

**NIEUWKOOP BV**

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**Liquid and  
gas analyzers**



**Biotechnology**  
**Chemical industry**  
**Drinking water**  
**Electroplating**  
**Food industry**  
**Geology**  
**Laboratory**  
**Pharmaceutical industry**  
**Printing industry**  
**Swimming pools**  
**Textile industry**  
**University and Research**  
**Waste water**  
**Water quality monitoring**  
**O.E.M.**

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*The Technical Specifications shown in this catalog may be changed without notice.*

# Multiparameter probes

## MULTIPARAMETER WATER QUALITY INSTRUMENTS

### • For continuous and unattended monitoring of:

- Well Water
- Underground Aquifers
- Rivers & Lakes
- Estuaries & Oceans
- Wastewater Treatment
- Industrial Effluents

Nieuwkoop/B&C has developed a waterproof multiparameter data logger that contains all sensors, signal processing circuits and battery power supplies in one compact housing.

The microprocessor controlled unit transmits, through an RS 485 output, data from sensors and messages.

Data can be displayed locally or transmitted to a remote PC, through a modem connection.

Twenty years of expertise in the specialized field of electrochemical measurement has resulted in an integrated sensing probe that is superior to any other for water quality data acquisition.

Of particular importance is the small diameter of the probe, which allows measurement in well casing as small as 2 inches, eliminating the need for expensive new drilling operations.

The engineers at Nieuwkoop/B&C have incorporated powerful data handling software into the probe to allow the storage up to 40,000 data points.

In addition, specially designed software makes using the probe extremely simple, even by untrained personnel.

Parameter programming, routine checks, sensors calibration and sensors replacement can be accomplished quickly and easily.

Sensors are available for:

- **Depth**
- **Temperature**
- **E. Conductivity**
- **pH**
- **O.R.P.**
- **Dissolved Oxygen**
- **Turbidity**
- **ISE**



### Software of the probe

Data transmission has been made as flexible as possible, allowing the customer to use Nieuwkoop/B&C connecting software, their own software (written with the help of Nieuwkoop/B&C support documentation) or standard data analysis software.

The software of the probe allows the display and the calibration of the following functions:

- instrument code and SFW identification
- battery charge level
- free and used data storage capacity
- date and time
- measuring parameters
- programmable data storage on Frequency or Depth basis
- switch on/off and stand by

### Connecting software

The SA 8000 software for PC is available for:

- data receiving, storage and printing
- sensors calibration
- calibration parameters statistics
- level or time acquisition
- transfer of data stored in the probe
- data analysis
- graphics
- network management
- sites management

# Multiparameter probes

## Probes with diameter 70 mm



- 8 input channels
- Models with built-in data logger and rechargeable battery
- OEM models for external data loggers
- Submersible to 350 m
- Extractable sensors
- Internal or external power supply

### SA 8060.101

Model with 6 sensors: Depth, Temperature, E.Conductivity, pH, ORP, D. Oxygen.  
Max depth 20 m, data logger and internal battery.

### SA 8060.104

Model with 6 sensors: Depth, Temperature, E.Conductivity, pH, ORP, D. Oxygen.  
Max depth 350 m, data logger and internal battery.

### SA 8065.101

Model with 6 sensors: Depth, Temperature, E.Conductivity, pH, ORP, D. Oxygen.  
Max depth 20 m, without data logger, external power supply.

### SA 8065.104

Model with 6 sensors: Depth, Temperature, E.Conductivity, pH, ORP, D. Oxygen.  
Max depth 350 m, without data logger, external power supply.

### 091.181

Option Turbidity.  
Scale 0/4000.0 NTU

## Specifications

<b>Date</b>	DD-MM-YY (only SA8060.x0x)
<b>Hour</b>	hh-mm-ss (only SA8060.x0x)
<b>Level</b>	0/20.000 m. - 0/350.00 m. max.
<b>Temperature</b>	-5.00/+55.00 °C
<b>Conductivity</b>	0/6.000 mS autorange 0/60.000 mS
<b>Temperature Coefficient</b>	0/3.50 %/°C
<b>Reference Temperature</b>	10/30 °C
<b>pH</b>	0/14.000 pH
<b>Redox</b>	± 1100.0 mV
<b>Dissolved Oxygen</b>	0/200.00 mmHg 0/200.00 %air 0/20.000 PPM 0/20.000 mg/l

Secondary parameters:

<b>Pressure</b>	500/800 mmHg
<b>Salinity</b>	0/60.000 PPM
<b>Relative Humidity</b>	0/100 %
<b>Identification of probe</b>	0 / 32
<b>Programmable acquisition</b>	Time interval
<b>(Stand alone)</b>	Level interval
<b>Power supply</b>	2.7/4.8 Vdc external 12 Vdc
<b>Internal batteries</b>	Ni/Cd rechargeable 1800 mAh
<b>Interface</b>	serial RS485 or RS232 D
<b>Operating Pressure</b>	30 bar max.
<b>Material</b>	PVC/AISI 316
<b>Length</b>	510 mm
<b>Diameter</b>	70 mm max.
<b>Weight</b>	2 Kg max.
<b>Connector</b>	IP 68 - 100 bar oceanographic

The technical specifications may be changed without notice

## Non standard models

Ask our sales department



Internal of the probe

# Multiparameter probes

## Probes with diameter 42 mm with absolute Pressure sensor



**New**

- 4 input channels
- Suitable for 2" piezometers
- Submersible to 350 m
- Extractable sensors
- External power supply
- OEM models

### SA 8145.101

Model with 4 sensors: Depth, Temperature, E.Conductivity, pH.  
Max depth 20 m

### SA 8145.104

Model with 4 sensors: Depth, Temperature, E.Conductivity, pH.  
Max depth 350 m

### Specifications

<b>Level</b>	0/20.000 m (SA 8145.101) 0/350.00 m max. (SA 8145.104)
<b>Temperature</b>	-5.00/+55.00 °C
<b>Conductivity</b>	0/6.000 mS autorange 0/60.000 mS
<b>Temperature Coefficient</b>	0/3.50 %/°C
<b>Reference Temperature</b>	10/30 °C
<b>pH</b>	0/14.000 pH
<b>Identification of probe</b>	0 / 32
<b>Interface</b>	serial RS485
<b>Power supply</b>	9/14 Vdc external 35/20 mA
<b>Operating Pressure</b>	30 bar
<b>Material</b>	PVC/AISI 316
<b>Length</b>	470 mm
<b>Diameter</b>	42 mm max.
<b>Weight</b>	2 Kg max.
<b>Connector</b>	IP 68 - 100 bar oceanographic

The technical specifications may be changed without notice

## Probes with diameter 42 mm with gauge Pressure sensor



- 4 input channels
- Suitable for 2" piezometers
- Submersible to 20 m
- Extractable sensors
- External power supply
- OEM models

### SA 8345.106

Model with 4 sensors: Depth, Temperature, E.Conductivity, pH.  
The cable is provided with an internal tubing for the Atmospheric Pressure compensation.

### Specifications

<b>Level</b>	0/20.000 m
<b>Temperature</b>	-5.00/+55.00 °C
<b>Conductivity</b>	0/6.000 mS autorange 0/60.000 mS
<b>Temperature Coefficient</b>	0/3.50 %/°C
<b>Reference Temperature</b>	10/30 °C
<b>pH</b>	0/14.000 pH
<b>Identification of probe</b>	0/32
<b>Power supply</b>	9/14 Vdc external 35/20 mA
<b>Interface</b>	serial RS485
<b>Operating Pressure</b>	2 bar max.
<b>Material</b>	PVC/AISI 316
<b>Length</b>	470 mm
<b>Diameter</b>	42 mm max.
<b>Weight</b>	2 Kg max
<b>Cable</b>	5 m in Kevlar

The technical specifications may be changed without notice

# Multiparameter probes

## Temperature+Conductivity probes



### SA 8126.105

Model with 1 connector.  
Max. depth: 600 m

### SA 8126.160

Model with 2 connectors.  
This model allows to connect probes in bunches  
Max. depth: 600 m

### Specifications

<b>Temperature</b>	-5,00/+55,00 °C
<b>Conductivity</b>	0/4.000 mS autorange 0/60.000 mS autorange
<b>Temperature Coefficient</b>	0/3.50 %/°C
<b>Reference Temperature</b>	10/30 °C
<b>Identification of probe</b>	0/32
<b>Power supply</b>	external 12 VDC
<b>Working Pressure</b>	60 bar max.
<b>Material</b>	PVC/Stainless Steel (AISI 316)
<b>Length</b>	305 mm.
<b>Diameter</b>	40 mm
<b>Weight</b>	1.1 Kg max.
<b>Connector</b>	IP 68 - 100 bar oceanographic

*The technical specifications may be changed without notice.*

## Accessories

### SA 8000 connecting software

To be installed on the P.C. for the following functions:

- connection to sites and probes in network
- continuous data and messages display
- storage and printing of data
- sensor calibration
- operation mode programming of the probe (time or depth based data logging)
- data transfer from the data logger of the probe
- transfer of the sensors calibration parameter stored in the probe
- graphics and data analysis

### SA 9491 interconnecting cable

Made by 5 m cable and connectors for probe, PC, and battery charger.  
It adapts the RS 485 output from the probe to the RS 232 input of the PC.

