IQ Sensor Net

Digital. Modular. Flexible. Secure

Content
43 Fields of Application and Product Overview
44 IQ Systems
45 IQ Sensors
45 IQ Analyzer
46 IQ Sensor Net System 2020
46 The basic equipment
47 The Sensors and Parameters
48 The Modules
50 IQ Sensor Net System 282/284
50 The Controllers
51 The Sensors and Parameters
51 The Modules
52 IQ Sensor Net System 181
52 The Controllers
53 The Sensors and Parameters
53 The Modules
77 Data sheets

see also https://www.xylemanalytics.com/en/landingpages/iq-sensor-net
Fields of Application and Product Overview

IQ SENSOR NET - the system for wastewater treatment plants and more applications

The digital and modular IQ SENSOR NET provides many unique advantages. Since 2001 our customers have enjoyed making the most out of the IQ SENSOR NET modular design. It enables you to easily expand the network with new members. This provides great flexibility and peace of mind that you are completely safe for all wastewater monitoring requirements in the future.

- Integrated overvoltage protection of all components (sensors, modules, cables)
- Reduce cost of installation with universal sensor connection and 2 wired cables rather than multiple power and output cables
- Intuitive design to operate and expand

At the beginning of your planning, make your decision between 3 systems:

| Connectable sensors | Displayable parameters | USB interface | Ethernet interface | System access via IQ WEB CONNECT | Field bus connection | Data memory | IQ sensors with universal sensor connection | IQ fixed cable sensors | MIQ modules | DIQ modules | Wireless communication | Redundant controller | Max. number of displays | Oxygen sensors see from page 8 | pH/ORP probes see from page 13 | Conductivity cells see from page 17 | Turbidity sensors see from page 22 | Suspended solids sensors see from page 23 | Nitrogen probes see from page 28 | Carbon probes see from page 34 | SAC/UVT probes see from page 34 | Phosphate analyzer see from page 37 | Sludge level probes see from page 39 |
|---------------------|------------------------|---------------|-------------------|-------------------------------|---------------------|-------------|-------------------------------------------|-----------------------|------------|------------|----------------------------|-------------------------|-----------------------------|--------------------------------|--------------------------------|----------------------------|-----------------------------|---------------------|-----------------------------|---------------------|-----------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| MIQ/TC 2020 3G      | MIQ/MC3                | DIO/S 284     | DIO/S 282         | DIO/S 181                     |                     |             |                                                                                           |                       |            |            |                                                                                           |                       |                             | see page 46            | see page 49            | see page 50            | see page 50            | see page 52          | see page 46            | see page 49            | see page 50            | see page 50            | see page 52          | see page 46            | see page 49            | see page 50            | see page 50            | see page 52          |

Visual System overview see cover of this catalog. All parameters (tabular design) see cover of this catalog. System details (tabular design) see cover of this catalog. Analog systems from page 56. ATEX from page 60.
IQ Systems

1) IQ Sensor Network:

System 2020 3G
- For up to 20 digital IQ sensors in any order
- Measuring network for large plants, BackUp controller function for higher operational safety
- Ethernet/LAN interface and integrated webserver for easy network connection
- Fast and easy software update and saving of logbook data, measured values and configurations for additional safety on a USB stick
- Up to 3 portable and clear displays even in direct sunlight

2) Outstanding among the compact:

System 282/284
- Multi-channel controller for up to 4 IQ sensors provides easy and low-cost expansion
- Up to 20 parameters can be visualized at the same time
- Perfectly suited to replace or add a single measuring point
- Simple Data transfer and download with USB stick at every controller
- Optional: Ethernet and RS 485 interface for network connection and fieldbus communication

3) The single parameter measuring point:

System 181
- Low-cost entrance into the digital measuring technique
- Suitable fixed cable sensors for the parameters pH/ORP, Cond, D.O. and Turb
- Stable, robust and reliable measuring technique

Visual overview of systems see cover of this catalog.

Product descriptions of single components see page 46
Product descriptions of single components see page 50
Product descriptions of single components see page 52
IQ Sensors

One connection for all IQ sensors - via the universal SACIQ sensor cable

The standard version of high grade stainless steel is suitable for process and industry. All media contacting components of the seawater versions are made of titanium and plastic and are therefore extremely resistant to corrosion.

