

Competence in digital bus communication

Get more information about digital communication capabilities and field bus systems for water and wastewater analytics.



At Hach, you will find information about the broad range of sensors and controllers for process automation and the seamless integration into Process Control and Asset Management Systems.

The product range

Hach goes beyond the universally popular 0/4-20mA signal to provide the widest digital communication capability in the world of continuous sensors and controllers for water and wastewater analysis. These sensors help with secure and efficient operation of treatment plants. They can be integrated easily into common Process Control and SCADA systems. Furthermore you will find information about the broad range of sensors and controllers for process automation and the integration into Process Logic Control (PLC) and Asset Management Systems.

The following digital bus-systems are available:

PROFIBUS® DP-V1, DP-V0

pH, ORP, Conductivity (conductive), Conductivity (Inductive), Dissolved Oxygen (LDO), Dissolved Oxygen (Galvanic), Chlorine (free), Chlorine dioxide, Ozone, Low-range Turbidity, Turbidity, suspended Solids, Sludge concentration, Sludge level, Ammonium, Nitrate, Phosphate (ortho), Phosphate (total), SAC, TOC

The profile and the products

Through the advanced platform of SC-controllers and other analyzers, you can access the best solution for sensors and controllers in the world of water and wastewater analysis. The following parameters are covered in this great portfolio: pH, ORP, Conductivity (conductive), Conductivity (Inductive), Dissolved Oxygen (LDO), Dissolved Oxygen (Galvanic), Chlorine (free), Chlorine dioxide, Ozone, Low-range Turbidity, Turbidity, Suspended Solids, Sludge concentration, Sludge level, Ammonium, Nitrate, Phosphate (ortho), Phosphate (total), SAC, TOC, mA-Inputs, digital Inputs.

SC-Controllers are available in many different versions customized to meet the individual needs of your applications:

- SC 1000 multi-channel controller: up to 8 sensors at one location, extensions through networking, implementation of current 0/4-20mA-signals or digital Inputs
- SC 100 two-channel controller: up to two Sensors with up to 4 measurement values

We are registered at the PROFIBUS®-User-Organization (PNO). Hach instruments are certified by the PROFIBUS®-User-Organization (PNO) and proved their interoperability in numerous applications.

Hach is a member of the FDT group, we provide certified device DTM files for download.

The advantages

The bidirectional communication with PROFIBUS® DP (Decentralized Peripherals) offers the following advantages:

- Biggest installed base in the world for field bus installation for process automation
- Up to 40 measurement read plus 8 write values from various different sensors supported through a single Slave (SC 1000), most flexible configuration possible
- Open field bus standard
- Free choice of products for end users
- High performance of 9,6 kBit/s up to 12Mbit/s
- 32 instruments per bus-Segment
- Simple and cost-effective wiring
- Topology: line, no spur lines allowed
- DP-V1 offers acyclic communication for alarms, remote operation, configuration and diagnostics in addition to DP-V0 offering cyclic data only
- PROFIBUS® follows the international Standards IEC 61158 und IEC 61784
- Four wire controller: supply of data and power independently over two pairs of wires

PROFIBUS® Topologie

Certificates following the PROFIBUS® standard:

Z01474 Profibus® DP/V1 SC 200 Dual Channel Controller

Z01474 Profibus® DP/V1 SC 1000 Multi Channel Controller

Z01331 Profibus® PA Profile V3.0 SI 792X D-PA Universal Oxygen Transmitter

Z01329 Profibus® PA Profile V3.0 SI 792X P-PA Universal pH & ORP Transmitter

Z01330 Profibus® PA Profile V3.0 SI 792X C-PA Contacting Cond. Transmitter

Z01332 Profibus® PA Profile V3.0 SI 792X T-PA Inductive Cond. Transmitter

Z01333 Profibus® PA Profile V3.0 SI 792X E-PA Inductive Cond. Transmitter

Z01473 DP/V1 SC200 Dual Channel Controller

[Official PROFIBUS® website](#)

[Official FDT Group website](#)

Do you have questions? Then feel free to contact us: Sales-uk@hach.com

MODBUS RTU

pH, ORP, Conductivity (conductive), Conductivity (Inductive), Dissolved Oxygen (LDO), Dissolved Oxygen (Galvanic), Chlorine (free), Chlorine dioxide, Ozone, Low-range Turbidity, Turbidity, suspended Solids, Sludge concentration, Sludge level, Ammonium, Nitrate, Phosphate (ortho), Phosphate (total), SAC, TOC

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Through the advanced platform of SC-controllers and other analyzers, you can access the best solution for sensors and controllers in the world of water and wastewater analysis.