### SA 9430 interconnecting cable

Made by 30 m cable and connectors for probe, PC, and battery charger.  
Kevlar/poliurethane material, Diameter 7.5 mm

### BC 8582 automatic battery charger

Suitable for 3 NiCd batteries.  
Power 220 Vac  $\pm$  10%, Current 0.8 A

### BC 8601 RS232/RS485 converter

Necessary with cable SA 9430

### SZ 929 extension cable

Kevlar/poliurethane material, Diameter 7.5 mm

### SA 9409 blind plug

Suitable for stand alone and vertical profile operating mode

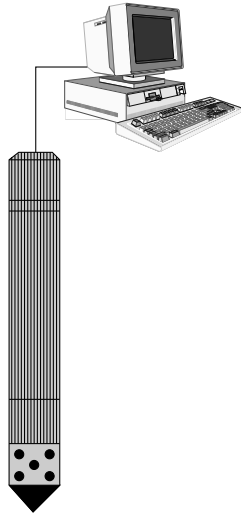
## Spares

- SA 9100** Reference electrode
- SA 9110** pH electrode
- SA 9115** pH + ORP electrode
- SA 9120** ORP electrode
- SA 9130** Conductivity sensor
- SA 9150** Temperature sensor
- SA 9160** D. Oxygen sensor
- SA 9180** Turbidity sensor

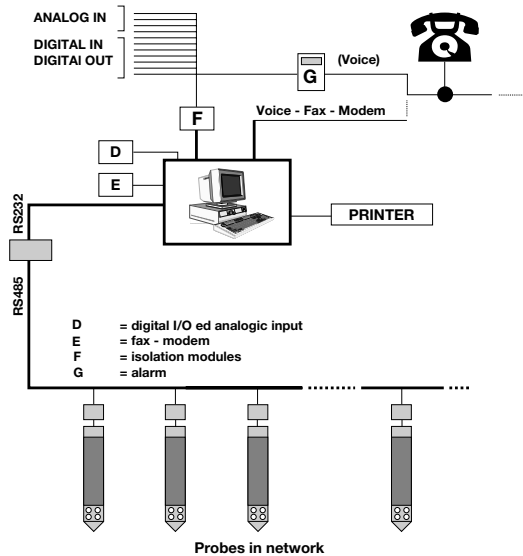
# Multiparameter probes

## Applications

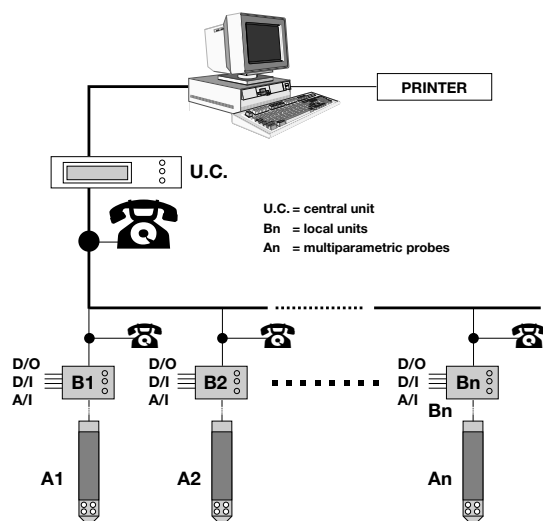
### Real time mobile monitoring



### Local monitoring



### Remote monitoring



## Service

Nieuwkoop provides periodical revision and calibration to Multiparameter probes under Customers request.

# Electrochemical Monitors

## 7685 SERIES

microprocessor-based



### Common features

- Selectable input
- Input from RTD Pt100 3 wires
- Alphanumeric back-lighted LCD
- Temperature readout
- Software filter
- Operating mode: automatic and manual
- Calibration parameters display
- Set-point and alarm conditions display
- Automatic or manual Temperature compensation
- 0/20 mA or 4/20 mA programmable isolated output
  
- Dual set-point with hysteresis, delay and min/max programmable functions
- Min/max and set-points timing alarm relay
  
- New options:
  - 85/285 Vac universal power
  - 9/36 Vdc and 9/24 Vac power
  - RS 485 isolated output
  
- Software:
  - 3 access levels
  - user friendly
  - keyboard lock
  - watch-dog
  
- EEPROM parameter storage
- Automatic overload protection and reset
- Extractable terminal blocks
- 96X96 (1/4" DIN) housing

### Common specifications

#### Temperature

Input: RTD Pt100 2/3 wires

#### Set point A and B:

Operation: ON/OFF  
 Hysteresis: adjustable  
 Delay: 0.0/99.9 Sec  
 \* Function: Max/Min  
 Relay contacts: SPDT 220 V 5 A (Resistive load)

#### Alarm:

Low/High: adjustable  
 Delay: 0.0/99.9 Sec  
 \* Relay status: activated/deactivated  
 \* Alarm on max. operating time of set-point A/B: ON/OFF  
 \* Max operating time of set-point A/B: 0/60 minutes  
 Relay contacts: SPDT 220 V 5 A (Resistive load)

#### Analog output N° 1

\* Input corresponding to the analog output (option 091.371x): selectable  
 \* Output range: 0-20/4-20 mA (it can be made to represent any segment of the measuring scale)  
 Response time: 2.5 s for 98%  
 Isolation: 250 Vac  
 Load: 600 ohm max

#### Analog output N° 2 (option 091.371x)

\* Input corresponding to the analog output: selectable  
 \* Output range: 0-20/4-20 mA (it can be made to represent any segment of the measuring scale)  
 Response time: 2.5 s for 98%  
 Isolation: 250 Vac  
 Load: 600 ohm max

#### Configuration (\*)

The above parameters indicated by asterisks "\*", may be selected in the Configuration menu

#### General Specification

Alphanumeric display: 1 line x 16 characters  
 Operating temperature: 0/50 °C  
 Humidity: 95% without condensation  
 Power supply: 110/220 Vac ± 10% 50/60 Hz  
 Isolation: 4 kV between primary and secondary (IEC 348)  
 Power: 5 VA max.  
 Terminal block: extractable  
 Weight: 850 g  
 Dimensions: 96 x 96 x 155 mm

#### Options

##### 091.701 RS 232 isolated output

The output sends the data to the serial port of the computer.

##### 091.404 24 Vac power supply

*The technical specifications could be changed without notice.*

# Electrochemical Monitors

## PH 7685 pH/ORP controller



*Add the following to the common Features/Specifications of the 7685 Series shown overleaf*

- **Applications:**
  - water treatment
  - food industry
  - drinking water
  - swimming pool
  - biotechnology
- **Temperature readout**
- **Calibration parameters display**
- **Set-point and alarm conditions display**
- **Automatic or manual Temperature compensation**
- **Operating mode: automatic and manual**
- **0/20 mA or 4/20 mA programmable isolated output**
- **Dual set-points with hysteresis, delay and min/max programmable functions**
- **Min/max and set-points timing alarm relay**
- **EEPROM parameter storage**
- **Automatic overload protection and reset**
- **Extractable terminal blocks**
- **96X96 (1/4" DIN) housing**

## Specifications

### Sensors type

Glass pH - Antimony pH - ORP - 080102 preamplifier  
RTD Pt 100 3 wires

### Glass electrode

Zero: 0.0 mV at pH 7  $\pm 2$  pH adjustment  
Slope: 59.16 mV/pH at 25 °C 80/110 % adjustment

### Antimony electrode

Zero: -325 mV at pH 7  $\pm 2$  pH adjustment  
Slope: 50 mV/pH at 25 °C 70/140 % adjustment

### ORP electrode

Zero adjustment:  $\pm 100$  mV  
Sens. adjustment: 80/110 %

### Input scales

\* pH: 0.00/14.00  $\pm 0.01$  pH  
\* ORP: -1000/+1000 mV  $\pm 1$  mV  
\* Software filter: 0.4/50.0 s

### Temperature

Measuring and compensation range: -10/+110 °C  
Resolution:  $\pm 0.1$  °C  
Zero adjustment:  $\pm 2$  °C  
Manual Temp. comp: -10.0/110.0 °C

### Option 091.211

Set-point A/B selectable actions: ON/OFF - PFM - PWM

### PFM action

Proportional band: 0.00/1.50 pH (0/150 mV)  
Pulse frequency: 0/120 pulse/min  
Function: Min/Max

### PWM action

Proportional band: 0.00/1.50 pH (0/150 mV)  
Pulse Period: 0/99.9 s  
Function: Min/Max

### Option 091.3711

Dual isolated output.  
The user may select the temperature output

*The technical specifications could be changed without notice.*

## Accessories

This instrument may use all pH and ORP sensors and amplified probes from Nieuwkoop catalogue.

