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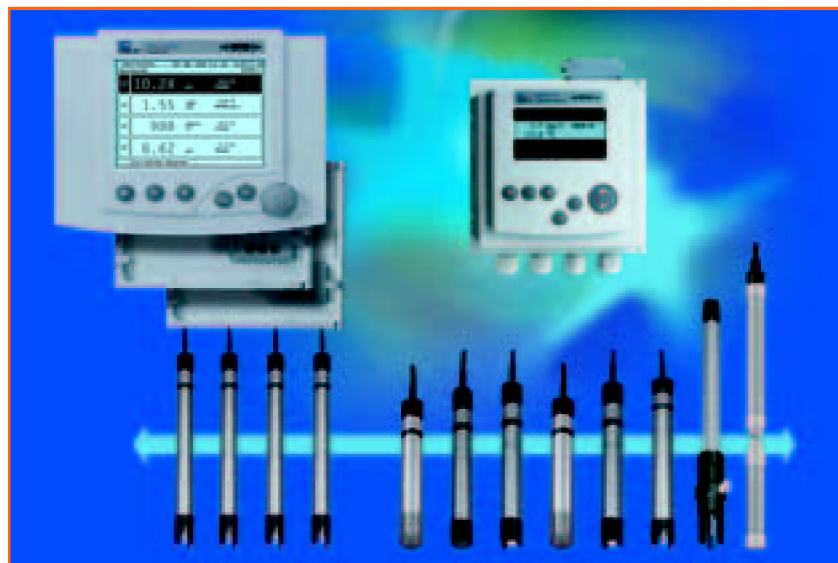
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IQ SENSOR NET

The modular multi-parameter measuring system



- Universal online measuring system
- For any parameter
- Upgradable analog and digital connections

NEW

System 182 XT

with 4 analog outputs and 5 relays

Digital and universal, for

- user choice of any two sensors
- additional analog outputs, e.g. for temperature

The IQ SENSOR NET is a modular system for precise online measurements:

- pH, ORP, oxygen, temperature, turbidity/TSS, ammonium, nitrate, COD and more
- Single parameter units and multiparameter systems
- Analog outputs and relays, digital interfaces (PROFIBUS DP(V1 with FDT/DTM), Modbus RTU)

With special security features for fail-safe operation, such as:

- Integrated lightning protection (coarse and fine protection)
- Programmable status in case of error
- Automatic power fail restart
- Optional redundant controller for 100% availability
- Software for storing, saving, documenting and reloading system configuration

Simple installation using:

- 2-wire-connection technology
- Plug & play connection of any IQ sensor
- Simple system expansion by easily adding modules or sensors
- Install components where needed (e.g. analog outputs close to PLC) or directly in control room

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3 Year Warranty

The IQ sensors with digital interface enable:

- large distances in-between sensors and between sensors and measuring system
- signal transmission which is immune to interference
- calibration data are stored in the sensor, calibration can be performed in the laboratory

Stackable modules and digital communication of the IQ system allows:

- analog and digital world combinations
- well laid-out graphic display of measured values
- digital transmission, storage and analysis of measured values



U.S. patent granted
(US 6,655,233 B2)

Systems 182, 184 XT and 2020 XT

Choose the system that's right for your application:

	System 182		System 184 XT		System 2020 XT	
Max. number of sensors	2		12		20	
Output signals	ANALOG:	DIGITAL:	ANALOG:	DIGITAL:	ANALOG:	DIGITAL:
	Analog outputs, (0/4 - 20 mA), Relays	<ul style="list-style-type: none"> • RS 485 • PROFIBUS DP • Modbus RTU 	Analog outputs, (0/4 - 20 mA), Relays	<ul style="list-style-type: none"> • via RS 232 – PC software terminal and data server function 	Analog outputs, (0/4 - 20 mA), Relays	<ul style="list-style-type: none"> • via RS 232 – PC software terminal and data server function • RS 232-modem • RS 485 • PROFIBUS DPV1 with FDT/DTM • Modbus RTU
					(digital standards parallel to analog possible)	
Knowledge of special automation technology required	Basically no, in PROFIBUS/Modbus systems yes		No		Basically no, in PROFIBUS/Modbus systems yes	
Additional Options						
Additional Displays	No		Yes		Yes	
Redundant controller	No		Yes		Yes	
Datalogger	No		Yes		Yes, enhanced performance	
Modem-capable interface (fixed line telephone and mobile network)	No		No		NEW Yes Alarms and measured values via SMS	
Radio transmission	Yes		Yes		Yes	

NEW

* The double sensors VARIION 700 IQ, NitraVis® 700/x IQ TS, CarboVis® 700/5 IQ TS and NiCaVis® 700/5 IQ need 2 sensor spaces.

System 182 for up to 2 sensors

It is particularly suitable as a replacement or supplement for single parameter systems in existing water and wastewater treatment plants. It can be easily integrated in existing process control systems using PROFIBUS or Modbus options but also the conventional analog version with analog outputs and relays.

NEW System 182 XT

In addition to the basic version with 2 analog outputs and 3 relays an XT version with a total of 4 analog outputs and 5 relays is available.

System 184 XT for up to 12 sensors

particularly suitable for conventional facilities, in which the user wishes to combine the advantages of digital sensor technology with the simplicity of conventional instrumentation. Signal relaying is generally performed by means of 0/4-20 mA analog outputs and relays.

System 2020 XT for up to 20 sensors

is the system of choice for a large number sensors, for digital interfaces and as futureproof instrumentation, if for example a PROFIBUS control is planned in an upcoming extension phase.

System 182

DIQ/S 182

NEW

DIQ/S 182 XT



4 x mA;
5 x relays

2 x IQ sensors can be
connected directly



This universal monitor for 1 or 2 digital sensors is particularly suitable as a replacement or supplement for single parameter systems in existing water and wastewater treatment plants:

- Two user-defined sensors may be connected; a total of **19 different sensors are available**
- All parameters, from **pH, ORP, DO, temperature** and **turbidity/suspended solids** and the nutrient parameters **ammonium, nitrate** and **COD** may be measured directly in the process
- Integrated power supply unit (110-240 VAC) or a 24 V power supply unit
- Digital **PROFIBUS** or **Modbus** outputs
- Analog version with **2 analog outputs** and **3 relays**
alternative **XT version** with **4 analog outputs** and **5 relays**

Typical applications, e.g. **control** of nitrification/denitrification can be covered with one single system 182: Just connect the DO and the ammonium or nitrate sensor and you will instantly obtain the data to control your process!

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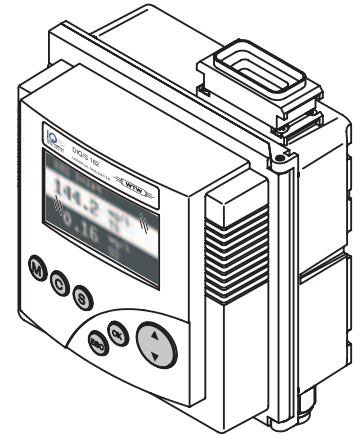
3 Years
Warranty

System 182 Components

System 182 is a remarkably compact two-channel monitor with integrated power supply, controller, operating unit, analog outputs and relays or optional digital outputs available.