The following parameters are covered in this great portfolio:

- pH, ORP, Conductivity (conductive), Conductivity (inductive)
- Dissolved Oxygen (LDO), Dissolved Oxygen (Galvanic), Ozone
- Chlorine (free), Chlorine dioxide
- Low-range Turbidity, Turbidity, suspended Solids, Sludge concentration, Sludge level
- Ammonium, Nitrate
- Phosphate (ortho), Phosphate (total)
- SAC, TOC
- mA-Inputs, digital Inputs

For MODBUS TCP/IP we offer the SC1000 Multi-Channel Controller:

- up to 8 sensors at one location
- extensions through networking
- implementation of current 0/4-20mA-signals or digital Inputs

Each instrument proved their interoperability in numerous applications with MODBUS TCP/IP.

The advantages

The bidirectional communication with MODBUS TCP/IP offers the following advantages:

- Open Industrial Ethernet Standard
- Up to 60 measurement values from various different sensors supported through a single slave (SC1000), most flexible configuration possible
- Supports up to 5 master systems in parallel (PLC, PC, SCADA)
- Built-in modem that can stream Modbus TCP/IP data using the global standard for cellular networks, GSM-GPRS
- Simple and cost-effective wiring using Ethernet port (LAN) or wireless GPRS
- Remote configuration, diagnostic, parameterization and access to data log files can be performed using the built-in Web Server
- VPN (Virtual Private Network) for secured internet communication

[Official MODBUS website](#)

Do you have questions? Then feel free to contact us: Sales-uk@hach.com

PROFIBUS® PA

pH, ORP, Conductivity (conductive), Conductivity (Inductive), Dissolved Oxygen (LDO), Dissolved Oxygen (Galvanic), Chlorine (free), Chlorine dioxide, Ozone, Low-range Turbidity, Turbidity, suspended Solids, Sludge concentration, Sludge level, Ammonium, Nitrate, Phosphate (ortho), Phosphate (total), SAC, TOC

The profile and the products

- Flexibility with high security of data and measurement
- Optimal user interface with graphical status signals
- Wide choice of sensors and armatures
- pH, ORP, conductivity (conductive), conductivity (inductive), dissolved oxygen
- Two-wire controller: supply of power and data with FISCO-bus powered
- Certified according to ATEX II 2(1)G EEx ia IIC T4, C1D2 or C1D1 and CSA
- We are registered at the PROFIBUS®-user organization

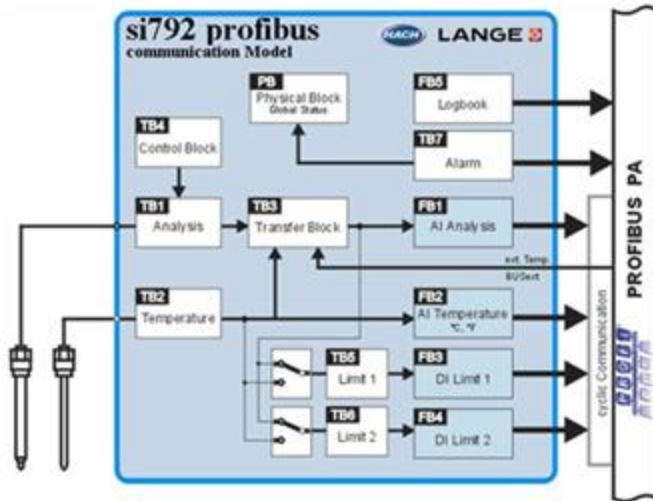
The advantages

The bidirectional communication with PROFIBUS® PA (Process Automation) offers the following advantages.