# Electrochemical Monitors

## pH 7685.010 pH+ORP controller



Add the following to the common Features/Specifications of the 7685 Series shown overleaf

- **Applications:**
  - pH + ORP measuring
  - chromate and cyanide treatment plants
  - swimming pool
  - autoclean sensors
  - PFM / PWM regulations
- **Dual input from:**
  - pH electrode (Glass or Antimony)
  - ORP electrode
- **Input from Pt100 3 wires**
- **pH/mV/Temperature readout**
- **Software filter**
- **Operating mode: automatic and manual**
- **Calibration parameters display**
- **Set-point and alarm conditions display**
- **Automatic or manual Temperature compensation**
- **Dual isolated output:**
  - 0/20 mA or 4/20 mA selectable
  - pH/ORP/°C selectable
- **Dual set-points (pH/ORP selectable) with selectable action:**
  - ON/OFF
  - PFM proportional Pulse Frequency Modulation
  - PWM proportional Pulse Width Modulation with hysteresis, delay and min/max programmable functions
- **Min/max and set-points timing alarm relay**
- **Autoclean relay**
- **EEPROM parameter storage**
- **Automatic overload protection and reset**
- **Extractable terminal blocks**
- **96X96 (1/4" DIN) housing**

## Specifications

### Sensor type

Glass pH/Antimony pH/ ORP

### Glass electrode

Zero: 0.0 mV at pH 7 ±2 pH adjustment  
Slope: 59.16 mV/pH 25 °C 80/110 % adjustment

### Antimony electrode

Zero: -325 mV at pH 7 ±2 pH adjustment  
Slope: 50 mV/pH 25 °C 70/140 % adjustment

### ORP electrode

Zero adjustment: ±1000 mV  
Sens. adjustment: 80/110 %

### Input scales

\* pH: 0.00/14.00 ±0.01 pH  
\* ORP: -1000/+1000 mV ±1 mV  
\* Software filter: 0.4/50.0 s

### Temperature

Input: RTD Pt100 2/3 wires connection  
Measuring and compensation range: -10/+110 °C  
Zero adjustment: ±2 °C

### Set point A and B

\* ON/OFF action 0.00/14.00 pH -1000/1000 mV  
Hysteresis: 0.00/1.50 pH 0/150 mV  
Delay: 0.0/99.9 s  
\* Function: Min/Max

### PFM action

Proportional band: 0.00/1.50 pH 0/150 mV  
Pulse frequency: 0/120 pulse/min  
\* Function: Min/Max

### PWM action

Proportional band: 0.00/1.50 pH 0/150 mV  
Pulse Period: 0/99.9 sec  
\* Function: Min/Max

### Relay contacts

SPDT 220 V 5 A (Resistive load)

### Analog output N° 1 and N° 2

\* Input corresponding to the analog output : pH/mV/°C  
\* Output range: 0-20/4-20 mA (it can be made to represent any segment of the measuring scale)

### Option

**091.701** RS 232 isolated output.  
The output sends the data (pH, mV, °C) to the serial port of the computer.

**091.404** 24 Vac power supply

*The technical specifications could be changed without notice*

## Accessories

This instrument may use all pH and ORP sensors from Nieuwkoop catalogue.

# Electrochemical Monitors

## C 7685

E. Conductivity controller



Add the following to the common Features/Specifications of the 7685 Series shown overleaf

- **Applications:**
  - deionized water
  - drinking water
  - food industry
  - surface treatment
- **Selectable input from:**
  - 2 electrodes
  - 4 electrodes pre-amplified cell
  - electrodeless pre-amplified cell
- **Scales: from 0.2 mS to 40 Siemens**
- **Autoranging**
- **Conversion in % - gr/l - Bè**
- **Temperature readout**
- **Filter software**
- **Calibration parameters display**
- **Dual set-point and alarm conditions display**
- **Automatic or manual Temperature compensation**
- **Automatic or manual acquisition of the temperature compensation table**
- **Isolated output:**
  - 0/20 mA or 4/20 mA selectable
  - programmable input on the span
- **Automatic or manual operation**
- **Dual Set-point with hysteresis, delay, and min/max programmable functions**
- **Alarm:**
  - min/max and delay programmable
  - on Set-points timing
- **Automatic overload protection and reset**
- **Extractable terminal block**
- **96x96 (1/4 DIN) housing**

## Accessories

This instrument may use all the probes and sensors of the present catalog

## Specifications

### Input

- \* From 2-electrode E.C. cell
- \* From 08310 4-electrode microtransmitter
- \* From 08315 electrodeless microtransmitter
- From RTD Pt100 3 wires

### Scales

- \* See tables Scales vs. K
- \* Autoranging: on/off
- \* Indirect scale: on/off
- Zero adjustment: 0/5 %
- Sens. adjustment: 60/160 %
- \* Temp. reference: 10/99 °C
- \* Table /coeff. ATC selection
- \* ATC coefficient: 0/5 %/°C
- \* Software filter 90% RT: 0.4/50.0 s
- Display resolution: 1/1000 at 20 °C

### Temperature

- Input: RTD Pt100 2/3 wires connection
- Measuring and compensation range: -10/+110 °C
- Resolution: +/- 0.1 °C
- Zero adjustment: +/- 1 °C
- Manual Temp. comp: -10/+110 °C

### Options

The following options are available:

- 091.3713** dual analog programmable and isolated output.  
The operator may select an output for Temperature.
- 091.701** RS232 isolated output.  
The output sends the data (E.C., °C) to the serial port of the computer.
- 091.404** 24 Vac power supply

An option dual line display for E.C. and temperature readout is available on request.

*The technical specifications may be changed without notice*

### Input from 2-electrode cells

K cm <sup>-1</sup>	0,1	0,2	0,5	1,0	2,0	5,0	10,0
Range	0,2000µS	0,4000µS	1,000µS	2,000µS	4,000µS	10,00µS	20,00µS
	2,000µS	4,000µS	10,00µS	20,00µS	40,00µS	100,0µS	200,0µS
	20,00µS	40,00µS	100,0µS	200,0µS	400,0µS	1000µS	2000µS
	200,0µS	400,0µS	1000µS	2000µS	4000µS	10,00mS	20,00mS
	2000µS	4000µS	10,00mS	20,00mS	40,00mS	100,0mS	200,0mS

### Input from microtransmitters 080310 connected to 4-electrode cells or Input from microtransmitters 080315 connected to electrodeless cells

K cm <sup>-1</sup>	0,1	0,2	0,5	1,0	2,0	5,0	10,0
Range	0,2000mS	0,4000mS	1,000mS	2,000mS	4,000mS	10,00mS	20,00mS
	2,000mS	4,000mS	10,00mS	20,00mS	40,00mS	100,0mS	200,0mS
	20,00mS	40,00mS	100,0mS	200,0mS	400,0mS	1000mS	2000mS
	200,0mS	400,0mS	1000mS	2000mS	4000mS	10,00 S	20,00 S
	2000mS	4000mS	10,00 S	20,00 S	40,00 S	100,0 S	200,0 S

# Electrochemical Monitors

## C 7685.001

E.Conductivity - Resistivity controller



Add the following to the common Features/Specifications of the 7685 Series shown overleaf

- **Applications:**
  - high purity water
  - micro electronics industry
  - electroplating
  - pharmaceutical industry
- Scales in nS and Mohm
- Autoranging
- Temperature readout
- Filter software
- Calibration parameters display
- Dual set-point and alarm conditions display
- Automatic or manual Temperature compensation
- Table of high purity water stored into the microcomputer
- Isolated output:
  - 0/20 mA or 4/20 mA selectable
  - programmable input on the span
- Automatic or manual operation
- Dual Set-point with hysteresis, delay, and min/max programmable functions
- **Alarm:**
  - min/max and delay programmable
  - on Set-points timing
- Automatic overload protection and reset
- Extractable terminal block
- 96x96 (1/4 DIN) housing

## Specifications

### Operating mode

Automatic/Manual

### E.C. Cells

- \* K = 0.01/0.10/1.0/10 cm<sup>-1</sup>
- \* Input scales: 200.0 nS/20.00 mS (see table)  
readout in Mohm
- \* Autoranging: ON/OFF
- Zero adjustment: +/- 10 %
- Sens. adjustment: 60/160 %
- \* Temp. reference: 10/25 °C
- \* ATC coefficient: 0/3.50 %/°C
- \* Software filter 90%RT: 0.4/50.0 s
- Display resolution: 1/1000 at 20 °C

### Temperature

Input: RTD Pt100 2/3 wires connection  
Measuring and compensation range: 0/+100 °C  
Resolution: +/- 0.1 °C  
Zero adjustment: +/- 2 °C  
Manual Temp. comp: 0/100 °C

### Options

The following options are available:

**091.3713** dual analog programmable and isolated output.

The operator may select an output for temperature.

**091.701** RS232 isolated output.

The output sends the data (E.C., °C) to the serial port of the computer.

**091.404** 24 Vac power supply

An option dual line display for E.C. and temperature readout is available on request.

*The technical specifications may be changed without notice*

### Input from 2-electrode cells

K cm <sup>-1</sup>	0,01	0,10	1,00	10,0
Range		200nS	2000nS	20,00µS
	200,0nS	2000nS	20,00µS	200,0µS
	2000ns	20,00µS	200,0µS	2000µS
	20,00µS	200,0µS	2000µS	20,00mS

## Accessories

See SI 308T, SZ 3320.1, SZ 3330.1 probes

# Electrochemical Monitors

## OD 7685

Dissolved Oxygen controller



Add the following to the common Features/Specifications of the 7685 Series shown overleaf

- **Applications:**
  - water treatment
  - drinking water
  - fish pond
  - food industry
  - biotechnology
- **Selectable input from:**
  - polarographic high/low current cells
  - galvanic cells
  - 080610.2 preamplifier
- **Scales: PPM - mg/l - % air sat. - mmHg**
- **Autoranging**
- **Temperature readout**
- **Dual filter software**
- **Calibration parameters display**
- **Dual set-point and alarm conditions display**
- **Autocalibration in air**
- **Automatic or manual temperature compensation**
- **Pressure, R.H., salinity compensation**
- **Isolated output:**
  - 0/20 mA or 4/20 mA selectable
  - programmable input on the span
- **Automatic or manual operation**
- **Dual set-point with hysteresis, delay, and min/max programmable functions**
- **Alarm:**
  - min/max and delay programmable
  - on set-points timing
- **Autoclean relay and holding function for input and outputs**

## Specifications

### Polarographic Cell

Low Current cell: 25/75 nA  
 High Current cell: 140/510 nA  
 \* Polarization: 0/1250 mV

### Galvanic Cell

Input: 17/51 mV

### Selectable scales

0/200.0 mmHg D.O. partial pressure  
 0/200.0 % air saturation  
 0/20.00 PPM  
 0/20.00 mg/l  
 \* Software filter 90% RT: 0.4/50.0 sec.  
 Zero adjustment: +/- 10%  
 Sensitivity adjustment: 80/170 %  
 Display resolution at 20°C: 1/1000

### Secondary parameters

Pressure: 500/800 mmHg  
 Salinity: 0/60,000 PPM  
 Relative Humidity: 0/100 %

### Temperature

Input: RTD Pt100 2/3 wires connection  
 Measuring and compensation range: -2/+52 °C  
 Resolution: ±0.1 °C  
 Zero adjustment: ±2 °C  
 Manual temp. comp: 0/50 °C

### Options

The following options are available:

**091.3713** dual analog programmable and isolated output.

The operator may select an output for temperature.