Display of measured values and operator guidance

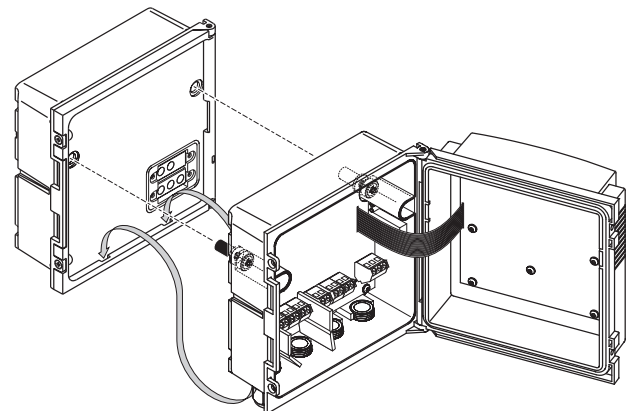
The user can select the display of either a single or of two measurement values including a secondary parameter (e.g. temperature). For a quick survey, the status of all relays and outputs can be simultaneously displayed in one overview. Clear text operator guidance is identical with all IQ SENSOR NET Systems.



DIQ/S 182

Sensor connection and system configuration

Upon connection, any IQ sensor will be automatically recognized by the system and the measured value will be displayed instantly. If needed, an additional power supply unit may be adapted. This is necessary for sensors with high power consumption, e.g. the NitraVis®, CarboVis®, NiCaVis® 700 IQ UV-VIS sensors or for operation of two turbidity sensors with ultrasound cleaning system at one monitor. The different modules can be stack mounted, thereby simultaneously establishing the electrical connection between the modules. Any cable lengths up to 850 ft. (250 m) may be used within one system.



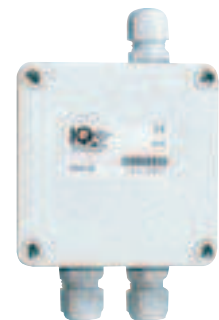
Stack mounting DIQ/S 182
with additional power supply unit

Branching module for sensors and magnetic valve module for automatic air cleaning

A plain "junction box" DIQ/JB is available for connecting a second or a remote IQ sensor.

The solenoid valve required for automatic air cleaning is located in the DIQ/CHV module of the same line. It can be used for the ion selective sensors for ammonium and nitrate and for the UV-VIS sensors as well. It is controlled directly by a relay of the monitor.

These two modules can be mounted on a common fitting panel and attached to a mounting stand.

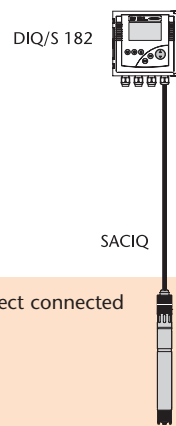


DIQ module

Configuration Options for System 182

Example 1

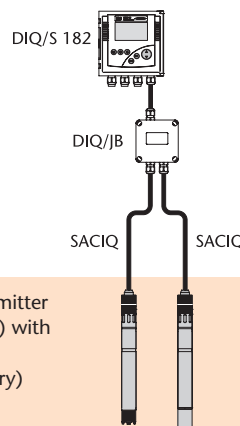
Configuration Example	Order No.
DIQ/S 182	472 000
SACIQ-7,0	480 042
IQ Sensor	user selected



Transmitter with 1 direct connected IQ sensor

Example 2

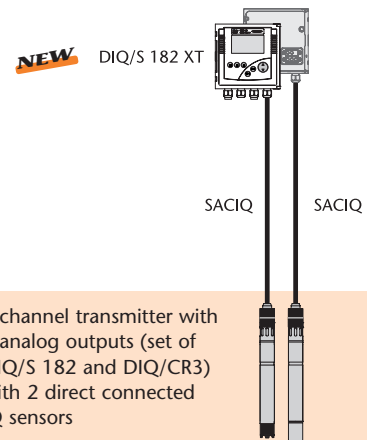
Configuration Example	Order No.
DIQ/S 182	472 000
DIQ/JB	472 005
2 x SACIQ-7,0	480 042
2 IQ Sensors	user selected



2 channel transmitter (analog outputs) with 2 IQ sensors (DIQ/JB necessary)

Example 3

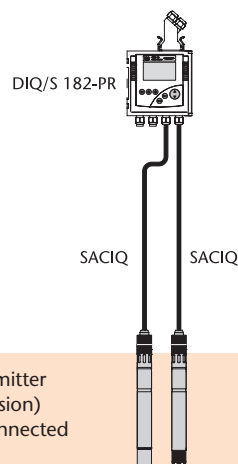
Configuration Example	Order No.
DIQ/S 182 XT	472 001
2 x SACIQ-7,0	480 042
2 IQ Sensors	user selected



2 channel transmitter with 4 analog outputs (set of DIQ/S 182 and DIQ/CR3) with 2 direct connected IQ sensors

Example 4

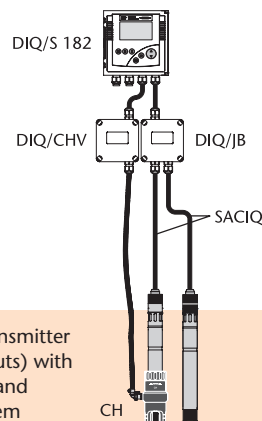
Configuration Example	Order No.
DIQ/S 182-PR	472 002
2 x SACIQ-7,0	480 042
2 IQ Sensors	user selected



2 channel transmitter (PR or MOD version) with 2 direct connected IQ sensors

Example 5

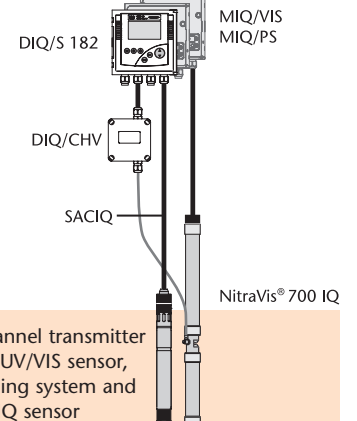
Configuration Example	Order No.
DIQ/S 182	472 000
DIQ/JB	472 005
DIQ/CHV	472 007
CH	900 107
2 x SACIQ-7,0	480 042
2 IQ Sensors	user selected



2 channel transmitter (analog outputs) with 2 IQ sensors and cleaning system

Example 6

Configuration Example	Order No.
DIQ/S 182	472 000
MIQ/VIS	481 029
MIQ/PS	480 004
DIQ/CHV	472 007
NitraVis® 700/1 IQ	481 021
SACIQ-7,0	480 042
IQ Sensor	user selected