- Intrinsically Safe Controller
- Simple and cost-effective wiring
- Number of instruments per segment is related to power consumption (Ex-Zone (EEx ia) max 10)
- Flexible Topology: Tree, Star or Line
- FISCO model (Fieldbus Intrinsically Safe Concept)
- Communication complies with IEC 61158-2 with 31.25 Kbit/s, MBP (Manchester Coding Bus Powered)
- PROFIBUS® PA and FOUNDATION FIELDBUS® utilize the same Physical Layer
- Implementation into PLC Systems via segment couplers via PROFIBUS® DP
- Block structure, see picture below
- Acyclic data for Alarms, remote operation, configuration and diagnosis
- Instruments can be hot plugged (connected and disconnected in operation without interference)

Certificates following the PROFIBUS® standard:

Z01329	SI 792x P-PA pH/ORP
Z01330	SI 792x C-PA conductivity (conductive)
Z01332	SI 792x T-PA conductivity (inductive)
Z01333	SI 792x E-PA conductivity (inductive)
Z01331	SI 792x D-PA dissolved oxygen



[Official PROFIBUS® website](#)

Do you have questions? Then feel free to contact us: Sales-uk@hach.com

FOUNDATION FIELDBUS®

pH, ORP, Conductivity (conductive), Conductivity (Inductive), Dissolved Oxygen

The profile and the products

The advantages of SI 792

- Flexibility with high security of data and measurement
- Optimal user interface with graphical status signals
- Wide choice of sensors and armatures
- pH, ORP, Conductivity (contacting), Conductivity (inductive), Dissolved Oxygen
- Two-wire Controller: Supply of power and data with FISCO-bus powered
- Certified following ATEX II 2(1)G EEx ia IIC T4, C1D2 or C1D1 and CSA
- We are registered at the FOUNDATION FIELDBUS® organization

The advantages of FOUNDATION FIELDBUS® H1

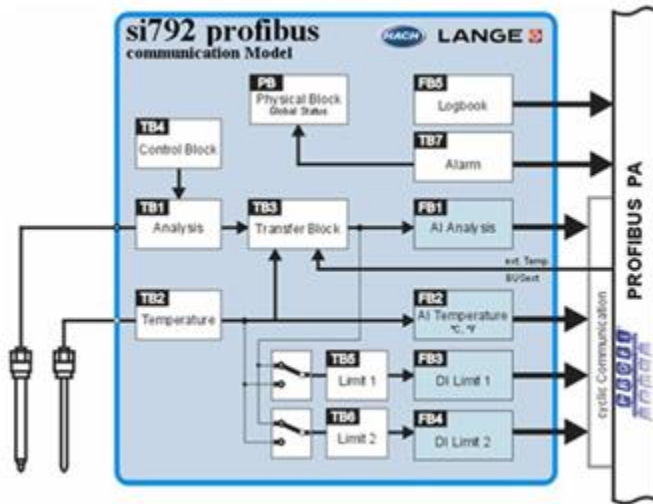
- Intrinsically Safe Controller
- Simple and cost-effective wiring
- Number of instruments per segment is related to power consumption (Ex-Zone (EEx ia) max 10)
- Flexible Topology: Tree, Star or Line
- FISCO model (Fieldbus Intrinsically Safe Concept)
- Communication complies with IEC 61158-2 with 31.25 Kbit/s, MBP (Manchester Coding Bus Powered)
- PROFIBUS® PA and FOUNDATION FIELDBUS® utilize the same Physical Layer
- Implementation into PLC Systems via Linking Devices

- Block structure, see picture below
- Acyclic data for alarms, remote operation, configuration and diagnosis
- Instruments can be hot plugged

Further information

Certificates following FOUNDATION FIELDBUS® Standard:

IT045900	SI 792x P-FF pH/ORP
IT045600	SI 792x C-FF conductivity (contacting)
IT046000	SI 792x T-FF conductivity (inductive) 8398 Series
IT045800	SI 792x E-FF conductivity (inductive) 3700 Series
IT045700	SI 792x D-FF dissolved oxygen



[Official FIELDBUS FOUNDATION® website](http://www.foundationfieldbus.org)

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HART® Communication

pH, ORP, Conductivity (conductive), Conductivity (Inductive), Dissolved Oxygen

[The profile](#)

The advantages of SI 792 transmitter

- Flexibility with high security of data and measurement
- Optimal user interface with graphical status signals
- Wide choice of sensors and armatures