**091.701** RS232 isolated output.

The output sends the data (E.C., °C) to the serial port of the computer.

**091.404** 24 Vac power supply

*The technical specifications may be changed without notice*

## Accessories

This instrument may use all the D.Oxygen probes and sensors of the present catalog

# Electrochemical Monitors

## OD 7685.010

Autoclean Dissolved Oxygen controller



**New**

Add the following to the common Features/Specifications of the 7685 Series shown overleaf

- **Applications:**
  - water treatment
  - activated sludge
  - de-nitrification
  - fish pond
- **Input from galvanic cell**
- **Scales: PPM - mg/l - % air sat. - mmHg**
- **Autoranging**
- **Temperature readout in °C or °F**
- **Dual filter software**
- **Calibration parameters display**
- **Dual set-point and alarm conditions display**
- **Autocalibration in air**
- **Automatic or manual temperature compensation**
- **Pressure, R.H., salinity compensation**
- **Dual isolated output:**
  - 0/20 mA or 4/20 mA selectable
  - programmable input on the span
- **Automatic or manual operation**
- **Dual set-point with hysteresis, delay, and min/max programmable functions**
- **Autoclean relay and holding function for input and outputs**
- **Automatic overload protection and reset**
- **Extractable terminal block**
- **96x96 (1/4 DIN) housing**

## Specifications

### \* Galvanic cell

membrane: 1 mil - 2 mil - 5 mil (5 mil standard)  
cable length: 15 m

### \* Scales

0/400 - 0/200.0 - 0/20.00 mmHg  
0/400 - 0/200.0 - 0/20.00 % air saturation  
0/40.0 - 0/20.0 PPM - 0/2000 PPB  
0/40.0 - 0/20.00 mg/l - 0/2000 µgr/l

\* Software filter 90% RT: 0.4/50.0 s

Zero: ± 1 mV

Sensitivity: 62.5/212.5 %

### Temperature

measuring and compensation range: +2/+52 °C or 28,4/125,5 °F

Zero: ± 2 °C or ±3,6 °F

Input: Pt100 3 wires

### Temperature compensation

Internal table for each membrane type

Reference temperature: 20 °C or 68 °F

Manual compensation: 0/50.0 °C or 32/122 °F

### Secondary parameters

Pressure: 500/800 mmHg

Salinity: 0/60,000 PPM

Relative humidity: 0/100 %

### Analog outputs

Dual isolated for D.O and temperature

### Set points

Dual with ON/OFF programmable functions

### \* Autoclean function

Disable - manual - auto + manual

\* Repetition cycle: 0.1/24 hours

\* Number of cycles: from 1 to 10

\* Compressor time: 0.5/60.0 sec.

\* Discharge time: 0.5/10.0 sec.

\* Holding time: 0/20.0 min. (for measuring, outputs, relays)

*The technical specifications may be changed without notice*

## Probes and accessories

This instrument uses the OD 8182 dissolved oxygen probe.

It is normally installed in the OD 8112 autoclean assembly

# Electrochemical Monitors

## Dissolved Oxygen Autoclean system

**Install & forget**



### • Applications:

- water treatment
- activated sludge
- de-nitrification
- fish pond

The on-line monitoring system is designed for the continuous measurement of oxygen gas in solution.

The full scale operating range of the system may be selected by the user for 0-20.00 PPM or 0-40.00 PPM, and the sensing system will operate on water streams with temperature from 0 to 50 °C.

The measured dissolved oxygen concentration is displayed on a backlit liquid crystal display on the front of the instrument. The D.O. monitor is well suited for wastewater treatment aeration tanks, effluent monitoring, or stream monitoring.

The basic sensing element used in the D.O. monitor is a galvanic membraned sensor assembly that automatically delivers high pressure air to the tip of the sensor to effectively blast accumulated growth from the membrane.

The system includes two main components and fittings:

- **OD 8112 D.Oxygen assembling with cleaner**
- **OD 8182 D.Oxygen sensor with cleaner nozzle**
- **Installation accessories**
- **Spares**

For special applications, the D.O monitor can be supplied without the cleaner, and the customer will provide the pressure air to the sensor.

Submersible sensors are designed for direct immersion in an aeration tank or flowing stream.

A 15 m cable is potted into the top section of the sensor assembly, and connects directly to the D.O. monitor,.

A separate tubing connection located at the top of the sensor assembly is provided for connection of a 15 m length of plastic tubing between the sensor and the monitor.

The D.O. sensor assembling is mounted to a 1" pipe using a special mounting adapter.

The 1" pipe is attached to the tank handrail with a bracket assembly that holds the sensor at a slight angle in the tank.

Once installed and placed into operation, the Autoclean D.O. sensor will provide months of reliable D.O. measurement in almost any application. Sensor should be checked for build-up after the first 3 months to verify that the cleaner is keeping the membrane clean.

However, sensor maintenance intervals of 6 months or more are likely in most aeration tanks.

The sensor cleaning frequency is user programmable, and units are shipped with a default cleaning frequency of once every 24 hours.

This frequency has proven sufficient for most aeration applications, but can be increased if needed for a specific application.

A cleaning frequency of more than every 2 hours is not recommended.



### System installation

The installation of the auto-clean D.oxygen system is quick and simple.

A special mounting adapter connects the sensor to standard 1" conduit or pipe, and another adapter provides secure connection of the pipe to a standard handrail system.

# Electrochemical Monitors

## OD 8112

### Autoclean D.Oxygen monitor



In this control box are installed the OD 7685.010 monitor and the cleaner consisting of compressor, reservoir and solenoid.

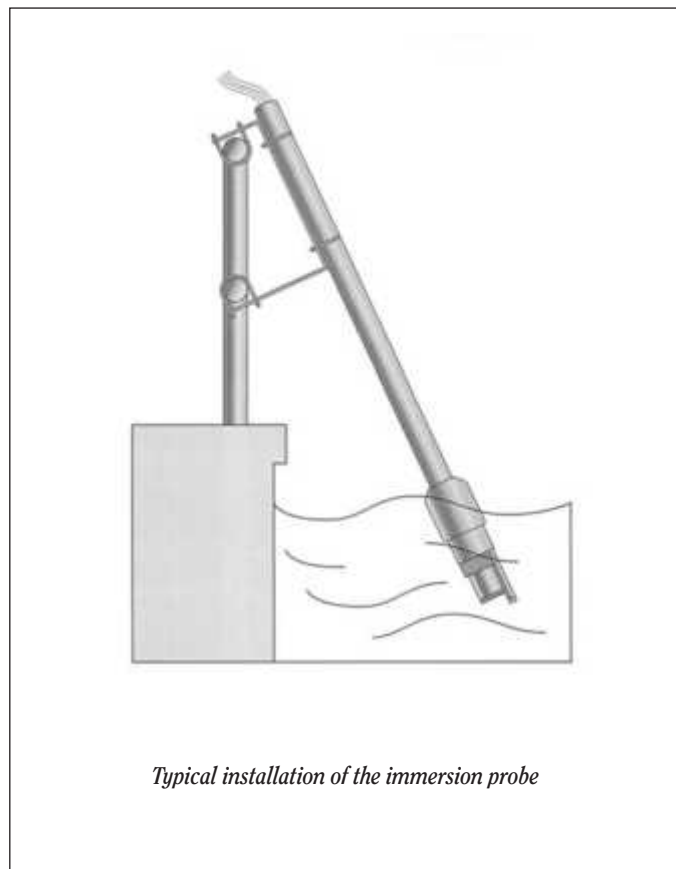
**Air pressure:** 3 bar

**Dimensions:** 376 x 306 x 207 mm

**Protection:** IP 65

**Power:** 220 Vac 50/60 Hz 150 VA

OD 7685.010 specifications are described on the page related to the instrument.



*Typical installation of the immersion probe*

## OD 8182

### Autoclean D.Oxygen probe



The probe is equipped with a galvanic membraned sensor and a RTD temperature element.

A titanium nozzle injects the pressure air for the membrane cleaning.

