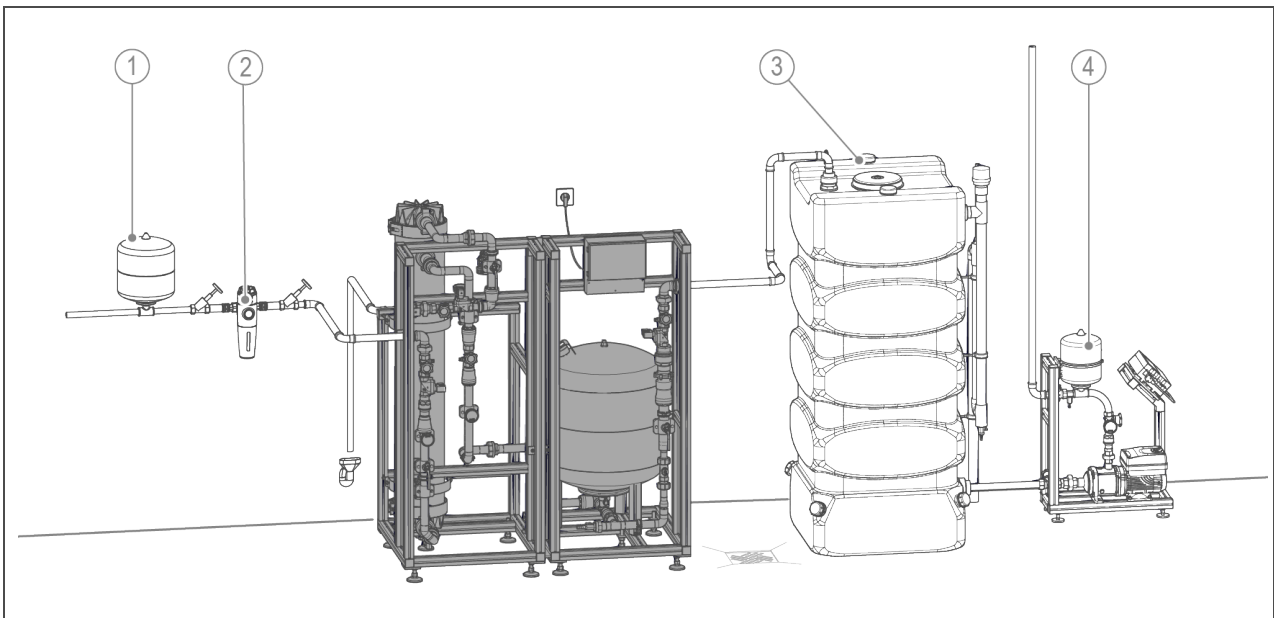
General data		MA5000	MA10000
Water temperature (drinking water)	°C	5 – 20	
Ambient temperature (drinking water)	°C	5 – 25	
Water (technical applications)	temperature °C	5 – 35	
Ambient temperature (technical applications)	°C	5 – 35	
Humidity (non-condensing)	%	≤ 70	
Order no.		535 150	535 160

**Installation example:
ultraI:MA5000 with diaphragm expansion tank/pressurised water tank**



Item	Designation	Item	Designation
1	Diaphragm expansion tank	2	Fine filter with pressure reducer
3	Diaphragm expansion tank/pressurised water tank (buffer tank)		

**Installation example:
ultraI:MA5000 with unpressurised tank and pressure booster system**



Item	Designation	Item	Designation
1	Diaphragm expansion tank	2	Fine filter with pressure reducer
3	Unpressurised tank	4	Pressure booster system

Installation requirements

The components below must be installed upstream and downstream of the system:

In case of private water supply:

- Upstream of the ultrafiltration system (on raw water side)
 - well water pump¹ with pressure switch control on site
 - Diaphragm expansion tank to prevent water hammer (refer to accessories) by client on site
 - fine filter (filter fineness $\leq 200 \mu\text{m}$) with pressure reducer on site
- Downstream of the ultrafiltration system (on filtrate side)
 - Diaphragm expansion tank by client on site

- or pressurised water tank by client on site
- or pure water tank with pressure booster system by client on site to keep up the water supply during the flushing process (refer to accessories)

The installation site must provide protection from the impacts below:

- Moisture, wetness
- Environmental impacts such as wind, rain, snow, etc.
- Frost, direct sunlight, severe heat exposure
- Chemicals, dyes, solvents and their vapours

For electrical connection a Schuko socket is required within a distance of approx. 1.2 m of the system. The socket outlet requires permanent power supply and must not be coupled with light switches,

emergency heating switches or the like.