2 channel transmitter with UV/VIS sensor, cleaning system and 2nd IQ sensor

Ordering Information System 182

Monitors		Order No.
DIQ/S 182	Dual IQ/system 182, Universal Transmitter for connection of 2 digital IQ sensors, with 2 analog outputs (0/4-20 mA) and 3 relays	472 000
DIQ/S 182 XT	Dual IQ/ system 182, Universal Transmitter for connection of 2 digital IQ sensors, with 4 analog outputs (0/4-20 mA) and 5 relays	472 001
DIQ/S 182-PR	Dual IQ/system 182, UUniversal Transmitter for connection of 2 digital IQ sensors, with 3 relays and PROFIBUS-DP connection	472 002
DIQ/S 182-MOD	Dual IQ/system 182, Universal Transmitter for connection of 2 digital IQ sensors, with 3 relays and MODBUS RTU/RS 485 connection	472 003
DIQ/S 182/24V	Dual IQ/system 182, Universal Transmitter for connection of 2 digital IQ sensors, with 2 analog outputs (0/4-20 mA) and 3 relays, for 24 V AC/DC power supply	472 010
DIQ/S 182 XT/24V	Dual IQ/ system 182, Universal Transmitter for connection of 2 digital IQ sensors, with 4 analog outputs (0/4-20 mA) and 5 relays, for 24 V AC/DC power supply	472 011
DIQ/S 182-PR/24V	Dual IQ/system 182, Universal Transmitter for connection of 2 digital IQ sensors, with 3 relays and PROFIBUS-DP connection, for 24 V AC/DC power supply	472 012
DIQ/S 182-MOD/24V	Dual IQ/system 182, Universal Transmitter for connection of 2 digital IQ sensors, with 3 relays and MODBUS RTU/RS 485 connection, for 24 V AC/DC power supply	472 013
DIQ Modules		
DIQ/JB	Dual IQ/Junction box for connection of a second or a further IQ sensor to the Universal Transmitter DIQ/S 182 (system 182)	472 005
DIQ/CHV	Dual IQ/Cleaning Head Valve for automatic air cleaning controlled by a relay for system 182 (relay and compressed air supply external)	472 007
MS/DIQ	Mounting plate for up to 2 DIQ modules (DIQ/CHV and DIQ/JB)	472 009
MIQ Module and Cables for System Supplement		
MIQ/Blue PS NEW	Module IQ/Radio transmission, for wireless connection within the IQ SENSOR NET system, for system 182, 184 XT and 2020 XT. SET with two pairwise preconfigured modules	480 021
MIQ/VIS	Module IQ/VIS for connecting one UV/VIS probe NitraVis®/CarboVis®/NiCaVis® 700 IQ to the IQ SENSOR NET, fo system 2020 XT, 184 XT and 182	481 029
MIQ/PS	Module IQ/Power Supply, wide-range power supply for system 182, 2020 XT and 184 XT, power output max. 18 W	480 004
MIQ/24V	Module IQ/24V, power supply for 24 VAC / 24 VDC input voltage, for system 182, 2020 XT and 184 XT, power output max. 18 W	480 006
SNCIQ	Specific two-wire IQ SENSOR NET cable with shield for safe power/information transfer within the IQ SENSOR NET system. Please indicate cable length in m when ordering (unit: m)	480 046
SNCIQ/UG	Specific two-wire IQ SENSOR NET cable with shield for safe power/information transfer within the IQ SENSOR NET system, esp. for use in underground. Please indicate cable length in m when ordering (unit: m)	480 047
Mounting Material for Monitors		
SSH/IQ	Sun shield for mounting of IQ SENSOR NET modules and series 171/170 monitors to mounting stands	109 295
PMS/IQ	Kit for panel mounting of IQ SENSOR NET modules	480 048
THS/IQ	Kit for top hat rail mounting of IQ SENSOR NET modules	480 050
WMS/IQ	Kit for wall mounting of IQ SENSOR NET modules	480 052
SD/K 170	Sun shield for outdoor installation of junction boxes (e.g. junction boxes KI/pH 170) or an IQ SENSOR NET module	109 284
MR/SD 170	Mounting kit for attaching of sun shields to pipes	109 286

Systems 184 XT and 2020 XT – the modular solution for today and for the future


IP 66
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3 Years Warranty

Do you plan to use more than two sensors or to upgrade your installation step by step?

If so, the systems 184 XT and 2020 XT are the solution to your needs: These fully modular systems will “keep on growing” at the pace of your growing demand! Their flexibility makes them particularly appealing for smaller to medium and for larger sewage treatment plants as well. From discharge measuring with parameters turbidity, pH, conductivity and temperature to nitrification/denitrification control, all conceivable applications can be performed, as well as the complete sewage treatment plant water analysis by means of one single system. These benefits are achieved at very low investment costs, and due to the easy handling of the system the operation is highly cost-effective, too.

- Up to **12/20** digital IQ sensors at user’s choice may be connected
- Easy **system expansion**, no previous knowledge required
- Centralized power supply using a wide range power supply (100-240 VAC) or 24 V variant
- A nearly unlimited number of relays and analog outputs (0/4-20 mA) may be selected
- Digital outputs **PROFIBUS DPV1** or **Modbus RTU**
- Optional modem connection via **analog** or **GSM modem**
- **Wireless connection** via radio transmission
- **Easy integration** of existing measuring points by mA inputs

Signal processing

Generally, the signal processing with System 184 XT is analog via 0/4-20 mA outputs or relays. Should a digital connection via standardized field bus interfaces to a superordinate control system be required (either in present or in a future planning stage), System 2020 XT is the first choice, as it is optionally available with PROFIBUS DPV1 or Modbus interface besides the analog output.

In the PROFIBUS configuration System 2020 XT is operated as subsystem (1 participant), thereby gaining considerable advantages over PROFIBUS-only systems:

- Direct connection to PLC via PROFIBUS DP, but with the ease of use of Profibus PA (2-wire technology, any bus topology, configuration and parameterization per FDT/DTM) and including power supply for sensors with high power demand and cleaning devices
- No specialized personnel required for replacement of sensors or other components
- Sensor calibration in the laboratory and on-site connection of pre-calibrated sensor possible
- For particularly critical applications, parallel installation of analog outputs and relays in addition to digital signal transmission is possible, in order to implement prescribed safety strategies in the case of control system failure.

System 184 XT



MIQ/C184 XT

System 2020 XT



MIQ/T2020

MIQ/MC



Universal module housing

IQ System Components

Overview shows the individual components with their main functions:

Controller/Terminal

	System 184 XT	System 2020 XT
Central control unit	Combined terminal / Controller MIQ/C184 XT	Controller MIQ/MC - XX - YY with additional functions such as digital interfaces and automatic air pressure compensation
1st Terminal	Integrated in control unit	Separate terminal MIQ/T2020 (PLUS)

MIQ-Modules for both systems

Power supply	MIQ/PS for 100 – 240 VAC input voltage MIQ/24V for 24 VAC or 24 VDC input voltage; Parallel connection of up to 6 modules installed in one system
Output modules	MIQ/CR3 with 3 analog outputs and 3 relay outputs MIQ/C6 with 6 analog outputs MIQ/R6 with 6 relay outputs
Magnetic valve module	MIQ/CHV PLUS, magnetic valve module for automatically controlled air cleaning
Connection / Junction box modules	MIQ/JB with 4 connections (for IQ Net or IQ sensors) MIQ/JBR, as MIQ/JB, with additional signal amplification for use with long cable lengths (> 1000 yds/1 km overall length)
Input current module	MIQ/IC2 with 2 inputs for 0/4-20 mA signals Enables inclusion of separate measuring transducers and analyzers in the IQ Net
Connection module for spectral probes	for connecting CarboVis®, NitraVis® and NiCaVis® probes
NEW Radio module	MIQ/Blue PS for wireless connection within the IQ SENSOR NET system
2nd and 3rd Terminal if additional display units are desired	Terminal MIQ/T2020 or Terminal MIQ/T2020 PLUS, if a redundant controller is desired to increase breakdown safety or Software terminal MIQ/IF 232, offers the full functionality of the hardware terminal MIQ/T 2020; additional functions: <ul style="list-style-type: none"> • Current measuring data transmitted to PC for further processing • Offline readout of stored values • View/save/open/print system configuration