The package includes the connecting cable and:

**0012.020007** DO sensor

**0012.040003** Assembled Lead electrode

**0012.050001** Kit of 10 membranes 5 mils

**0012.090007** Electrolyte bottle 120 cc. (4 OZ)

**0012.050014** Screw and OR Kit

**0012.440040** 33 m PVC tubing

## Specifications

Submersible type with top holder and screw-in sensor

**Response time** 90% in 180 s with 5 mil membrane

**Temp. sensor** Pt100 integral to sensor

**Temp. limits** -5 to +55 °C

**Connections** 5 wires cable, 15 m (150 m max)

15 m flexible tubing 1/4"-3/8"

**Materials** Noryl and stainless steel

## Accessories

Choose one of the following accessory for the installation

**0012.450043**

Adapter for extension pipe

**0012.000624**

Swivel mounting including 0012.450043 adapter

# Electrochemical Monitors

## CL 7685

Potentiostatic controller for  
Free Chlorine, Chlorine dioxide, D. Ozone



*Add the following to the common Features/Specifications of the 7685 Series shown overleaf*

- **Applications:**
  - drinking water
  - bottling industry
- **Input from:**
  - potentiostatic sensor
  - Pt100 3 wires
- **Ranges: 0/2 PPM and 0/20 PPM autoranging**
- **Filter software**
- **Calibration mode: immediate or postponed**
- **Calibration parameters display**
- **Dual set-point and alarm conditions display**
- **Automatic or manual temperature compensation**
- **Isolated output:**
  - 0/20 mA or 4/20 mA selectable
  - programmable input on the span
- **Automatic, manual or simulated operation**
- **Dual set-point:**
- **Selectable actions**
  - ON/OFF
  - PFM Pulse frequency modulation
  - PWM Pulse width modulation
  - hysteresis, delay, and min/max programmable functions
- **Alarm:**
  - min/max and delay programmable
  - on Set-points timing
- **Autoclean relay**
  - auto + manual/manual action
  - holding function for input and outputs
- **Automatic overload protection and reset**
- **Extractable terminal block**
- **96x96 (1/4 DIN) housing**

## Specifications

### Input Current

2  $\mu$ A/PPM at 20 °C

### \* Scales

0/2.000 PPM - 0/20.00 PPM

(Cl<sub>2</sub>, ClO<sub>2</sub>, D.O<sub>3</sub>)

Zero adjustment:  $\pm$  2  $\mu$ A

Cell sensitivity: 12.5/250 %

\* Polarization: -200 mV (0/-1250 mV)

\* Temperature coefficient: 0/4.0 %/°C

\* Filter software: 0.6/99.9 s

### Temperature

Input: Pt100 3 wires

Measuring and compensation range: -2/52 °C

Resolution: 0.1 °C

Zero adjustment:  $\pm$  1 °C

### Set-point A and B

\* Selectable action: ON/OFF - PFM - PWM

### PFM/PWM action

Proportional band: 0/10 % of the scale

Pulse frequency: 0/120 pulse/min

Pulse width: 0/99.9 s

### Option 091.3711

Dual analog output

The user may select the temperature output

*The technical specifications may be changed without notice*

## Accessories

### SZ 283

Potentiostatic electrode

### SZ 7231

Flow cell for SZ283

### SZ 7233

Flow cell for 3 sensors: SZ283, pH, ORP

### SZ 7251

Autoclean flow cell

# Electrochemical Monitors

## SZ 283 Potentiostatic electrode



This sensor is made for the measurement of Free Chlorine, Chlorine dioxide and D.Ozone in water.

The potentiostatic method is an “amperometric” measure with constant potential, made through 2 metal electrodes and a reference electrode dipped in a cell.

The current running through the cell consumes Chlorine or Ozone contents, therefore they must be renewed through a constant liquid flow.

In the traditional amperometric measurement it results difficult to maintain a constant relation between cell current and Chlorine (Ozone) concentration, especially near the zero, because of the ORP and liquid resistance effects. As result frequent zero and sensitivity calibration are needed.

In the potentiostatic measuring, the electrodes potential is electronically controlled in relation to the liquid, providing a linear relationship current/concentration and a very stable zero value in oxidative absence.

The sensor is shaped so that it is easy to clean and replace.

It is suggested to place the sensor in a measurement cell SZ 7231 or SZ 7233 provided with overflow in order to maintain the sample flow constant.

If placed in different types of cells or in a pipe-line, in order to avoid an instable measurement, it is necessary for the flow to be constant.

### Specifications

**Electrodes:** 2 Platinum rings  
**Reference:** gel with annular junction  
**Body:** glass  
**Cable:** 3 m  
**Max pressure:** 10 bar at 20°C  
**Dimensions:** 110x12 mm

## SZ 7231 – SZ 7233 Flow cells



This series of cells is made for the measurement of Residual Chlorine with a potentiostatic method.

The cell's manufacturing characteristics allow the sample to run through the potentiostatic electrode site with a constant velocity. The in-flow can be regulated through a check valve.

The SZ 7231 cell is for the potentiostatic electrode only, while the SZ 7233 cell is also for additional pH and O.R.P. electrodes and for a temperature sensor.

The package includes a 1/4" fitting, 2 meters of 4x6 plastic tubing for the sample drawing and 2 screws for wall fastening.

### Specifications

**Material:** clear acrylic resin  
**Inlet:** 1/4" fitting  
**Outlet:** fitting for 10x14 mm tubing  
**Connection tubing:** 2 m 4x6 tubing  
**Flow:** about 10/30 litre/hour approx  
**Temperature:** 0/50°C  
**SZ 7233 dimensions:** 150 x 120 x 40 mm  
**SZ 7231 dimensions:** 150 x 90 x 40 mm  
**Sensors site:** diameter 12 mm for pH/ORP/Cl  
diameter 5 mm for temperature  
**Suggested sensors:** pH = SZ 165  
ORP = SZ 275  
Cl = SZ 283  
°C = SP 514

# Electrochemical Monitors

## SZ 7251

Auto clean flow cells  
for Residual Chlorine/D.Ozone



This cell is designed for the in-line or in-flow continuous measurement of Residual Chlorine or Dissolved Ozone in solution.

The measuring sensor is inserted in the holder of the cell, which protects the body and places the sensing part in the right position into the cell.

The sample inlet flow will create a continuous movement of the internal balls whose contact with the sensing part of the sensor will perform a self cleaning action.

The package includes:

- plastic tube for the connection to the sample
- fixing clamp
- spare balls.

The sample inlet pressure must be constant in order to get a continuous flow necessary to obtain stable and reliable measuring.

## Specifications

**Transparent body:** acrylic

**Holder:** PVC

**O Ring:** NBR and fluoridated elastomer

**Fittings:** polypropylene

**Tubing:** polythene

**Balls:** N° 20 into the body

**Inlet/outlet:** 1/8 " fittings

**Diameter:** 40 mm max.

**Length:** 150 mm max.

**Flow:** 15/40 liter/hour constant

**Temperature:** 0/50 °C

**Connecting tubing:** Diameter 4X6 mm. L=5 m

**Sensor:** to be order separately depending on the application

## CL 7901 – OZ 7901

Flow cells and sensors  
for Free Chlorine/D.Ozone



The selective membrane polarographic sensor is inside a flow cell with overflow, for measurements with CL 7685.010 or CL 7685.001.

### CL 7901

For Free Chlorine measurement.

The package contains:

- 0012.000066 Free Chlorine sensor
- 0012.030029 a 7 m cable
- 0012.000043 flow cell
- 0012.090011 electrolyte 125 cc
- 0012.050005 kit of 10 membranes
- 0012.050004 kit of screws and OR

### OZ 7901

For D.Ozone measurement.

The package contains

- 0012.000042 D. Ozone sensor
- 0012.030029 a 7 m cable
- 0012.000043 flow cell
- 0012.090008 electrolyte 125 cc
- 0012.050002 kit of 10 membranes
- 0012.050004 kit of screws and OR

## Specifications

**Response time:** 90% in 60 s

**Temperature sensor:** RTD Pt100 built in the sensor

**Temperature limits:** 5/+55 °C

**Material:** Noryl and stainless steel

**Type of cell:** overflow system

**Material:** clear acrylic

**Inlet:** 25/110 litre/hour

**Inlet fitting:** 1/4"

**Outlet fitting:** 1/2"

Sensors for combined Chlorine and in-line measurements are available.

# Electrochemical Monitors

## CL 7685.010

Residual Chlorine - D.Ozone controller  
for selective membraned sensors



Add the following to the common Features/Specifications of the 7685 Series shown overleaf

- **Applications:**
  - drinking water
  - water treatment
  - bottling industry
  - OEM
- **Input from selective membraned sensors:**
  - Free Chlorine, Chlorine dioxide, Combined Chlorine, D.Ozone
  - Total Chlorine gas sensing method
- **Input from Pt100 3 wires**
- **Ranges: 0/2 PPM - 0/20 PPM - 0/200 PPM autoranging**
- **Filter software**
- **Calibration mode: immediate or postponed**
- **Calibration parameters display**
- **Dual set-point and alarm conditions display**
- **Temperature display**
- **Automatic or manual Temperature compensation**
- **Isolated output:**
  - 0/20 mA or 4/20 mA selectable
  - PPM or °C programmable input on the span
- **Automatic, manual or simulated operation**
- **Dual Set-point:**
  - **Selectable actions**
    - ON/OFF
    - PFM pulse frequency modulation
    - PWM pulse width modulation
  - hysteresis, delay, and min/max programmable functions
- **Automatic overload protection and reset**
- **Extractable terminal block**
- **96x96 (1/4 DIN) housing**

## Specifications

### Input current

160 nA/PPM at 20 °C

### \* Scales

0/2.000 PPM - 0/20.00 PPM -0/200.0 PPM

(Cl<sub>2</sub>, ClO<sub>2</sub>, D.O<sub>3</sub>, SO<sub>3</sub><sup>2-</sup>)

Zero adjustment: ± 200 nA

Cell sensitivity: 12.5/250 %

\* Polarization: -200 mV (0/-1250 mV)

\* Temperature coefficient: 0/4.0 %/°C

\* Filter software: 0.6/99.9 s

### Temperature

Input: Pt100 3 wires

Measuring and compensation range: -2/52 °C

Resolution: 0.1 °C

Zero adjustment: ± 1 °C

### Set-point A and B

\* Selectable action: ON/OFF - PFM - PWM

### PFM/PWM action

Proportional band: 0/10 % of the scale

Pulse frequency: 0/120 pulse/min

Pulse width: 0/99.9 s

### Option 091.3711

Dual analog output

The user may select the temperature output

*The technical specifications may be changed without notice*

## Accessories

### CL 7901

Flow cell and sensor for Free Chlorine

### OZ 7901

Flow cell and sensor for D. Ozone

### Sensors available

For Combined Chlorine, Sulfite.