The system must be accessible for maintenance and repair work. All necessary operating aisles and heights have to be kept free in addition to the depth/width/height of the system

- Front: 800 mm
- Left: 1000 mm
- Right: 1000 mm
- Height: 400 mm

An adequately dimensioned floor drain must be present. If no floor drain is available, the client must install a flushing water tank including waste water lifting system on site.

Lifting systems must be secured against power failure.

1) If the well pump is a centrifugal pump, it can be integrated via a release signal of the ultraliQ control unit. It must be ensured on site that the switching cycles of the centrifugal pump can be maintained in a technically correct way via a MAG.

Accessories

Diaphragm expansion tank

DD 33, G $\frac{3}{4}$
Order no. 890 60 304

To prevent water hammer in the inlet of the ultrafiltration system if a pressurised water tank by client on site is used to store the filtrate

Diaphragm expansion tank

In addition to an existing diaphragm expansion tank or for new installations as water supply during the flushing process of the ultrafiltration system

DD 25, G $\frac{3}{4}$
Order no. 535 105

DT5 60,
Rp 1 $\frac{1}{4}$
Order no. 535 115

DT5 80,
Rp 1 $\frac{1}{4}$
Order no. 535 125

DT5 100,
Rp 1 $\frac{1}{4}$
Order no. 535 135

DT5 300,
Rp 1 $\frac{1}{4}$
Order no. 535 155

DT5 500,
Rp 1 $\frac{1}{4}$
Order no. 535 165

Pressurised water tank

In addition to an existing pressurised water tank or for new installations as water supply during the flushing process of the ultrafiltration system

150 l, 6 bar
Order no. 530 505

300 l, 6 bar
Order no. 530 515

500 l, 6 bar
Order no. 530 525

750 l, 6 bar
Order no. 530 535

1000 l, 6 bar
Order no. 530 545

Basic pure water tank
GT 1000 (standard)
Order no. 712000010000

With GENO-Multi Level, with overflow, without sterile air filter

Basic pure water tank
GT 1000 (aerated with sterile air)
Order no. 712000020000

With GENO-Multi Level, with overflow and siphon, with sterile air filter

Tanks for drinking water applications:

– Available upon request –

Pressure booster systems

GENO-HR-X
Automatically controlled via pressure and flow controller

GENO-HR-X 4/40-1 N
Order no. 730 462
from 2.4 m³/h at 50.0 mWC up to 7.2 m³/h at 16.0 mWC

GENO-HR-X 2/40-2 N
Order no. 730 461
from 2 x 1.0 m³/h at 54.0 mWC up to 2 x 4.2 m³/h at 24.0 mWC

GENO-HR-X 4/40-2 N
Order no. 730 463
from 2 x 2.4 m³/h at 50.0 mWC up to 2 x 7.2 m³/h at 16.0 mWC

GENO-FU-X

Speed-controlled by pressure sensor as well as frequency converter

GENO-FU-X 4/40-1 N
Order no. 730 642
from 2.0 m³/h at 66.0 mWC up to 8.5 m³/h at 29.0 mWC

GENO-FU-X 2/40-2 N
Order no. 730 641
from 2 x 1.0 m³/h at 56.0 mWC bis 2 x 4.4 m³/h at 25.0 mWC

GENO-FU-X 4/40-2 N
Order no. 730 643
from 2 x 2.0 m³/h at 66.0 mWC up to 2 x 8.5 m³/h at 29.0 mWC

Optional equipment

Front cover for ultraIiQ:MA
Order no. 535 168

Controller S7-1200 for ultraIiQ
Order no. 535 060

Mobile cleaning system CIP:UF60
Order no. 778 100
for the chemical cleaning of ultrafiltration systems

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