General Technical Data System 184 XT and 2020 XT

System	
Certifications	ETL, cETL (conforms with relevant UL and Canadian standards), CE
Electromagnetic compatibility	EN 61326, Class B; FCC Class A, EMC for indispensable operation
Integrated lightning protection	According to EN 61326 enhanced overvoltage protection for the entire system, implemented in each component
Connection medium cable	IQ SENSOR NET cable: SNCIQ or SNCIQ/UG (underground cable with additional PVC coating); 2-wire with shield; 2 x 0.75 mm ² ; Filler cord for easy connection of shield: 0.75 mm ² ; pressure resistant to 10 bar
Connection characteristics	Power supply and data transmission on these wires; Resistant to polarity reversal with respect to switched shield and inner conductor (no damage); Comprehensive EMC shield control; Cable topology within IQ SENSOR NET system as required, e.g. in the form of a line, tree, star, multiple star; Total cable length: max. 1.000 m (without signal amplifying), with signal amplifying module MIQ/JBR additional 1.000 m
Connection medium radio	Radio transmission with a range of 100 m (max. 300 m), nearly unlimited range with repeater islands
Connection characteristics	Data transmission, separate power supply necessary for each island

Controller/Terminal	
MIQ module coupling at rear	Combined mechanical and electrical connection, for rapid coupling to MIQ modules
Display	Graphic display: resolution: 320 x 240 pixel; visible area: 4.49 x 3.39 in. (114 x 86 mm), black/white, backlit
Control functions/function keys	5 operating keys: 3 master keys for functions: Measurement (M), calibration (C), set/system settings (S), 2 keys for: confirmation/switching menu O.K. (OK), Escape (ESC) 1 knob for rapid selection of software functions and input of alphanumeric values
Data logger	MIQ/C 184 XT: Data memory for up to 8,640 data sets; MIQ/MC: Data memory for up to 43,200 data sets
Electric supply	Directly via the IQ SENSOR NET when coupled to MIQ module
Ambient conditions	Operating temperature: -4 °F ... 131 °F (-20 °C ... +55 °C); Storage temperature: -13 °F ... 149 °F (-25 °C ... +65 °C)
Housing material	ASA (Acrylonitrile-Styrene-Acryloesterpolymer)
Protection rating	IP 66 / equivalent to NEMA 4X (not suitable for conduit connection)
Dimensions (W x H x D)	8.27 x 6.69 x 1.57 in. (210 x 170 x 40 mm)
Weight	Approx. 1.54 pounds (0.7 kg)

Modules	
MIQ module coupling at front	Combined mechanical and electrical connection for rapid docking and removal of the MIQ/T2020 (PLUS) terminal and the MIQ/C184 XT controller, and for docking additional modules
MIQ module coupling at rear	Combined mechanical and electrical connection for docking additional modules, a total of 3 modules as a stack mounted unit
Cable feeds	4 screw cable glands M 16 x 1.5
Terminal connections	Screw terminal strips Terminal area for solid conductors: 0.2 ... 4.0 mm ² Terminal area for flexible conductors: 0.2 ... 2.5 mm ² accessible by opening cover
IQ SENSOR NET terminal connections	Terminal connections for the IQ SENSOR NET are available on each module and can be used as required: - for connecting sensors - as an input/output or for looping through/branching of the IQ SENSOR NET cable
Other functions	Two LEDs, yellow and red, for monitoring the operating voltage of the IQ SENSOR NET; IQ SENSOR NET connection, resistant to reversed polarity; Integrated local identity function; Integrated switchable terminal resistor (SN terminator)
Electric supply	Directly via the IQ SENSOR NET
Ambient conditions	Operating temperature: -4 ... 131 °F (-20 ... +55 °C); Storage temperature: -13 ... 149 °F (-25 ... +65 °C)
Housing material	PC - 20 % GF (polycarbonate with 20 % fiberglass)
Protection rating	IP 66 / equivalent to NEMA 4X (not suitable for conduit connection)
Dimensions (W x H x D)	5.67 x 5.67 x 2.05 in. (144 x 144 x 52 mm)
Weight	Approx. 1.1 pounds (0.5 kg)

Sensors	
Mechanical connections for accessories	Connection slot; Connection screw thread G 1"
IQ sensor connection cable	Combined mechanical and electrical connection for rapid attachment and exchange of sensors. Consists of jack plug and pressure-resistant screw connection. Cable lengths: 5 ft. - 23 ft. - 49 ft. (1.5 m - 7.0 m - 15.0 m)/ 65 ft. - 162 ft. - 324 ft. (20 m - 50 m - 100 m in sea water design) available. Storage temperature: -13 °F ... 149 °F (-25 °C ... +65 °C) Operating temperature: -4 °F ... 131 °F (-20 °C ... +55 °C)

Configuration and performance data

Model	Description	System 184 XT Number Min/Max	System 2020 XT Number Min/Max	Power- consumption / output / W
	IQ Sensors	1/12**	1/20**	
SensoLyt® 700 IQ (SW)	pH / ORP assembly			⇒ 0.2
TriOxmatic® 700 IQ (SW)	D.O. sensor			⇒ 0.2
TriOxmatic® 701 IQ	D.O. sensor			⇒ 0.2
TriOxmatic® 702 IQ	D.O. sensor			⇒ 0.2
TetraCon® 700 IQ (SW)	Conductivity sensor			⇒ 0.2
VisoTurb® 700 IQ	Turbidity sensor			⇒ 5.0 (without ultrasonic ⇒ 0.3)
ViSolid® 700 IQ	Suspended Solids sensor			⇒ 2.0
VARiON 700 IQ	Combination sensor ammonium and nitrate (ISE)			⇒ 0.2
AmmoLyt® 700 IQ	Ammonium assembly (ISE)			⇒ 0.2
NitraLyt 700 IQ	Nitrate assembly (ISE)			⇒ 0.2
NitraVis® 700/X IQ (TS)	Optical nitrate probe with connection module MIQ/VIS			⇒ 7.0
CarboVis® 700/5 IQ (TS)	Optical COD/TOC/DOC/BOD/SAC probe with connection module MIQ/VIS			⇒ 7.0
NiCaVis® 700/5 IQ	Optical probe for measurement of nitrate and COD/TOC/DOC/BOD/SAC, with connection module MIQ/VIS			⇒ 7.0
	Modules	with x numbers of IQ SENSOR NET terminal connections		
	Power input connection module			
MIQ/IC2**	IQ / input current 2, module with 2 inputs for 0 / 4 - 20 mA signals 2	**each occupied current input is counted as IQ sensor		⇒ 0.2*
	Connection modules	1/6	1/6	
MIQ/PS	IQ / power supply module for input power with wide-range power supply unit for 100 - 240 VAC input voltage 3			18 ⇒
MIQ/24V	IQ / 24 V module for input power with 24 VAC or 24 VDC input voltage 3			18 ⇒
	Output modules (mA, relays, magnetic valve)	A total of 36 output channels is available.	A total of 48 output channels is available.	
MIQ/CR3	IQ / current relay 3 module, with 3 analog outputs and 3 relay outputs each 2	Each module requires 6 output channels.	Each module requires 6 output channels.	⇒ 3.0
MIQ/C6	IQ / current 6 module with 6 analog outputs 2	Each module requires 6 output channels.	Each module requires 6 output channels.	⇒ 3.0
MIQ/R6	Module IQ/ Relais 6 with 6 relay outputs 2	Each module requires 6 output channels.	Each module requires 6 output channels.	⇒ 1.5
MIQ/CHV PLUS	Modul IQ / Cleaning Head Valve for automatically controlled air cleaning 2	Each module requires 1 output channel.	Each module requires 1 output channel.	⇒ 1.0
	Radio module			
MIQ/Blue PS	Module IQ/ Radio transmission for wireless connection within the IQ SENSOR NET system 3	user-defined	user-defined	⇒ 0.6
	Connection- and branching modules			
MIQ/JB	IQ / junction box module 4	0/15	0/25	⇒ 0.0
MIQ/JBR	IQ / junction box repeater module 2 + 2	0/2	0/2	⇒ 0.2
	Terminal, Controller			
	Terminal / Controller System 184 XT	1/1	not possible	
MIQ/C184 XT	Terminal / controller for System 184 XT			⇒ 3.0
	Terminal System 184 XT and 2020 XT	0/2	1/3	
MIQ/T2020	Terminal System 2020 XT / 184 XT			⇒ 3.0
MIQ/T2020 PLUS	as MIQ/T2020, with redundant controller function			⇒ 3.0
MIQ/IF232	IQ / software terminal module 3			⇒ 0.2
	Controller System 2020 XT	not possible	1/1	
MIQ/MC(-A)(-RS)	Modul IQ / Micro Controller 2			⇒ 1.5
MIQ/MC(-A)-PR	Modul IQ / Micro Controller with PROFIBUS- or Modbus-Option 2			⇒ 3.0
MIQ/MC(-A)-MOD				
	For further Information see brochure "Product Details"			

