Process Instrumentation

D.O. · pH/ORP · CONDUCTIVITY · TURBIDITY/TSS · NH₄/NO₂/NO₃ ·
COD/BOD/TOC/DOC/SAC/UVT · PHOSPHATE · SLUDGE LEVEL · CHLORINE
IQ SENSOR NET –
the System for Wastewater Treatment Plants,
Industrial Applications and much more

① IQ Sensor Network: System 2020

Outlet:
Ammonium, Nitrate, Nitrite, pH, Cond, Turbidity, COD/TOC/DOC/BOD/SAC, UVT, Phosphate

Post sedimentation:
Sludge level

Inlet:
pH, Cond, Ammonium,
Nitrate, COD/TOC/DOC/BOD/SAC

Aeration, Micropollutant
Removal, Deammonification:
D.O., Ammonium, Nitrate, Nitrite,
SAC, UVT, TSS, pH, Phosphate

Portable Display
TC 20203G

IQ Sensor Network: System 2020

② Outstanding among the compact Controllers:
System 282/284

③ The Single Parameter Measuring Point:
System 181

Oxygen measurement
with FDO® 700 IQ
- Calibration free sensor
- Reduces energy and operational costs
- Long lifetime of membrane cap
- Precise results without drift
see page 9

Ammonium & Nitrate measurement with ISE sensors
(e.g. VARiON® Plus 700 IQ)
- Easy and fast matrix adjustment
- Up to 2,000 mg/l NH₄
- Extremely robust electrodes
- Compensation with K and Cl
see page 28

Reagent-free COD measurement
with NiCaVis® 701/705 IQ NI
- No reagent consumption
- Integrated ultrasonic cleaning
- Extremely low in maintenance
- No wear parts
- Additionally BOD, TOC, DOC, SAC, UVT, Nitrate and Nitrite
see page 30
## All measurement parameters at a glance

<table>
<thead>
<tr>
<th>Sensors</th>
<th>TriOxmatic® 700 IQ (F)</th>
<th>FDO® 700/701 IQ (F)</th>
<th>Sensolyt® 700 IQ (F)</th>
<th>TetraCon® 700 IQ (F)</th>
<th>VisoTurb® 700 IQ (F)</th>
<th>ViSolid® 700 IQ</th>
<th>Ammonolyt® 700 IQ</th>
<th>Nitratolyt® 700 IQ</th>
<th>VARIOn® 700 IQ</th>
<th>NitraVis® 701/705 IQ (TS)</th>
<th>NitraVis® 701/705 IQ (NI)</th>
<th>CarboVis® 701/705 IQ (TS)</th>
<th>NiCaVis® 705 IQ (TS/SF)</th>
<th>NiCaVis® 701/705 IQ (NI) SF</th>
<th>UV 701/705 IQ SAC</th>
<th>UV 701/705 IQ NOx</th>
<th>UV 701/705 IQ OCx</th>
<th>Alyza IQ PO4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Usable with System 2020</td>
<td></td>
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</tbody>
</table>
# Systems in Detail

## Module

|--------|--------|---------|--------|--------|---------|-----------|----------|--------|--------|-----------------|--------------|---------|----------------|-------------|--------------------------|--------------------------|------------|

**Usable with System 2020**

**Usable with System 282/284**

**Available IQSN connectors**

| Electrical current [W] | **** | **** | 3.0 | 3.0 | 0.2 | 3.0 | 0.0 | 0.2 | 0.6 | 3.0 | 2.5 | 3.0 | 3.0 | *** | *** | 2.5 |

## Module features

**Power supply**

| 100…240 V AC | ✔ |
| 24 V AC/DC | ✔ |

**Analog outputs/relays**

| 6 x 0/4…20 mA | ✔ |
| 6 x relays | ✔ |
| 3 x 0/4…20 mA, 3 x relays | ✔ |

**Analog inputs**

| 2 x 0/4…20 mA | ✔ |

**Interfaces**

| MODBUS | ✔ |
| PROFIBUS | ✔ |
| USB | ✘ ✘ ✔ ✔ ✔ ✔ ✔ |
| Ethernet/LAN (Profinet, Ethernet/IP, Modbus TCP) | ✔ ✔ |