For Total Chlorine gas sensing method.

# Electrochemical Monitors

## CL 7685.001

PID controller for  
D.Ozone, Residual Chlorine



Add the following to the common Features/Specifications of the 7685 Series shown overleaf

- **Applications:**
  - Ozone generators
  - drinking water
  - water treatment
  - bottling industry
  - OEM
- **Input from**
  - Potentiostatic sensor
  - Polarographic selective membraned sensors:
  - Total Chlorine gas sensing method
- **Input from Pt100 3 wires**
- **Ranges: 0/2 PPM - 0/20 PPM - 0/200 PPM autoranging**
- **Filter software (2 levels)**
- **Calibration mode: immediate or postponed**
- **Calibration parameters display**
- **Dual set-point and alarm conditions display**
- **Temperature display**
- **Automatic or manual temperature compensation**
- **Isolated output:**
  - 0/20 mA or 4/20 mA selectable
  - programmable input on the span
- **PID output:**
  - 0/20 mA or 4/20 mA isolated output
  - dual relay for stepping motor
- **Automatic or manual operation**
- **Alarm on set-point deviation**
- **Automatic overload protection and reset**
- **Extractable terminal block**
- **96x96 (1/4 DIN) housing**

## Specifications

- \* **Measuring:** D.Ozone/Residual Chlorine
- \* **Measuring cell:** Potentiostatic/Polarographic

### Polarographic cell

- Current: 160 nA/PPM at 20 °C
- \* Scales: 0/2.000 PPM - 0/20.00 PPM -0/200.0 PPM
- Zero adjustment: ± 200 nA
- Cell sensitivity: 12.5/250 %

### Potentiostatic cell

- \* Scales: 0/2.000 PPM - 0/20.00 PPM
- Zero adjustment: ± 2 µA
- Cell sensitivity: 12.5/250 %

- \* **Polarization:** -200 mV (0/-1250 mV)
- \* **Filter software:** 0.6/99.9 s (large/small)

### Temperature

- Input: Pt100 3 wires
- Measuring and compensation range: -2/52 °C
- Manual temperature: -2/52 °C
- Resolution: 0.1 °C
- Zero adjustment: ± 1 °C
- \* Temperature coefficient: 0/4.0 %/°C

### Regulation:

- \* 4/20 mA or 0/20 mA/Stepping motor
- \* Motor time: 10/120.0 s
- \* Dead time: 0/20.0 s
- Manual starting position: 0/100.0 %

### Set-point: any value in the measuring range

- \* Dead band: 0.2/20.0 % (stepping motor)
- Proportional band: 0.1/400.0 %
- \* Derivative: 0/1200 s
- \* Integral: 0/3600 s

*The technical specifications may be changed without notice*

## Compatible accessories

### SZ 283

Potentiostatic measuring sensor

### SZ 7231

Flow cell for Chlorine and D. Ozone

### SZ 7233

Flow cell for Chlorine / D. Ozone, pH, ORP sensors

### SZ 7251

Autoclean flow cell

### CL 7901

Flow cell and sensor for Free Chlorine

### OZ 7901

Flow cell and sensor for D. Ozone

# Electrochemical Monitors

## TU 7685

Turbidity and Suspended solids



Add the following to the common Features/Specifications of the 7685 Series shown overleaf

- Input from preamplified sensor
- Manual and automatic operation
- Selectable scales:  
0/4.000 0/40.00 0/400.0 0/4000 NTU  
0/10.00 0/100.0 0/1000 0/10,000 mg/l of SiO<sub>2</sub>
- Autoranging
- Software filter
- Alphanumeric backlit display
- 0/20 or 4/20 mA selectable output, programmable on the input scale
- 2 Set point with min/max function, Hysteresis and adjustable delay
- Alarm: min/max Turbidity, Set point timing, dirty lens, empty cell, external light too high
- Check signal of dirty lens
- Autoclean relay with programmable cycle repetition, cleaning and holding time
- 3 access levels: display, calibration and configuration of process parameters
- 110/220 Vac with overload power protection
- Dimensions: 96x96x155 mm DIN 43700
- Panel mounting

This instrument is designed to operate together with TU 810 amplified Turbidity probe which can be installed over 100 m far from the controller.

Accessories allow the system to operate in flow, in line and in immersion applications.

## Specifications

**Turbidity Sensor:** TU 810

**Operating mode:** Automatic/Manual

**Measuring unit:** NTU/mg/l/PPM

**Range:** 4/400 NTU - 40/4000 NTU

9/999 - 99/9999 PPM of SiO<sub>2</sub>

9/999 - 99/9999 mg/l of SiO<sub>2</sub>

**Resolution:** 0.05% of scale

**Zero of the probe:** 0.0/10.0 % f.s.

**Sensitivity:** 80.0/120.0 %

**Set point A/B:** ON-OFF

**Hysteresis:** 0/10 % of the scale

**Relay delay:** 0.0/99.9 s

**Relay contacts:** 5 A 220 V

**Low/high alarm:** 0 to full scale

**Autoclean:** Manual/Auto+Manual

**Analog output Nr.1:** 0-20/4-20 mA isolated

**Response time:** 10 sec. for 98% of input

**R max:** 600 ohm

**Analog output Nr.2:** option 091.3713

**Serial output:** RS232 option 091.701

**Humidity:** 95% without condensate

**Power:** 110/220 Vac +/-10% 50/60 Hz 5 VA max

**Isolation:** 4000 V (IEC 348)

**Dimensions:** 96x96x155 mm (1/4 DIN)

*The technical specifications may be changed without notice*

## Measuring probes

### TU 810

Turbidity probe in PVC body

### TU 8105

Turbidity probe in PVFD body

### TU 8182

Turbidity probe autoclean submersible in PVC body

## Accessories

- **SZ 9481** Connector + 10 m cable
- **TU 910** Flow cell for TU 810 or TU 8105
- **Formazine Standard solutions**

# Electrochemical Monitors

## TU 810 - TU 8105

Turbidity probe



- For in flow, in line applications
- Nephelometric method
- I. R. light
- Cable length up to 100 m
- Sample Temperature 0/50 °C
- Built-in preamplifier
- IP67 connector

### Specifications

**Range:** 0/4000 NTU

**Resolution:** 0.001 on scale 0/4.000 NTU  
 0.01 on scale 0/40.00 NTU  
 0.1 on scale 0/400.0 NTU  
 1 on scale 0/4000 NTU

**Accuracy:** ± 5% of reading on 0/400 NTU  
 ± 10% of reading on 400/4000 NTU

**Response time:** 10 sec.

**Measuring method:** Nephelometric (ISO 7027 - EN 27027)

**Light source:** LED I.R. 890 nm

**Preamplifier:** built-in

**Power:** ± 12 Vdc from TU 7685

**Ambient Temperature:** 0/50 °C

**Sample Temperature:** 0/50 °C

**Sample Pressure:** 6 bar max. a 20 °C

**Connector:** IP 67

**TU 810 body material:** PVC

**TU 8105 body material:** PVDF

**O Ring:** NBR (Acrylat Nitrile)

**Optical window material:** Acrylic

**Diameter:** 40 mm

**Cable length:** 100 m max.

*The Technical Specifications may be changed without notice*

## TU 910

Turbidity flow cell



This measuring cell has been designed for using with TU 810 or TU 8105 turbidity probes.

It allows very accurate measurements even at very low turbidity values, as requested by drinking water applications.

It is provided with a flow control to avoid air bubbles from grab samples under pressure.

Cleaning and calibrating operations are very easy.

The package includes the 1892702 adaptor and O Ring 2713118 for the TU 810 - TU 8105 installation.

### Specifications

**Applications:** in flow measurement

**Flow of sample:** 0.2/25 l/min.

**Temperature:** 0/50 °C

**Temperature of sample:** 0/50 °C

**Pressure of sample:** 6 bar max. a 20 °C

**Material:** PVC

**Fixing of probe:** 2 1/2" nut (DN 50)

**Fittings:** 1/4"

**Tubing:** PVC 4x6 mm l=5m

*The Technical Specifications may be changed without notice*

# Electrochemical Monitors

## Turbidity meter Autoclean system

**Install & forget**



The on-line monitoring system is designed for the continuous measurement of Turbidity in water.

The full scale operating range of the system may be selected by the user from 0-4.000 to 0-4,000 NTU or from 0-10.00 to 0-10,000 PPM (mg/l) of SiO<sub>2</sub>, and the sensing system will operate on water streams with temperature from 0 to 50 °C.

The measured Turbidity is displayed on a backlit liquid crystal display on the front of the instrument. The Turbidity monitor is well suited for wastewater treatment, effluent monitoring, or stream monitoring.

The measuring method is Nephelometric.

A light source and a photocell are positioned with their optical axes 90° from each other. The emitted light is scattered by particles in the process and received by the photocell, in accordance to standard ISO 7027.

The assembly automatically delivers high pressure air to the tip of the sensor to effectively blast accumulated growth from the optical lens. For special applications, the Turbidity monitor can be supplied without the cleaner, and the customer will provide the pressure air to the sensor.

Submersible sensors are designed for direct immersion in the tank or flowing stream.

A 10 m cable is potted into the top section of the sensor assembly, and connects directly to the Turbidity monitor.

A separate tubing connection located at the top of the sensor assembly is provided for connection of a 10 m length of plastic tubing between the sensor and the monitor.

The Turbidity sensor assembling is mounted to a 1" pipe using a special mounting adapter.

The 1" pipe is attached to the tank handrail with a bracket assembly that holds the sensor at a slight angle in the tank.

Once installed and placed into operation, the Autoclean Turbidity sensor will provide months of reliable Turbidity measurement in almost any application.