*(+2.2 W per connected power supply/isolator)

For information visit www.WTW.com for a customer care center near you or inside US: call WTW 800 645 5999.

System data IQ SENSOR NET

IQ SENSOR NET performance data

All components within the system require a specific electric power supply. Due to the enormous flexibility of the system, an infinite number of variations is conceivable. Therefore, a balance sheet must be drawn up after selecting the components. This is easily done by totaling the power consumption of the individual components and checking whether the sum exceeds the power provided by a particular power supply unit. If so, the available power can be increased by installing additional or more powerful power supply units.

Power consumption in Watts	Number of power supply units
MIQ/PS	
≤ 18 Watt	1 power supply unit
18 - 36 Watt	2 power supply units
36 - 54 Watt	3 power supply units
55 - 72 Watt	4 power supply units
73 - 90 Watt	5 power supply units
91 - 108 Watt	6 power supply units

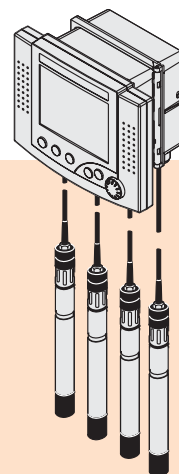
Additional cable losses generally do not need to be taken into account for installations where the main consumers are near (<164 yds/150 m) the next power supply and the overall cable length does not exceed 437 yds (400 m). In systems with greater cable lengths, approx. 1 watt of power loss per additional 109 yds (100 m) of cable have to be considered. These standard values apply when using specified IQ SENSOR NET cable SNCIQ.

Example

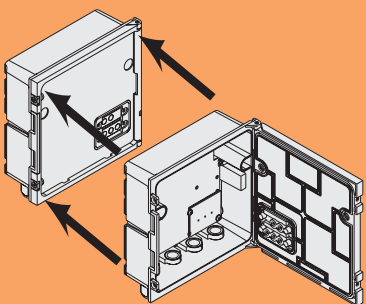
Outlet measurement with the following parameters: turbidity, pH, dissolved oxygen, conductivity and temperature	Components:	Power consumption or power supply	One power supply unit MIQ/PS is sufficient for the complete system consisting of four connected sensors.
	MIQ/PS	+ 18.0 W	
	MIQ/C184 XT	- 3.0 W	
	MIQ/C6	- 3.0 W	
	VisoTurb® 700 IQ	- 5.0 W	
	Sensolyt® 700 IQ	- 0.2 W	
	TriOxmatic® 700 IQ	- 0.2 W	
	TetraCon® 700 IQ	- 0.2 W	
	Total Σ:	+ 6.4 W	

Multi-parameter monitor for any 4 parameters, with 6 analog outputs

MIQ/C184 XT
+ MIQ/PS
+ MIQ/C6
+ 4 IQ Sensors
6 x mA



Features and functions



of the terminal/controller components

Mechanical docking of a terminal

A Terminal T2020 (PLUS) or Terminal/ Controller C184 XT can be easily connected to each module. The electrical contact for the power supply and data communication is made simultaneously with the mechanical connection.

Measurement display

The user can configure the measurement display by selecting between a single, four-fold or multiple view – depending on the number of connected sensors. The freely definable designation of the measuring location is included on each view for easy identification.

Stored measured data can be optionally displayed as measuring value lists, daily, weekly or monthly graphs. The respective current measured value can be displayed by following the curve with the cursor.

of the modules

Stack mounting of modules

Up to three modules can be mechanically connected to form a stack. Simultaneous mechanical and electrical connection to data and power transmission. The individual modules of the stack can be accessed at any time without dismantling the stack by simply undoing two lateral screws.

Distributed mounting of modules

(See the configuration examples on pages 71 to 73)

All modules can be installed anywhere in the system, both individually and in stacks. When not stacked, system components are connected via the 2-wire shielded SNCIQ SENSOR NET cable. Each SENSOR NET connection of a system component can be used to extend the IQ SENSOR NET cable. Furthermore, IQ sensors can also be connected directly to the SENSOR NET terminals.

Local identity function

The local ID function is integrated in each module in the form of a memory component. The memory can be used to store relevant information when configuring the system such as location or designation of the measurement location and the sensors connected there. When connecting a terminal, this information is output and facilitates rapid localization of sensors for calibration purposes.

Diagnosis via LEDs

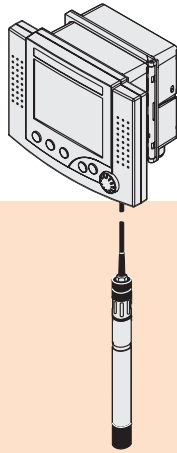
Each module is provided with two LEDs (yellow/red) for diagnostic purposes. They are located on the side of the module and are clearly visible at all times. They indicate whether the respective module is operational (power supply/ data communication).

Configuration Options for System 184 XT and 2020 XT

Due to the diversity of system versions, only a small selection of representative configurations can be shown here by way of example.