For the following parameters WTW offers IQ sensors:

- Oxygen (D.O.) from page 8
- pH/ORP from page 13
- Conductivity from page 17
- Turbidity from page 22
- Suspended Solids from page 23
- Nitrogen: NH₄, NO₃, NO₂, NOₓ from page 28
- Carbon: COD/TOC/DOC/BOD from page 34
- SAC/UVT from page 34
- Sludge Level from page 39

IQ Analyzer

Alyza IQ - the wet-chemistry revolution is now

The Alyza IQ convinces with extremely low reagent and waste consumption and an easy handling. It can be connected to Systems 2020 and 282/284.

For the following parameter WTW offers IQ analyzer:

- Orthophosphate from page 37
IQ SENSOR NET System 2020

A flexible system - reliable results

The IQ SENSOR NET is of modular design and grows with your demands.

Application areas and system concept

The IQ SENSOR NET is a network for analytical measurements. It is in worldwide operation since 2001, constantly evolving to meet customer needs. It is used for inlet and outlet monitoring, as well as for controlling the activated sludge process.

Due to its modular design, the system can be expanded any time by adding further modules and sensors in any order.

The basic equipment

Terminal/Controller MIQ/TC 2020 3G

Terminal/Controller for the IQ SENSOR NET System 2020, portable operating unit with large display, robust buttons and USB interface; connectible to every MIQ module.
Modules for Power Supply

**MIQ/PS** or **MIQ/24V** for the power supply via wide range or 24 V (AC and DC). The power supply modules that operate the IQ SENSOR NET are available in two models: The wide range power supply MIQ/PS for 100-240 VAC and the low-voltage power supply MIQ/24V for 24 VAC/24 VDC.

By the ability to stack these in the IQ SENSOR NET, you can quickly and easily dock these modules onto already existing ones - anywhere in the system. Therefore, additional mounting hardware is not required.

**Ordering Information**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIQ/TC 2020 3G</td>
<td>Terminal/Controller for the IQ SENSOR NET System 2020</td>
<td>470020</td>
</tr>
<tr>
<td>MIQ/PS</td>
<td>Power supply module for voltage supply with wide range power supply</td>
<td>480004</td>
</tr>
<tr>
<td>MIQ/24V</td>
<td>Power supply module for voltage supply with 24 VAC or 24 VDC input voltage</td>
<td>480006</td>
</tr>
</tbody>
</table>

For technical data please see datasheets D1.01 and D1.03

Alternatives and accessories see brochure “Product Details” and website

Analog systems from page 56  ATEX from page 60

---

**The Sensors and Parameters**

All common parameters from inlet to outlet. The sensors can be connected with a universal cable to any module.

For the following parameters WTW offers

**IQ sensors:**

- Oxygen (D.O.)
- pH/ORP
- Conductivity
- Turbidity
- Supended Solids
- Nitrogen: NH₄, NO₃, NO₂, NOₓ
- Carbon: COD/TOC/DOC/BOD
- SAC/UV
- Sludge Level

**IQ analyzer:**

- Orthophosphate

from page 8  from page 13  from page 17  from page 22  from page 23  from page 28  from page 34  from page 34  from page 39  from page 37
The Modules

Expand the functions of your system by adding specific modules.

Modules for System Expansion

The expansion modules are required to connect the IQ sensors as well as for the branching of the system.

- **MIQ/JB**: passive module „Junction Box“ (MIQ/JB) with four identical IQ SENSOR NET connections
- **MIQ/JBR**: Module with active repeater function to prepare the signal for very long cable distances
- **MIQ/WL PS**: Radio module for the wireless connection in your IQ SENSOR NET

Modules with Analog Outputs

The analog output modules can be combined as required, up to a max. of 48 output channels (total of current outputs and relays in the system 2020).

- **MIQ/R6** with 6 relays
- **MIQ/CR3** with 3 current outputs and 3 relays
- **MIQ/C6** with 6 current outputs

Module with Analog Inputs

With the module **MIQ/IC2** you will expand the system by two current inputs and you will also allow the connection of separate sensors and analyzers into the IQ SENSOR NET.

- Can be combined in any configuration thanks to the modular system - no matter where, when or how
- Simple installation – the stacking technique of the IQ SENSOR NET saves additional installation materials, work effort and time
- Integrated overvoltage protection ensures high operational safety in any weather

Connections of modules for system expansion, analog outputs, analog inputs, and power supply; with at least two IQ SENSOR NET connections

Antenna of radio module MIQ/WL PS

Year Warranty

D1.02, D1.04, D1.05, D1.06

Connections of modules for system expansion, analog outputs, analog inputs, and power supply; with at least two IQ SENSOR NET connections

Antenna of radio module MIQ/WL PS

<table>
<thead>
<tr>
<th>Year Warranty</th>
<th>D1.02, D1.04, D1.05, D1.06</th>
</tr>
</thead>
</table>
### Modules with Digital Outputs

- **MIQ/3-MOD** for MODBUS RTU connection
- **MIQ/3-PR** for PROFIBUS DP connection

### Other MIQ Modules

- **MIQ/CHV PLUS**: Magnetic valve module for automatic compressed air cleaning, controlled by relays of the IQ SENSOR NET.
- **MIQ/EKB**: In order to avoid trip hazards, you can also route the connecting cable of the IQ SENSOR NET underground. To extend these, you can use our ground cable terminal box MIQ/EKB.