- pH, ORP, Conductivity (conductive), Conductivity (inductive), Dissolved Oxygen
- Two-wire controller: Supply of power and data with FISCO-bus powered
- Certified according to ATEX II 2(1)G EEx ia IIC T4, C1D2 or C1D1 and CSA
- Globally supported system with huge installed base of instruments
- Our Device Descriptions (DD) are registered at the HART® Communication Foundation (HCF)

The advantages of HART® Communication

- 4-20mA compatibility with simultaneous digital information available
- Easy to use and understand
- Low risk - highly accurate and robust
- Cost-effective implementation for both users and suppliers
- Available in a wide variety of device types
- Supported by most industry device and systems suppliers
- Fully interoperable and reliable

[Official webpage of HART®-Communication Foundation](#)

Do you have questions? Then feel free to contact us: Sales-uk@hach.com

MODBUS TCP/IP

pH, ORP, Conductivity (conductive), Conductivity (Inductive), Dissolved Oxygen (LDO), Dissolved Oxygen (Galvanic), Chlorine (free), Chlorine dioxide, Ozone, Low-range Turbidity, Turbidity, suspended Solids, Sludge concentration, Sludge level, Ammonium, Nitrate, Phosphate (ortho), Phosphate (total), SAC, TOC

[More information](#)

The profile

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- Chlorine (free), Chlorine dioxide
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- SAC, TOC
- mA-Inputs, digital Inputs

For MODBUS TCP/IP we offer the SC1000 Multi-Channel Controller:

- up to 8 sensors at one location
- extensions through networking
- Implementation of current 0/4-20mA-signals or digital Inputs

Hach instruments proved their interoperability in numerous applications with MODBUS TCP/IP.

The advantages

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Open Industrial Ethernet Standard

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- Supports up to 5 master systems in parallel (PLC, PC, SCADA)
- Built-in modem that can stream Modbus TCP/IP data using the global standard for cellular networks, GSM-GPRS
- Simple and cost-effective wiring using Ethernet port (LAN) or wireless GPRS
- Remote configuration, diagnostic, parameterization and access to data log files can be performed using the build-in Web Server
- VPN (Virtual Private Network) for secured internet communication

[Official MODBUS website](#)

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Ethernet LAN, Web Server, GPRS, VPN

pH, ORP, Conductivity (conductive), Conductivity (Inductive), Dissolved Oxygen (LDO), Dissolved Oxygen (Galvanic), Chlorine (free), Chlorine dioxide, Ozone, Low-range Turbidity, Turbidity, suspended Solids, Sludge concentration, Sludge level, Ammonium, Nitrate, Phosphate (ortho), Phosphate (total), SAC, TOC

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The advantages of SC 1000 V3.0

GPRS for remote access to locations where only wireless cell phone networks are available

Built-in modem that now transmits data using the global standard for cellular networks, GSM-GPRS

- No matter where the measurement is located, saves travel costs because of the instrument is online 24h/7d
- Secured internet communication using VPN (Virtual Private Network)
- Build-in web server for remote diagnostic, parameterization, diagnostic and log data download
- Full access to the measurement just using any internet browser such as Windows IE, Mozilla-Firefox, Apple-Safari, no special software needed
- Access the instrument from any PC, laptop or smart phone thru the WWW, just enter the IP-Address
- Warnings and alarms by email notification

[Click here for more information](#)

Do you have questions? Then feel free to contact us: Sales-uk@hach.com

The references

Sensors and controllers from Hach have been successfully set into operation with the following system components:

PLC, SCADA, OPC: ABB, Siemens, GE, Allen-Bradley Rockwell Automation, Schneider Electric, Mitsubishi, Phoenix Contact, Emerson, Wago, SAIA, Kepware and Matrikon.

Applications: Wastewater, drinking water industrial water treatment, Galvanic, boiler/cooler, Pharmaceutical, Delta-pH control and decentralized Process automation.

What is the offering of Hach?

- Best sensors and controllers portfolio for water and wastewater analysis in the world supporting FIELDBUSES and MODBUS
- Full support for digital communication in almost every product
- Download of supporting files (GSD, EDD, DD, DTM) free of charge
- Download of instrument certificates free of charge (PROFIBUS®, FOUNDATION FIELDBUS®, HART®)
- Competence center for digital communication in the Service Center in Düsseldorf (Germany)
- Competent project support right from the start
- On-site support through well-trained and educated staff
- Subsidiaries in almost 22 countries in Europe, global support by sister companies and authorized dealers