Example 1 System 184 XT

Configuration Example	Order No.
MIQ/S184 XT-H3	470 014
SACIQ-7,0	480 042
IQ Sensor	user selected



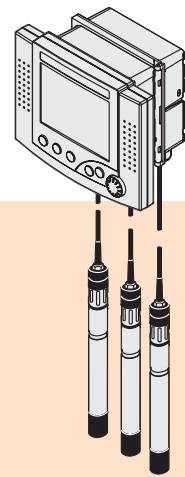
Starter set
MIQ/S184 XT-H3
consisting of:

- MIQ/C184 XT (controller/terminal)
- MIQ/CR3 (3 x mA, 3 x relays)
- MIQ/PS (power supply)
- SACIQ (Sensor connection cable)
- IQ sensor

Monitor
with 3 analog outputs and 3 relays,
universally employable for all parameters

Example 2 System 184 XT

Configuration Example	Order No.
MIQ/S184 XT-H3	470 014
SACIQ-7,0	480 042
IQ Sensors	user selected



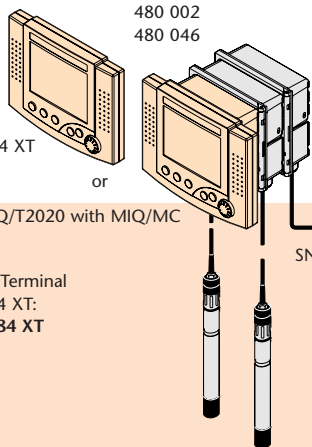
Starter set
MIQ/S184 XT-H3
consisting of:

- MIQ/C184 XT (controller/terminal)
- MIQ/CR3 (3 x mA, 3 x relays)
- MIQ/PS (power supply)
- SACIQ (Sensor connection cable)
- IQ sensors

Multi-parameter monitor
for any 3 parameters,
with 3 analog outputs and 3 relays

Example 3 System 184 XT

Configuration Example	Order No.
MIQ/C 184 XT	480 001
MIQ/PS	480 004
MIQ/C6	480 015
MIQ/JB	480 008
SACIQ-7,0	480 042
IQ Sensors	user selected
MIQ/T2020	480 002
SNCIQ	480 046



MIQ/C 184 XT

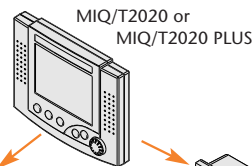
or

MIQ/T2020 with MIQ/MC

Controller/Terminal
System 184 XT:
• MIQ/C184 XT

System 2020 XT

Configuration Example	Order No.
MIQ/MC	471 000
MIQ/T2020	480 002
MIQ/PS	480 004
MIQ/C6	480 015
MIQ/JB	480 008
SACIQ-7,0	480 042
IQ Sensors	user selected
MIQ/T2020 PLUS	480 003
SNCIQ	480 046



MIQ/JB

MIQ/JB

Controller + Terminal
System 2020 XT:
• MIQ/MC
(with different options)
• MIQ/T 2020

Branched System 184 XT (left column) and respectively 2020 XT (right column) for up to any 12/20 parameters. System with 6 analog outputs; measuring locations 2 and 3 are at a large distance from controller.

Extendable by the mobile MIQ/T2020 terminal that serves as an additional display unit for easy on-site calibration or MIQ/T2020 PLUS with redundant controller function.

Configuration Options for System 2020 XT

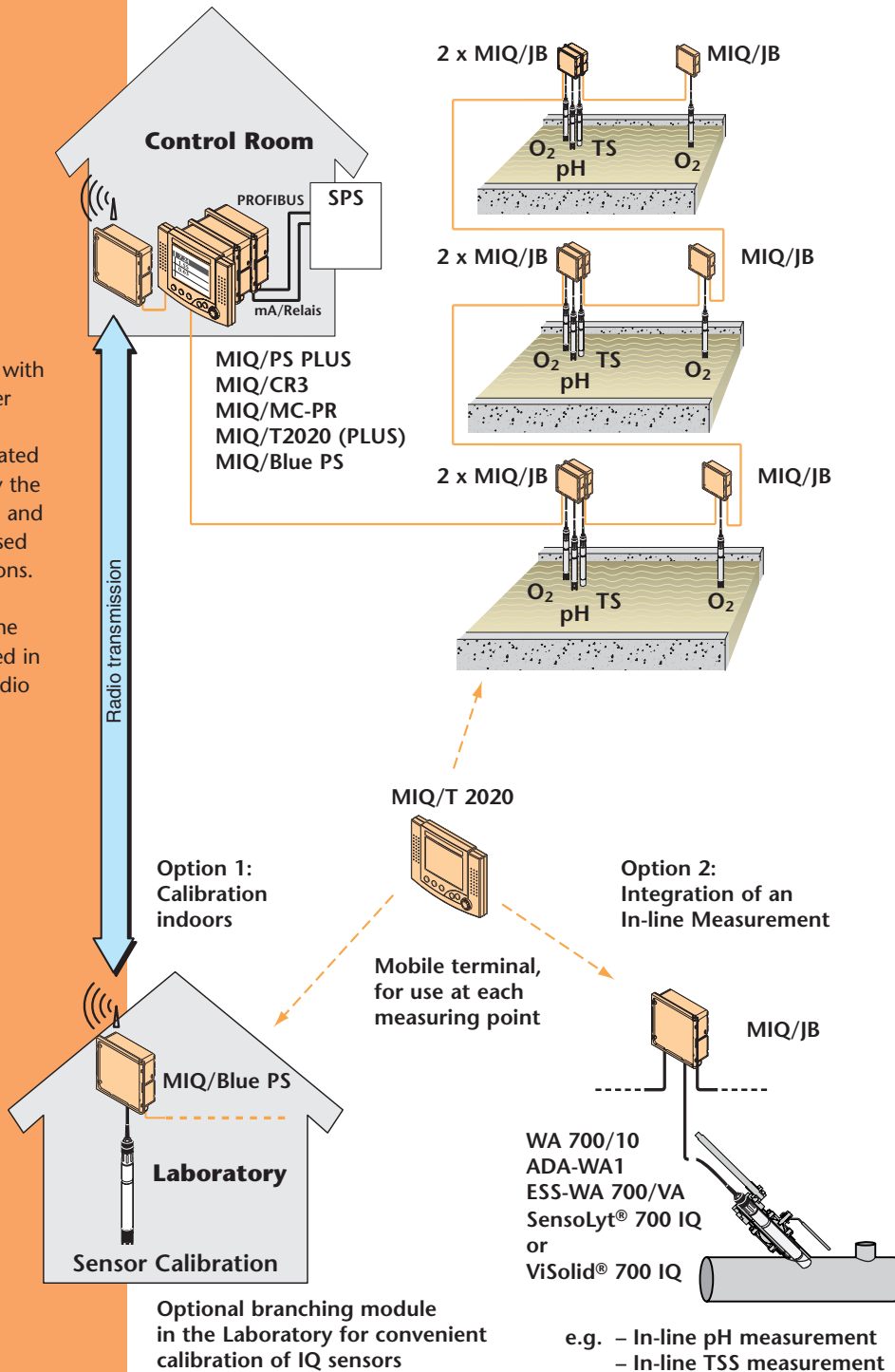
Due to the extreme diversity of system versions, only a small selection of representative configurations can be shown here.

Control of 3 Aeration Basins with IQ SENSOR NET

Example with 2 options

Branched System 2020 XT with 12 measuring points; Power supply and controller with PROFIBUS interface are located in the control room nearby the PLC; Analog outputs/relays and redundant controller are used for additional security reasons.