### Controller MIQ/MC3

The additional usage of a MIQ/MC3 controller provides several functionalities. This is in particular the reliable and direct data transfer to the PLC via the fieldbuses PROFIBUS DP, Modbus RTU (RS 485), Ethernet/IP, Modbus TCP or PROFINET (RJ 45).

By installing the MIQ/MC3, the MIQ/TC 2020 3G becomes a portable Terminal, which can be connected to any module. The MIQ/MC3 ensures operation of the IQ SENSOR NET. In case of damage, the portable terminal takes control of the system (Controller BackUp function). Finally, the MIQ/MC3 provides full access from remote with the integrated web server IQ Web Connect – read measuring values, change settings, secure data. All this is possible by connecting the IQ SENSOR NET into a local network or the Internet.

### Ordering Information

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIQ/JB</td>
<td>Modul IQ/Juction Box, for system branching, for system 2020 and 282/284, 4 free IQ SENSOR NET connections</td>
<td>480008</td>
</tr>
<tr>
<td>MIQ/WL PS SET</td>
<td>2 MIQ/WL PS radio modules, preconfigured as master and slave, ready to operate</td>
<td>480025</td>
</tr>
<tr>
<td>MIQ/R6</td>
<td>Module IQ / relay 6 with 6 relay outputs (output module, analog)</td>
<td>480013</td>
</tr>
<tr>
<td>MIQ/CR3</td>
<td>Module IQ / current relay 3, with 3 power and 3 relay outputs output module (analog)</td>
<td>480014</td>
</tr>
<tr>
<td>MIQ/C6</td>
<td>Module IQ / Current 6 with 6 power outputs (output module, analog)</td>
<td>480015</td>
</tr>
<tr>
<td>MIQ/3-MOD</td>
<td>Module IQ with MODBUS RTU / RS 485 connection (output module, digital)</td>
<td>471026</td>
</tr>
<tr>
<td>MIQ/IC2</td>
<td>Module IQ / input Current 2 with 2 inputs for 0/4 - 20 mA signals (input module)</td>
<td>480016</td>
</tr>
<tr>
<td>MIQ/CHV PLUS</td>
<td>Module IQ/Cleaning Head Valve for automatic relay or IQ SENSOR NET controlled compressed air cleaning (relay and compressed air supply, external)</td>
<td>480018</td>
</tr>
<tr>
<td>MIQ/MC3</td>
<td>Controller of the system 2020, for up to 20 sensors, with automatic air pressure compensation, USB and RJ45 interface (ethernet)</td>
<td>471020</td>
</tr>
<tr>
<td>MIQ/MC3-MOD</td>
<td>Like MIQ/MC3, but including MODBUS RTU/RS 485 interface</td>
<td>471022</td>
</tr>
<tr>
<td>MIQ/MC3-PR</td>
<td>Like MIQ/MC3, but including PROFIBUS-DP/RS 485 interface</td>
<td>471023</td>
</tr>
</tbody>
</table>

For technical data please see datasheets D1.05, D1.04, D1.06 and D1.02. Alternatives and accessories see brochure “Product Details” and website. DIQ modules for the system 282/284 from page 51. Analog systems from page 56.
IQ SENSOR NET System 282/284

for small and mid-sized wastewater treatment plants

Controller for small and mid-sized wastewater treatment plants including USB-interface and internal data logger - up to 4 sensors, all parameters, available anytime.

The Controllers

DIQ/S 282

Controller for up to two sensors, available in five different versions: with three current outputs, with PROFIBUS interface, with MODBUS interface, with Ethernet interface for remote control or with Ethernet interface including protocols PROFINET, Modbus TCP and Ethernet/IP. Every version is also available with 24 V AC/DC supply.

DIQ/S 284

Controller for up to four sensors, available in five different versions: with six current outputs, with PROFIBUS interface, with MODBUS interface, with Ethernet interface for remote control or with Ethernet interface including protocols PROFINET, Modbus TCP and Ethernet/IP. Every version is also available with 24 V AC/DC supply.