Sensor should be checked for build-up after the first 3 months to verify that the cleaner is keeping the lens clean.

The sensor cleaning frequency is user programmable, and units are shipped with a default cleaning frequency of once every 24 hours.

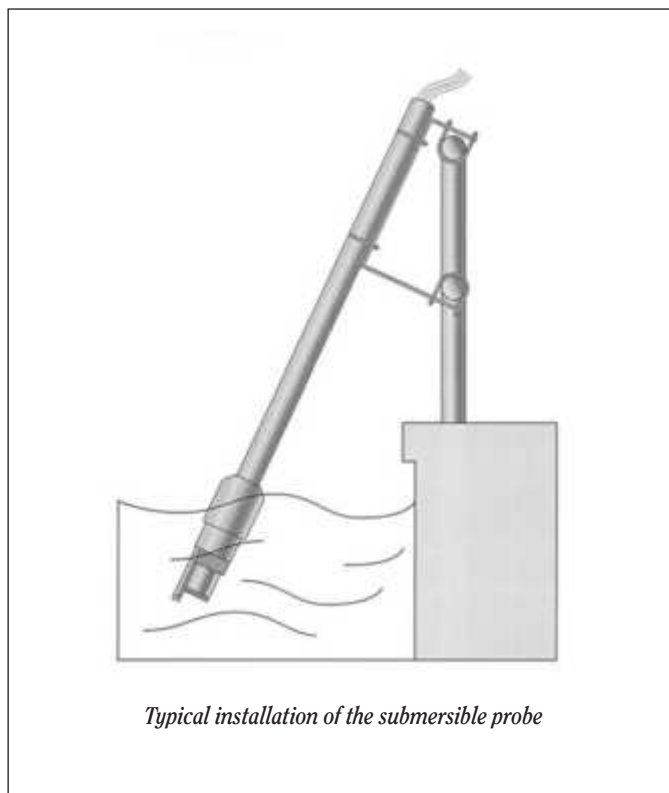
This frequency has proven sufficient for most applications, but can be increased if needed for a specific application.

### Autoclean sensor



### System installation

The installation of the autoclean Turbidity system is quick and simple. A special mounting adapter connects the sensor to standard 1" conduit or pipe, and another adapter provides secure connection of the pipe to a standard handrail system.



*Typical installation of the submersible probe*

# Electrochemical Monitors

## TU 8182

Submersible autoclean Turbidity and suspended solids probe



**New**

The Turbidity probe TU 8182 has been designed for submersible applications. It is provided with a built-in device for cleaning the optical lens by means of pressure air blasts.

The probe is operated by the TU 7685 controller. The controller provides the power to the amplifier of the probe and it activates the auto clean relay as programmed by the user.

The cleaning action can be effected by means of a water tight electric module completed with the air compressor. The controller TU 7685 can be installed on the front panel of the auto clean module.  
(See page 23 of this catalog).

The Turbidity probe contains

- an infrared light source
- a light detector
- a signal detector of the lens fouling
- a built-in amplifier as interface to the Turbidity monitor.

The measuring method is Nephelometric with the detection of the scattered light at 90° by suspended particles, proportional to the Turbidity value.

### Accessories

The installation of the probe needs few accessories to be selected among the following:

- 0012.450043** Extension pipe adapter
- 0012.000624** Swivel mounting
- 0012.440040** 33 m PVC tubing for pressure air

### Specifications

**Range:** 0/4000 NTU - 0/9.999 g/l

**Resolution:** 0.001 on scale 0/4.000 NTU  
0.01 on scale 0/40.00 NTU  
0.1 on scale 0/400.0 NTU  
1 on scale 0/4000 NTU

**Accuracy:** ± 5% of reading on scale 0/400 NTU  
± 10% of reading on scale 400/4000 NTU

**Response time:** 10 seconds

**Measuring principle:** Nephelometric

**Light:** LED IR 890 nm

**Preamplifier:** built-in

**Power:** ±12 Vdc

**Operating Temperature:** 0/50 °C

**Temperature of the sample:** 0/50 °C

**Pressure of the sample:** 6 Bar max. at 20 °C

**Body:** PVC

**Optical lens:** Acrylic

**Cable length:** 10 m

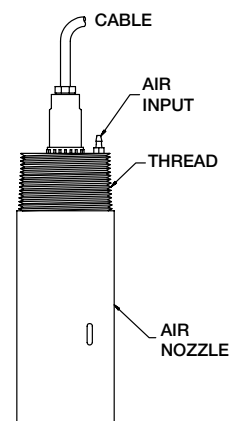
**Protection:** IP68

**Auto clean:** Built-in device

**Air line connector:** 1/4" I/E 3/8"

**Air Pressure:** 3 bar

### Auto clean Sensor



# Electrochemical Monitors

## IC 7685

### Ion Concentration controller



Example of applications

Add the following to the common Features/Specifications of the 7685 Series shown overleaf

- **Applications:**
  - with ISE electrodes
  - water softeners
  - drinking water
  - electroplating industry
  - Aluminum surface coating
  - CO<sub>2</sub> in biotechnology
- **Input from any ISE and CO<sub>2</sub> electrodes**
- **Input form Pt100 3 wires**
- **Measuring unit: PPM - mg/l - gr/l - mbar - mmHg**
- **Measuring range from 0.01 to 1000**
- **Autoranging**
- **Up to 5 points calibration**
- **Temperature readout**
- **Calibration parameters display**
- **Dual set-point and alarm conditions display**
- **Automatic or manual temperature compensation**
- **Filter software (2 levels)**
- **Isolated output:**
  - 0/20 mA or 4/20 mA selectable
  - programmable input on the span
  - dual output as option
- **Automatic or manual operation**
- **Dual set-point with hysteresis, delay, and min/max programmable functions**
- **Alarm:**
  - min/max and delay programmable
  - on set-points timing

## Specifications

### Operating mode

Automatic/manual

### ISE input

\* Ion type X<sup>-</sup>, X, X<sup>+</sup>, X<sup>++</sup>

Measuring scales: 5 decades from 0.01 to 1000

### \* Scales

10.00 - 100.0 - 1000 autoranging

2 level of software filter for small/large variations

### Calibration

Up to 5 points over all the measuring range

Zero adjustment: ± 100.0 mV

Range: ± 1100 mV

### Temperature

Input: RTD Pt1000 3 wires

Measuring range: -10.0/110.0 °C

Resolution: ± 0.1 °C

Zero: ± 2 °C

Manual Temperature: -10/110 °C

### Temperature compensation

Selectable: able/disable

Compensation range: -10/110 °C

Reference Temperature: 20 °C

*The technical specifications may be changed without notice*

## Accessories

This instrument may use all the ISE sensors for continuous operation

# Electrochemical Monitors

## IC 7685.010

Ion concentration controller with auto calibration and auto cleaning functions.



**New**

- **Applications:**
  - combined with ISE electrodes
  - softener
  - galvanic industry
- **Input for all ISE electrodes**
- **Readout: PPM - mg/l - g/l - mbar - mmHg**
- **Measuring range: from 0.01 to 1000**
- **Selectable scale: 10.00 - 100.0 - 1000**
- **Auto ranging**
- **5 calibration points**
- **Temperature input with Pt100 3 wires**
- **Temperature readout**
- **Manual and automatic temperature compensation**
- **Set-point and alarm conditions display**
- **Alphanumeric back-lighted LCD**
- **Dual software filter**
- **Analog output: 0/20 - 4/20 mA isolated**
- **Input field configurable in output range**
- **Automatic and manual operations**
- **1 or 2 set point with programmable hysteresis, delay, min/max**
- **Alarm relay**
- **Auto calibration function**
- **Auto clean function**
- **Terminal blocks extractable**
- **Dimensions 96x96 DIN 43700**
- **Software:**
  - easy to use
  - 3 access levels
  - keyboard lock
  - access code numbers
  - watch dog control system

## Specifications

(add common to the 7685 specifications)

### Operating Mode

Automatic/ Manual

### ISE electrodes input

\* Type of Ion: X<sup>-</sup>, X, X<sup>+</sup>, X<sup>++</sup>  
Measuring field: 5 decades from 0.01 to 1000

### \* Scale

10.00 – 1000 with auto ranging  
Software filter 90%RT: two levels from 0.4/20.0 seconds for large/small variations

### Calibration

Up to 5 points on the entire scale  
Zero adjustment: ±100.0 mV  
Range mV: ±1100.0 mV

### Temperature

Input: RTD Pt100 3 wires  
Measuring field: -10/100°C  
Resolution: ±0.1°C  
Zero correction: ±2°C  
Manual temperature: -10/100°C

### Thermo compensation

Compensation field: -10/110°C  
Ref. temperature: 20°C

### \* Auto calibration function

Disabled – Manual – Automatic + manual  
\* Repetition time: 1/999 hours  
\* Calibration time: 0.1/19.0 minutes  
\* Restoring time: 0.1/19.0 minutes  
\* Standard solutions: 0.01/1000 PPM

### \* Auto cleaning function

Disabled – Manual – Automatic + manual  
\* Repetition time: 1/999 hours  
\* Cleaning time: 0.5/60.0 seconds  
\* Restoring time: 0.1/19.0 minutes

*Technical specifications could be changed without notice*

This model includes the auto calibration and auto cleaning functions of the sensor, done by external devices activated by the instruments. For this, customers can make reliable and affordable ISE analyzers, through the use of ISE electrodes, which in continues applications, require frequent calibration and cleaning operations.