**Intra-system connectivity**

| 4 available IQSN connectors | ✔ |
| 4 available IQSN connectors including signal amplification for large distances | ✔ |

**Controller**

| Controller/Terminal (with display) | ✔ |
| Controller in standard IQ module without display | ✔ ✔ ✔ |

**Compensation**

| Air-pressure compensation for D.O. measurement | ✔ ✔ ✔ |

**Compressed air cleaning**

| Air compressor 230 VAC | ✔ |
| Air compressor 115 VAC | ✔ |
| Valve for automatic cleaning | ✔ |

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**Power delivery:** MIQ/PS and MIQ/24V provide 18W each

**Integrated power supply:**

**USB interface only for software updates:**

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WTW
a Brand, rich in Tradition

Since 2011, WTW is part of the Xylem Group, which operates worldwide in its core business of water. As a brand of Xylem Analytics Germany GmbH and being rich in tradition, we see our task in using our expertise and innovative technologies to find solutions for our customer’s measurement tasks.

For many years the IQ SENSOR NET has been a technology leader in wastewater quality measurement. It can be used both as single on-site measurement and in a network. The innovative digital sensors represent the heart of the system. As a result the IQ SENSOR NET is the most flexible digital multi-parameter system for up to 20 sensors.

With the new MIQ/MC3 controller family with integrated USB and LAN interfaces, the IQ SENSOR NET System can be connected to internet communication via TCP/IP technology.

The new Analyzer family Alyza IQ augments the System with wet chemical analyzers for the measurement of orthophosphate. They provide extremely low reagent consumption and produce very small amounts of waste.

This as well as our entire product portfolio of process instrumentation can be found on the following pages. If you need any information or solution on laboratory equipment of the brand WTW or other Xylem brands, don’t hesitate to contact us or take a look on our new website www.xylemanalytics.com.

With more than 70 years of experience, the WTW brand has established a first-class reputation through its exemplary customer-support. Our Customer Care Center is ready to find an individual solution for any customer’s measurement tasks. WTW’s comprehensive application collection, in combination with expert application specialists, ensures fast solutions for technical challenges. The dealer and service network extends around the world.

As it always has been the largest percentage of our products are produced at our facility in Weilheim in Upper Bavaria, south of Munich, by nearly 400 employees – quality-measurement technology with expert support, “Made in Germany”.

You can find out more about Xylem on our website:
www.xyleminc.com
## Contents

- **D.O. Measurement**
  - FDO®: Optical D.O. Measuring
  - TriOxomatic®: Electrochemical D.O. Measuring
  - Further analog Sensors

- **pH/ORP Measurement**
  - SensoLyt® System Design
  - Analog ProcessLine® Combination Electrodes
  - Analog SenTix® Electrodes

- **Conductivity Measurement**
  - TetraCon® 4-electrode Design
  - 2-electrode Measuring Cells

- **Turbidity / Suspended Solids**
  - Turbidity Sensor VisoTurb®
  - Suspended Solids Sensor VSolid®
  - UV-VIS Spectral Sensors
  - Analyzer for Turbidity

- **Nitrogen Measurement**
  - ISE Sensors
  - UV-VIS and UV Spectral Sensors

- **Carbon**
  - UV-VIS and UV Spectral Sensors

- **Phosphate**
  - Analyzer

- **Sludge Level Measurement**
  - Digital IQ Sensor to Determine the Sludge Level

- **Chlorine Measurement**
  - Analog Sensors
  - Analyzer

- **IQ SENSOR NET**
  - Fields of Application and Product Overview
  - IQ Systems
  - IQ Sensors
  - IQ Analyzer
  - IQ SENSOR NET System 2020
  - IQ SENSOR NET System 282/284
  - IQ SENSOR NET System 181

- **Analyzer**
  - Alyza IQ Series
  - Further Analyzers

- **Analog Monitors**
  - Series 29B Single-parameter Field Monitor
  - Panels with Analog Monitors

- **ATEX Instrumentation**
  - EX monitors Stratos Pro A 201 X
  - Isolated amplifier WG 21 A7

- **Samplers**
  - Portable samplers
  - Sampler for wall mounting

- **Accessories**
  - Accessories for the IQ SENSOR NET System
  - Accessories for further Process Instrumentation

- **Data sheets**

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### IP Code (International Protection Code)

