AQUADYN® modules are encased ultrafiltration hollow fiber membrane modules which effectively reduce micro-organisms and suspended solids from water. The AQUADYN® series offers a comprehensive range of filtration modules for a wide spectrum of applications. At a choice of either modified Poly Acrylonitrile (PAN) or Poly Ethersulfone (PES) a huge selection of module sizes is available.

These innovative membrane modules are developed by MANN+HUMMEL with vast R&D and business experience in filtration. The modules are manufactured under strict supervision and quality checks.

Due to the optimized design efficient flow distribution, enhanced cleaning, minimal pressure drop and high packing density can be achieved. For applications requiring large capacities, extra large modules are available (10” x 60”).

Moreover, the AQUADYN® UA (PAN) as well as the AQUADYN® UE (PES) materials are superior in their hydrophilic property compared to most other polymeric materials. The enhanced hydrophilic property improves the wettability and reduces operating pressure. Additionally, it makes the membrane more resistant to fouling; resulting in less cleaning cycles and reduced chemical usage.

The double asymmetric hollow fiber membranes offer another advantage over single asymmetric membranes. Bacteria, solids and turbidity can be rejected effectively due to a filtration layer inside and outside the hollow fiber. Therefore, problems such as pore clogging during backflush do not occur.

**ADVANTAGES**

» high flow rates (high hydrophilicity)
» high and stable permeate performance
» most reliable process
   (double asymmetric hollow fiber membranes)
» effective retention of particles and bacteria
» easy pre-treatment (100µm)
» compact installation
» high productivity
» flexible flushing modes
» low chemical demand
### Module Specifications and Operating Data AQUADYN® UA/UE Series

<table>
<thead>
<tr>
<th>Parameters</th>
<th>UA420-BT 1)</th>
<th>UA640 1)</th>
<th>UA860 1)</th>
<th>UA1060 1)</th>
<th>UE1060 1) 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Structure</strong></td>
<td>Hollow Fiber</td>
<td>Hollow Fiber</td>
<td>Hollow Fiber</td>
<td>Hollow Fiber</td>
<td>Hollow Fiber</td>
</tr>
<tr>
<td><strong>Membrane surface (m²)</strong></td>
<td>6</td>
<td>16</td>
<td>45</td>
<td>60</td>
<td>55</td>
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<tr>
<td><strong>Poresize (µm)</strong></td>
<td>0.025</td>
<td>0.025</td>
<td>0.025</td>
<td>0.025</td>
<td>0.025</td>
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<tr>
<td><strong>Housing material</strong></td>
<td>Reinforced PP uPVC</td>
<td>Reinforced ABS and uPVC</td>
<td>uPVC</td>
<td>uPVC</td>
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<td><strong>Potting</strong></td>
<td>Epoxy</td>
<td>Epoxy</td>
<td>Epoxy</td>
<td>Epoxy</td>
<td>Epoxy</td>
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<tr>
<td><strong>Flow type</strong></td>
<td>Out / In</td>
<td>Out / In</td>
<td>Out / In</td>
<td>Out / In</td>
<td>Out / In</td>
</tr>
<tr>
<td><strong>Type of filtration</strong></td>
<td>Dead End</td>
<td>Dead End</td>
<td>Dead End</td>
<td>Dead End</td>
<td>Dead End</td>
</tr>
<tr>
<td><strong>Regeneration</strong></td>
<td>-</td>
<td>Backflush, Air Scouring</td>
<td>Backflush, Air Scouring</td>
<td>Backflush, Forward Flush, Air Scouring</td>
<td>Backflush, Forward Flush, Air Scouring</td>
</tr>
<tr>
<td><strong>Max Trans-Membrane-Pressure (bar)</strong></td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<tr>
<td><strong>pH range</strong></td>
<td>2 - 10</td>
<td>2 - 10</td>
<td>2 - 10</td>
<td>2 - 10</td>
<td>2 - 12</td>
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<tr>
<td><strong>Max Feed TSS (mg/l)</strong></td>
<td>≤ 5</td>
<td>≤ 350</td>
<td>≤ 350</td>
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<td>≤ 350</td>
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</table>

**Note:**
1) Only the information given in the data sheets of the single products is binding
2) NSF Approval

### Module Operating Process

**Filtration Process**

Filtration process is an outside-in flow configuration where feed water is in contact with the exterior of the fibers and the filtrate (product water) is drawn from the inside of the hollow fibers (lumen). This configuration has the distinctive advantage of a larger membrane surface area which translates into higher flows.

**Air Scouring**

During the backflush process, air is injected into the module to loosen suspended solids on the fiber surface. This enables suspended solids in the module to be flushed out effectively and prevents solid build-up.
Flush Modes for AQUADYN® Ultrafiltration Modules

**Forward Flush**
Feed water flushes the exterior surface of the fiber and dilutes the retentate. Air scouring is incorporated along with this process to ensure the suspended solids are dislodged before backflushing. This reduces the use of permeate.

**Backflush**
Either at pre-set intervals or when reaching a predetermined transmembrane pressure (TMP), the membrane module undergoes a backflush cleaning sequence where filtrate is used to backflush from the inside of the hollow fibers, hence dislodging the solids attached to the feed surface of the fiber.
AQUADYN® Ultrafiltration Modules

Decoding of the product code:  
U A 10 60  
U E 10 60

<table>
<thead>
<tr>
<th>Type</th>
<th>Fiber Arrangement</th>
<th>Membrane Material</th>
<th>Ø Module [mm]</th>
<th>Length Module [mm]</th>
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<tr>
<td>UA420-BT</td>
<td>U-Shape</td>
<td>PAN</td>
<td>160</td>
<td>604</td>
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<td>U-Shape</td>
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<td>267</td>
<td>1737</td>
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<tr>
<td>UE1060</td>
<td>U-Shape</td>
<td>PES</td>
<td>267</td>
<td>1737</td>
</tr>
</tbody>
</table>

Applications AQUADYN® Modules

- effluent treatment after biological wastewater plants
- pre-treatment to reverse osmosis (sea water and brackish water desalination)
- stormwater treatment
- surface water treatment
- borehole water treatment
- karst water filtration
- drinking water filtration

Final sizing and selection has to be approved by an official MICRODYN-NADIR representative. Please contact phone + 49 611 962 6001 or www.microdyn-nadir.de
SEPARATION – OUR PASSION

For more than 50 years, MICRODYN-NADIR has developed innovative membranes and membrane modules for micro-, ultra- and nano-filtration as well as solutions to support our customers’ needs in operation, performance, efficient membrane processes and regulatory compliance.

We will deliver products, information and services, which fully meet or exceed customer expectations. Our team focuses on continual improvement to achieve the highest possible level of customer satisfaction and to be recognized by our customers as the technology and quality leader.

We are not satisfied until our products have been successfully integrated into your customers’ plants and processes. That is our passion.

Our quality system is designed to support these goals.

WE SUPPORT YOU – WORLDWIDE!

» Global availability
» Intensive technical consulting
» Ideal choice of membranes and modules
» Support with engineering and plant design
» Laboratory and pilot tests
» After Sales Service