Ordering Information

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIQ/S 282-CR3</td>
<td>Controller for up to 2 IQ sensors, with 3 Relays, with 3 mA-outputs, 100 ... 240 VAC</td>
<td>472110</td>
</tr>
<tr>
<td>DIQ/S 284-CR6</td>
<td>Controller for up to 4 IQ sensors, with 6 Relays, with 6 mA-outputs, 100 ... 240 VAC</td>
<td>472130</td>
</tr>
</tbody>
</table>

Version with field bus protocols and digital interfaces see data sheets D1.07 and D1.08.

For technical data please see datasheets D1.07 and D1.08.
Alternatives and accessories see brochure "Product Details" and website.
IQ SENSOR NET System 2020 see page 46.
Analog systems from page 56.
The Sensors and Parameters

All common parameters from inlet to outlet. The sensors can be connected with a universal cable to any module.

For the following parameters WTW offers

**IQ sensors:**
- Oxygen (D.O.) from page 8
- pH/ORP from page 13
- Conductivity from page 17
- Turbidity from page 22
- Suspended Solids from page 23
- Nitrogen: NH₄, NO₃, NO₂, NOX from page 28
- SAC/UVT from page 34
- Carbon: COD/TOC/DOC/BOD from page 34
- Sludge Level from page 39

**IQ analyzer:**
- Orthophosphate from page 37
- Orthophosphate from page 37

The Modules

Modules for the flexible expansion of digital IQ SENSOR NET systems 181 and 282/284 by additional measuring points or functions – compact design

- Simple installation - electrical connection and mounting can be done with terminal strips and simple screws
- The flexible system expansion allows you to upgrade at a later date
- Its compact design saves space and cost

**DIQ/JB** to connect a second or remote IQ sensor

**DIQ/CHV** for the automatic relay-controlled compressed air cleaning in the system 181 and 282/284

**MIQ/**...

All MIQ modules can be used with the system 282/284 (except: MIQ/MC3(-...)) and MIQ/3(-...) (see from page 48):
- MIQ/PS
- MIQ/24V
- MIQ/JB
- MIQ/JBR
- MIQ/WL PS SET
- MIQ/R6
- MIQ/CR3
- MIQ/C6
- MIQ/IC2
- MIQ/CHV PLUS
- MIQ/EXB

**Ordering Information**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIQ/JB</td>
<td>Dual IQ/Junction Box</td>
<td>472005</td>
</tr>
<tr>
<td>DIQ/CHV</td>
<td>Dual IQ/Cleaning Head Valve</td>
<td>472007</td>
</tr>
</tbody>
</table>

For technical data please see datasheet D1.10.
Alternatives and accessories see brochure “Product Details” and website.
IQ SENSOR NET System 181 page 52
Analog systems from page 56
IQ SENSOR NET System 181

Digital and easy

For pH, dissolved oxygen, turbidity or conductivity

Great technology at low price

Get decades of experience from WTW and use the established technology. With the excellent cost-performance ratio you can save time, work and money!

1 Controller. 1 Sensor.

Get started into the digital world and stay sustainable with the state-of-the-art technique. No preamplifier, reliable data transfer, automatic sensor recognition!

The Controller

The digital controller DIQ/S 181 for pH/ORP, D.O., Turbidity or Conductivity enables a sensor change at any time; cable length of up to 250 m.

Ordering Information

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Order No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIQ/S 181</td>
<td>Dual IQ/System 181</td>
<td>472100</td>
</tr>
</tbody>
</table>

For technical data please see datasheet D1.09
Alternatives and accessories see brochure "Product Details" and website
Analog systems from page 56
Controllers and sensors for explosive area see page 60
The Sensors and Parameters

Cost-effective and reliable – measure pH/ORP, D.O., Conductivity or Turbidity with the fixed cable IQ sensors of System 181.

for pH/ORP measurement

SensoLyt® 700 IQ F  see page 13
SensoLyte® electrodes  see page 14

for Dissolved Oxygen measurement

TriOxmatic® 700 IQ F  see page 10
FDO® 700 IQ F  see page 9
FDO® 701 IQ F  see page 9

for Conductivity measurement

TetraCon® 700 IQ F  see page 17

for Turbidity measurement

VisoTurb® 700 IQ F  see page 22

The Modules

Modules for flexible extensions of the digital IQ SENSOR NET Systems 181 and 282/284 with additional measuring points or functions – compact shape.

see page 51