Protection types acc. to DIN EN 60529

<table>
<thead>
<tr>
<th>1st number:</th>
<th>2nd number:</th>
</tr>
</thead>
<tbody>
<tr>
<td>instrument</td>
<td>protection against entry of solid bodies</td>
</tr>
<tr>
<td>0</td>
<td>not protected</td>
</tr>
<tr>
<td>1</td>
<td>with Ø ≥ 50 mm</td>
</tr>
<tr>
<td>2</td>
<td>with Ø ≥ 12 mm</td>
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<tr>
<td>3</td>
<td>with Ø ≥ 2.5 mm</td>
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<tr>
<td>4</td>
<td>with Ø ≥ 1.0 mm</td>
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<tr>
<td>5</td>
<td>dust protected*</td>
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<tr>
<td>6</td>
<td>dustproof</td>
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<tr>
<td>* limited amounts of dust may enter under certain conditions</td>
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This test mark indicates that the product complies with the applicable EU directives.

For WTW products these are essentially:

- **Directive 2014/35/EU**
  - Electrical equipment for use within particular voltage limits (low-voltage directive/product safety)

- **Directive 2014/30/EU**
  - Electromagnetic compatibility (EMC directive)

- **Directive 2011/65/EU**
  - Restriction Of Harzardous Substances (ROHS)

- **Directive 2014/53/EU**
  - Radio Equipment Directive (RED)

These test marks indicate that the national safety standards applicable in the USA and Canada have been complied with.

Our certification partners, UL (Underwriter Laboratories) and ITS (Intertek Testing Services), are officially authorized testing centers in both countries.

### Warranty

Warranty for perfect operation of instruments supplied by us.

Faults resulting from natural wear and tear, improper use/handling or from alterations/repairs carried out by the customer or third parties to the items supplied are excluded from this warranty.

Reference to Data sheets at the end of the catalog or separately available
<table>
<thead>
<tr>
<th>Process Instrumentation</th>
<th>WASTEWATER TREATMENT</th>
<th>EFFLUENT</th>
<th>SLUDGE UTILIZATION</th>
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<tr>
<td><strong>SEWAGE NETWORK</strong></td>
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<td>pH</td>
<td>Inlet</td>
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<tr>
<td></td>
<td>Conductivity</td>
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<tr>
<td>Biological Cleaning</td>
<td>D.O.:</td>
<td>Biological Cleaning</td>
<td>(Aeration)</td>
</tr>
<tr>
<td></td>
<td>pH</td>
<td>Biological Cleaning</td>
<td>(Aeration)</td>
</tr>
<tr>
<td></td>
<td>Conductivity</td>
<td>Biological Cleaning</td>
<td>(Aeration)</td>
</tr>
<tr>
<td></td>
<td>NH₄, NO₃⁺</td>
<td>Biological Cleaning</td>
<td>(Aeration)</td>
</tr>
<tr>
<td>Sedimentation</td>
<td>Sludge level:</td>
<td>Sedimentation</td>
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</tr>
<tr>
<td>Effluent</td>
<td>pH</td>
<td>Effluent</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Conductivity</td>
<td>Effluent</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NH₄, NO₃⁺</td>
<td>Effluent</td>
<td></td>
</tr>
<tr>
<td>Micropollutant</td>
<td>SAC, UVT:</td>
<td>TSS:</td>
<td>(Anammox)</td>
</tr>
<tr>
<td>Removal</td>
<td>UV 705 IQ SAC</td>
<td>TSS:</td>
<td>(Anammox)</td>
</tr>
<tr>
<td>Sludge Treatment</td>
<td>TSS:</td>
<td>NH₄, NO₃⁺</td>
<td>(Anammox)</td>
</tr>
<tr>
<td></td>
<td>ViSolid* 700 IQ</td>
<td>NO₃, NO₂⁻, NOₓ⁻, COD, BOD, TOC, DOC, SAC, UVT:</td>
<td>(Anammox)</td>
</tr>
<tr>
<td>Deammonification</td>
<td>pH</td>
<td>Deammonification</td>
<td>(Anammox)</td>
</tr>
<tr>
<td></td>
<td>D.O.:</td>
<td>Deammonification</td>
<td>(Anammox)</td>
</tr>
<tr>
<td></td>
<td>NH₄, NO₃⁺</td>
<td>Deammonification</td>
<td>(Anammox)</td>
</tr>
<tr>
<td></td>
<td>NO₃, NO₂⁻</td>
<td>Deammonification</td>
<td>(Anammox)</td>
</tr>
</tbody>
</table>