The calibration station in the laboratory can be integrated in the complete system via radio transmission.

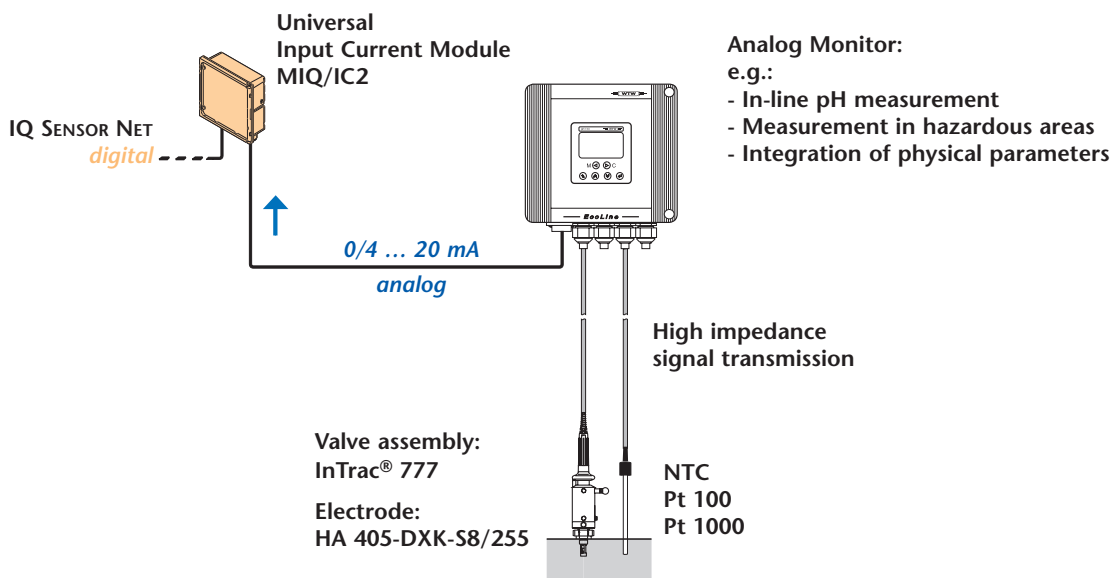


Integration of other Systems into the IQ Net

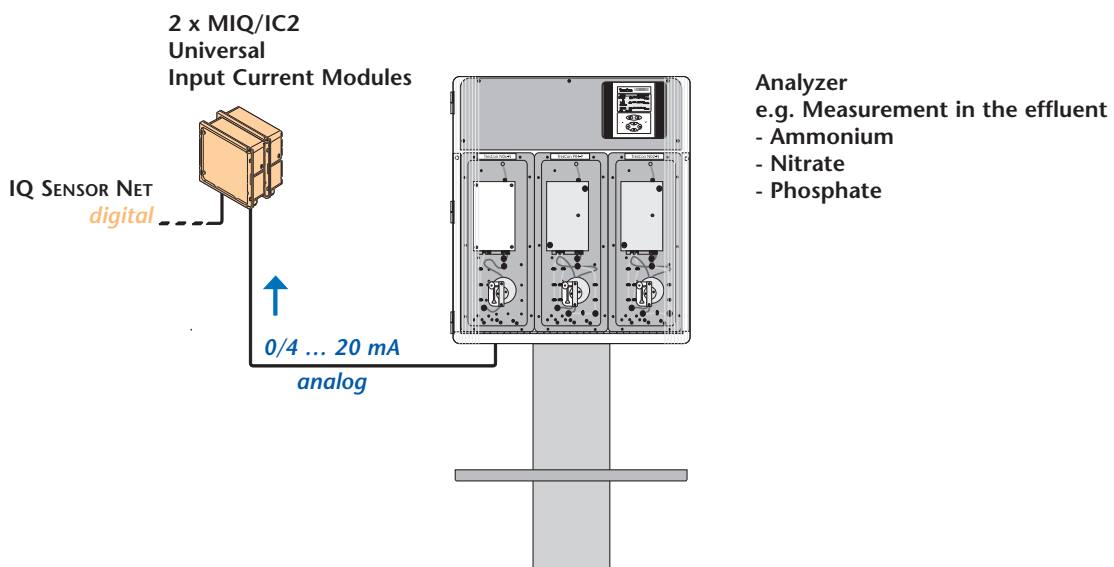
System 184 XT + 2020 XT:

Integration of external measuring points

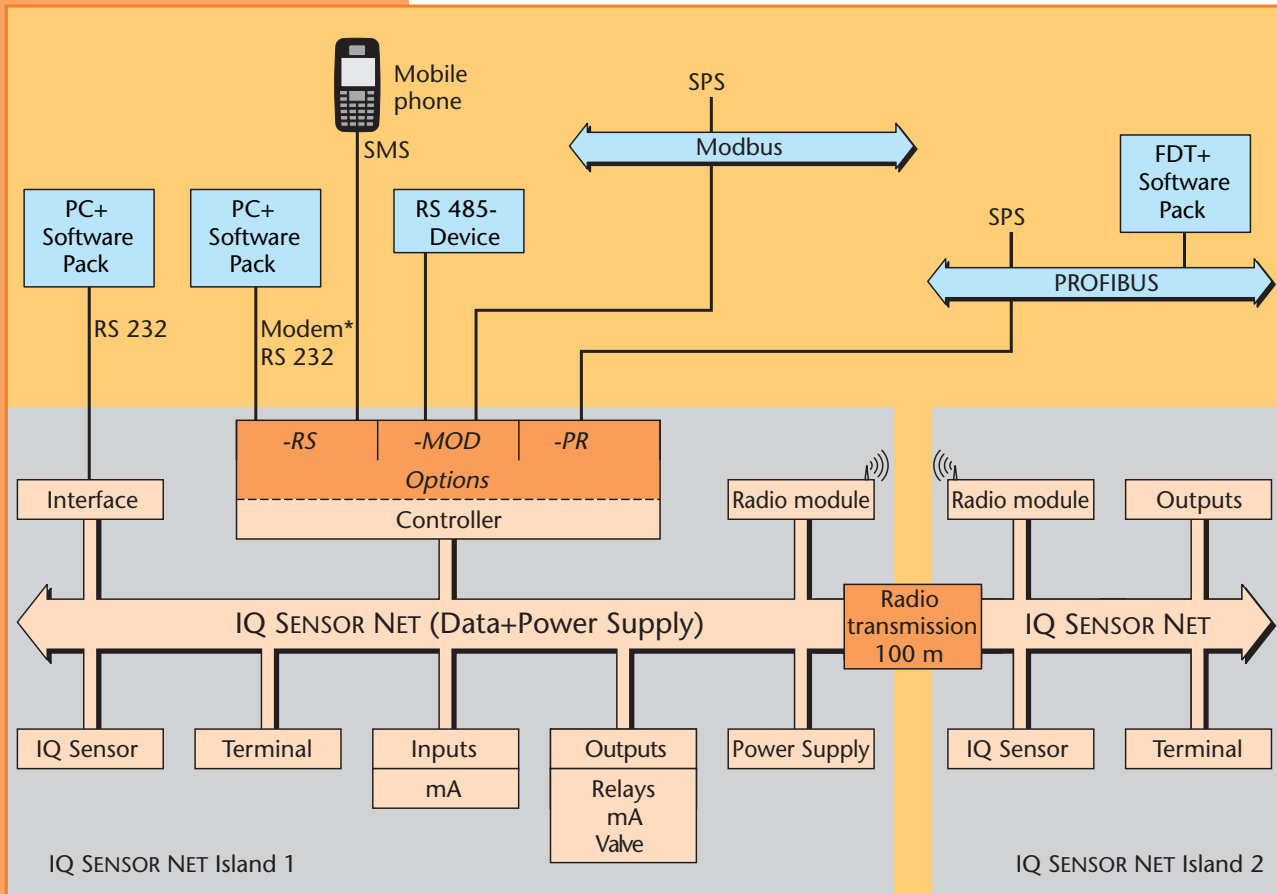
Example 1: Integration of an Analog Monitor