**Typical Applications**

Wastewater (municipal wwtp)

Typical Applications

Process Instrumentation

Drinking Water

- **pH/ORP Monitor**
  - pH 298 Pt 1000 (24V)
  - SenTix® ML 70
  - SenTix® ML ORP
  - see page 57

- **Conductivity Monitor**
  - LF 298 Pt 1000 (24V)
  - LR ML
  - see page 19

- **Chlorine Monitor**
  - Cl 298 Pt 1000 (24V)
  - FCML 412 N
  - TCML N
  - see page 41

- **D.O. Monitor**
  - Oxi 298 Pt 1000 (24V)
  - see page 57

- **Multi-parameter Panel**
  - MULTILINE 1000
  - see page 59

- **Chlorine Analyzer**
  - Chlorine 3000
  - see page 41

- **Turbidity Analyzer**
  - Turb 2000 Serie
  - see page 25

Industry

The IQ SENSOR NET can further be used for different industrial applications. Please consider the application range of our sensors, e.g. pH, temperature, corrosion or resistance. Given lifetimes and accuracies might differ due to the specific composition of the measured media.

- **IQ SENSOR NET**
  - from page 42
- **IQ Sensors**
  - from page 9
- **IQ Sensors (corrosion resistant SW versions)**
  - from page 9

see also [www.xylemanalytics.com/en/applications/drinking-water](http://www.xylemanalytics.com/en/applications/drinking-water)

see also [www.xylemanalytics.com/en/applications/industry](http://www.xylemanalytics.com/en/applications/industry)
Typical Applications

Process Instrumentation

Surface Water

see also www.xylemanalytics.com/en/applications/environmental-monitoring-surface-water

For the continuous monitoring of surface water Xylem Analytics Germany offers the IQ SENSOR NET with its standard IQ sensors and especially developed reagent free spectral probes (SF versions).

- **pH:** SensoLyt® 700 IQ  page 13
- **Conductivity:** TetraCon® 700 IQ  page 17
- **D.O.:** FDO® 700 IQ  page 9
  TriOxmatic® 700 IQ  page 10
- **Turbidity:** VisoTurb® 700 IQ  page 22
- **Nitrat (NO₃):** NiCaVis® 705 IQ SF  page 30
- **Nitrit (NO₂):** NiCaVis® 705 IQ NI SF  page 30
- **COD/BOD** NiCaVis® 705 IQ SF  page 34

Fish Farming

see also www.xylemanalytics.com/en/applications/aquaculture

From extensive to intensive management, from fresh to salt water fish farming – to monitor relevant parameters like pH, oxygen concentration, salinity, total suspended solids or turbidity, we offer respective sensors; including temperature.

<table>
<thead>
<tr>
<th></th>
<th>pH (incl. T)</th>
<th>D.O. (incl. T)</th>
<th>Salinity (incl. T)</th>
<th>TSS/Turbidity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fresh water</strong></td>
<td>SensoLyt® 700 IQ  page 13</td>
<td>FDO® 700 IQ*  page 9</td>
<td>TetraCon® 700 IQ  page 17</td>
<td>ViSolid® 700 IQ  page 23</td>
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<tr>
<td></td>
<td></td>
<td>TriOxmatic® 700 IQ  page 10</td>
<td></td>
<td>VisoTurb® 700 IQ  page 22</td>
</tr>
<tr>
<td><strong>Salt water</strong></td>
<td>SensoLyt® 700 IQ SW  page 13</td>
<td>FDO® 700 IQ SW (incl. protection head for the membrane against fish bite)  page 9</td>
<td>TetraCon® 700 IQ SW  page 17</td>
<td>ViSolid® 700 IQ SW  page 23</td>
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<tr>
<td></td>
<td></td>
<td>TriOxmatic® 700 IQ SW  page 10</td>
<td></td>
<td>VisoTurb® 700 IQ SW  page 22</td>
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</table>

* Protection head MSK FDO® against fish bite has to be ordered separately