Example 2: Integration of an Analyzer



Communication with the IQ Net



* Fixed line network, GSM or separate radio connection

additional islands possible

With only one interface the data of all connected sensors can be transmitted: up to 20 main measured values plus secondary measured values e.g. temperature (all including status information).

Available are all digital interfaces shown in the above scheme (hardware in brackets):

PROFIBUS/Modbus:

- IQ SENSOR NET ➔ PROFIBUS DPV1 with FDT/DTM (MIQ/MC-PR) ➔ PLC/ etc. (with engineering tool)
- IQ SENSOR NET ➔ Modbus RTU (MIQ/MC-MOD) ➔ PLC/ etc.

RS 485

- IQ SENSOR NET ➔ RS 485 (MIQ/MC-MOD) ➔ PLC or PC

RS 232 – modem

- IQ SENSOR NET ➔ RS 232 (MIQ/MC-RS) analog or GSM modem ➔ fixed line telephone or mobile network ➔ Analog modem or GSM modem on receiver side, with SMS function: alarms and measured values directly to the mobile phone
Modem for radio data transmission PC (WTW-Software)

RS 232 with suitable WTW-Software

- IQ SENSOR NET ➔ RS 232 (MIQ/IF 232) ➔ PC – WTW Software with different functions:

Functions of the WTW Software:

- Softwareterminal MIQ/T 2020 PC, Online connection, complete remote control of the IQ SENSOR NET
- DataServer, Online connection, transmission of current measured values to the PC (application example in Excel included), own programming easily possible
- DataTransfer, Online transmission of stored values to the PC
- Transmission of stored values in offline mode (MIQ/T2020 for temporary storage and MIQ/IF232 + MIQ/PS for transmitting the logged data to the PC)
- Saving, copying and printing of system configuration

Ordering Information Systems 184 XT and 2020 XT

	IQ Sensors	Order No.
IQ Sensors	All IQ sensors are connectable; for ordering information see each parameter chapter	
	Connection cable for IQ sensors	
SACIQ-1,5	Sensor connection cable for IQ, cable length 5 ft. (1.5 m)	480 040
SACIQ-7,0	Sensor connection cable for IQ, cable length 23 ft. (7.0 m)	480 042
SACIQ-15,0	Sensor connection cable for IQ, cable length 49 ft. (15.0 m)	480 044
	An overview of all connectable sensors can be found in our brochure "Product Details".	
	Terminal, controller, modules, accessories	
	Terminal / controller, System 184 XT	
MIQ/C184 XT	IQ/Terminal and controller module for System 184 XT	480 001
	Terminal, System 2020 XT / System 184 XT	
MIQ/T2020	IQ/Terminal module for System 2020 XT/184 XT	480 002
MIQ/T2020 PLUS	IQ/Terminal module for System 2020 XT/184 XT; with redundant controller function	480 003
MIQ/IF232	IQ/Interface 232 module for connecting a PC via the RS 232 interface incl. software terminal	480 020
	Controller, System 2020 XT	
MIQ/MC	IQ/Micro Controller module	471 000
MIQ/MC-A	IQ/Micro Controller module with fully automatic atmospheric pressure compensation	471 010
MIQ/MC-RS	IQ/Micro Controller module with modem-capable RS-232 interface	471 001
MIQ/MC-PR	IQ/Micro Controller module with PROFIBUS-DP connection	471 002
MIQ/MC-MOD	IQ/Micro Controller module with MODBUS RTU/RS 485 connection	471 003
MIQ/MC-A-RS	IQ/Micro Controller module with fully automatic atmospheric pressure compensation and modem-capable RS-232 interface	471 011
MIQ/MC-A-PR	IQ/Micro Controller module with fully automatic atmospheric pressure compensation and PROFIBUS-DP connection	471 012
MIQ/MC-A-MOD	IQ/Micro Controller module with fully automatic atmospheric pressure compensation and MODBUS RTU/RS 485 connection	471 013
	Power supply modules	
MIQ/PS	IQ/Power supply module for input power with wide-range power supply unit (100 – 240 VAC input voltage, ⇒ 18 W)	480 004
MIQ/24V	IQ/24 V module for input power with 24 VAC or 24 VDC input voltage, ⇒ 18 W	480 006
	Connecting-/branching modules	
MIQ/JB	IQ/Junction Box module for system branching	480 008
MIQ/JBR	IQ/Junction Box Repeater module for system branching, with integrated bidirectional signal amplifier for cable lengths >1094 yds (1000 m)	480 010
	Input current module	
MIQ/IC2	Module IQ/Input Current 2 with 2 inputs for 0/4 - 20 mA signals	480 016
	Magnetic valve module	
MIQ/CHV PLUS	Modul IQ/Cleaning head valve for automatically controlled air cleaning	480 018
	Output modules	
MIQ/CR3	IQ/Current Relay 3 module, with 3 analog outputs and 3 relay outputs each	480 014
MIQ/C6	Modul IQ/Current 6, with 6 analog outputs	480 015
MIQ/R6	Module IQ/Relais 6, with 6 relay outputs	480 013
	Radio module	
MIQ/Blue PS SET	Module IQ/Radio transmission, for wireless connection within the IQ SENSOR NET system, SET with two pairwise preconfigured modules.	480 021
	IQ SENSOR NET cable	
SNCIQ	Shielded two-wire IQ SENSOR NET cable for power supply and data transmission within the IQ SENSOR NET system; indicate length in m when ordering (unit: m)	480 046
SNCIQ/UG	Shielded two-wire IQ SENSOR NET underground cable for power supply and data transmission within the IQ SENSOR NET system; indicate length in m when ordering (unit: m)	480 047
	Multi-parameter monitor MIQ/S 184 XT	
MIQ/S 184 XT-H3	Multi-parameter monitor consisting of the MIQ/C 184 XT + MIQ/CR3 + MIQ/PS components; 100 - 240 VAC supply voltage; 3 mA outputs and 3 relay outputs; up to 12 IQ sensors of any type can be connected	470 014
	Mounting material	
SSH/IQ	Sun shield for mounting modules of the IQ SENSOR NET to Vario mounting stands	109 295
PMS/IQ	Kit for panel mounting of IQ SENSOR NET modules	480 048
THS/IQ	Kit for top hat rail mounting of IQ SENSOR NET modules	480 050
WMS/IQ	Kit for wall mounting of IQ SENSOR NET modules	480 052