# Electrochemical Monitors

## Gas sensing analyzers

Residual Sulfite, D. Sulfide, Total Residual Chlorine



This Monitor series takes a unique approach to the measurement of ion concentration. In operation a small amount of sample is pumped into the system and mixed with a suitable reagent. The mixed sample flows into a special chamber where the ion is converted in a gas stripped from the sample. A sensor located in the gas stream measures the gas concentration and displays the results in terms of equivalent ion concentration.

Monitors consist of two separate components:

- a chemistry module where the sample is conditioned properly to make the measurement

- an electronic readout module containing the measuring display, analog output, and alarm contacts.

This module is the S 7685 for Sulfite/Sulfide, and the CL 7685.010 for the Total Chlorine.

A 25 foot sensor cable is supplied to connect the two modules together, and the separation can be increased to 100 feet by the use of a junction box and additional signal cable.

A sample inlet overflow block is provided on the left side of the chemistry module.

Systems are extremely easy to operate and maintain, with the reagent usage limited to one liter every 10 days at standard flow rate. Sample and reagent are pumped using long life peristaltic pump tubing that requires replacement approximately every 6 months. The sensor requires no maintenance other than an occasional visual inspection to insure that no deposits have collected due to airborne particulates.

## Chemistry module



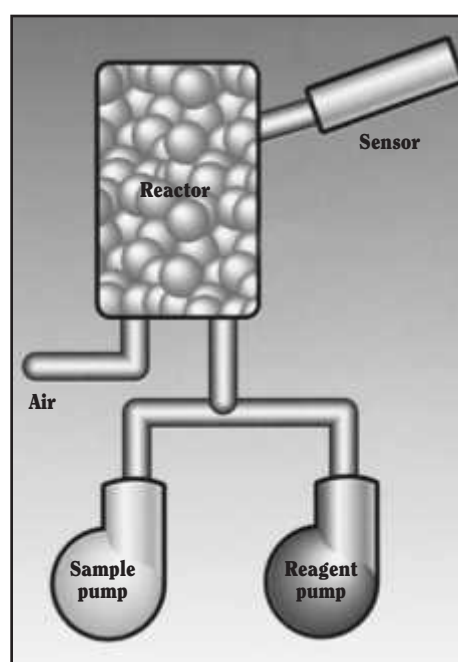
### Applications

**Residual Sulfite:** Dechlorination plants, Textile, Chemical, and Sulfur raw material industries.

**Dissolved Sulfide:** Spa, Drinking water, Tanneries, and Waste water plants.

**Total Chlorine:** Pulp and Paper, Chemical, and waste water industries

### Measuring principle



# Electrochemical Monitors

## 7685 - 7615 Series accessories

### SZ 7601

Transparent splashproof front door

**Protection:** IP 55



*Example of SZ 7601 installation*

### BC 931.2

Watertight enclosure with transparent front door suitable for the installation of one 96x96 (1/4 DIN) unit.

**Protection:** IP 65 (NEMA 4X)

**Size:** 270x180x238 mm

### BC 931.3

Watertight enclosure with transparent front door suitable for the installation of two 96x96 (1/4 DIN) units.

**Protection:** IP 65 (NEMA 4X)

**Size:** 270x180x238 mm



*Example of BC 931.3 installation*

### SX 101

Relay contacts snubber



## Laboratory enclosures

Enclosures for laboratory applications of 7615 - 7685 Series

**BT 7001** Enclosure for 1 unit

**BT 7003** Enclosure for 3 units



*Example of application*

## Sensor - Probes and accessories

Choose suitable sensors, probes and accessories described in the Nieuwkoop catalog.

# Electrochemical Monitors

## 565 SERIES

### Digital controllers

- 9 1/2" x 3 1/2" panel mounting
- Input from sensors and microtransmitters
- 3 1/2 digit LED display
- Selectable scales
- Manual and automatic Temperature compensation
- Temperature and Temperature Coefficient display
- 0/20 mA or 4/20 mA selectable output
- Set-points display
- Two on/off regulators with programmable min/max function and delay action
- Extractable terminal blocks
- Easy installation and maintenance



Example of installation in BC 912 housing

This series of analysers has been designed to carry out the measurement and the regulation of:

- pH
- O.R.P
- Conductivity
- Dissolved Oxygen
- Temperature
- Antifoam

in Biotechnology and in industrial processes, with continuous readings by means of digital indicators. Manual and automatic temperature compensation is available in the 565.2 model.

The automatic Temperature compensation is realized by RTD Pt100 to assure a higher precision in every type of measurement regardless of process conditions.

The adjustment of the zero and of the sensitivity is done by means of trimmers mounted on the front panel.

The instruments have the following technical specifications:

- the output is selectable 0/20 or 4/20 mA. The option "isolated output" is available on request.
- the set-point of the two A and B on-off regulators is displayed by pushing a button on the front panel next to the corresponding regulating dial.
- the activation of the relay function can be changed by means of dip-switches placed on the rear side of the instrument.
- the A and B regulators have a delayed action function that can be set between 0-5 seconds and the B regulator can be supplied with the special "window" function with an activation range around the A regulator's value.

If the thermoresistance device is installed, it is possible to display the Temperature value of the solution being examined by pushing a button on the front panel.

The Temperature Coefficient may be adjusted and displayed.

The controller enclosure is designed for surface or panel mounting. It consists of an anodized Aluminium front panel coated with a polycarbonate membrane and an epoxy-coated Aluminium case, to ensure the maximum anticorrosion characteristics.

The instruments are supplied with double input possibilities for sensors and amplified probes by means of a microtransmitter, completely water-tight, that adapts the output signal to the characteristics of a normal unshielded electric cable.

The power connections and the connections for recorders, thermoresistance, electrodes or probes are made by means of two extractable terminal blocks on the rear side of the instrument, which allow easy cable connection and easy maintenance of the instrument, the sensors etc.

### Common specifications

**Zero adjustment:** +/- 15 %

**Slope adjustment:** +/- 20 %

**Analog output:** 0/20 mA - 4/20 mA selectable, non isolated  
300 ohm max.

**Relay contacts:** 220 V 5 A resistive load - SPDT

**Regulator hysteresis:** +/- 0.25 % (others as requested)

**Switching Time:** < 0.5 s

**Operating Temperature:** 0/50 °C

**Humidity:** 95% without condensate

**Voltage:** 110/220 V +/-10 % 50/60 Hz

**Fuse:** 80 mA T (110 V) 32 mA T (220 V)

**Power:** 3 VA max.

**Weight:** 1.014 Kg

**Dimensions:** 241 x 89 x 157 mm (9 1/2" W x 3 1/2" H x 5 1/4" D)

**Option 091.363:** isolated output

**Option 091.401:** voltage 24 Vac

**Option 091.201:** "window" B regulator

# Electrochemical Monitors

## PH 565.2 pH controller

- Input from pH electrodes and microtransmitters
- Temperature display
- Manual and automatic Temperature compensation



### General informations

This instrument has all the advantages of a modern and reliable pH measurement and regulation for use in industrial plants and is particularly suitable for use in fermentation processes.

Input comes directly from pH electrodes or from microtransmitters. The controller provides a digital readout of pH.

Automatic or manual Temperature compensation from 0° to 100°C is provided with the Pt 100 device.

It also features digital readings of the solution's Temperature.

The manual Temperature compensation operates when the automatic compensation is excluded (RTD non connected).

The Temperature readout, both in manual and automatic Temperature operation, is obtained by pushing a button on the front panel.

There are two independent on-off A and B regulators that are programmed by a front-panel control to trigger at any level within the range of the meter.

The two set points have the feature of being changeable by rear selectors and can be delayed up to 5 seconds.

The controller provides an output of 0/20 or 4/20 mA selectable proportional to the meter reading, for driving a recorder or remote readout having a non grounded input.

### Specifications

*Add the following to the common Specifications shown overleaf*

**Input from:** pH electrode  
microtransmitter mod. 080102  
RTD Pt100

**Scale:** 0.00/14.00 pH

**Temperature readout:** 0/100.0 °C

**Temp. compensation:** automatic and manual 0/100 °C

**Temperature sensor:** RTD Pt100

**Input Current:** < 2 pA at 20 °C

**Input Impedance:** > 10 exp 12 ohm

## MV 545.2 O.R.P. controller

- Input from O.R.P. electrodes and microtransmitters
- Scale -1.999 / 1.999 mV
- Regulators scale 0 / 1000 mV



### General informations

This instrument, together with a probe and a microtransmitter, make up the most advanced system in the field of ORP measurement/regulation in industrial plants.

The controller provides a digital readout of ORP. Input comes directly from an electrode or from a microtransmitter.

There are two independent on-off A and B regulators with the possibility of selecting the min/max function by rear selectors and also the possibility to insert a delay function from 0 to 5 Seconds for each set-point.

The controller provides an output of 0/20 or 4/20 mA selectable and proportional to the meter reading, for driving a recorder or remote readout having a non-grounded input.

### Specifications

*Add the following to the common Specifications shown overleaf*

**Input:** from electrode  
from microtransmitter mod. 080102

**Display scale:** ±1999 mV

**Regulators scale:** ±1000 mV (others as requested)

**Input Current:** < 2 pA at 20 °C

**Input Impedance:** > 10 exp 12 ohm

# Electrochemical Monitors

## C 565.2

### Conductivity controller

- **Input** 2-electrodes cell  
4-electrodes preamplified cell  
electrodeless preamplified cell
- **Selectable scales**
- **Temperature and Temperature Coefficient display**
- **Manual and automatic Temperature compensation**



### General informations

This instrument presents all the advantages of a modern and reliable measurement of electrical conductivity in industrial plants.

In just this one instrument there are all the conductivity ranges necessary to undertake measurements in ultra-pure waters and in solutions with a very high ionic content.

It features a scale selector and there are two independent on-off regulators with the possibility of selecting the min/max function by rear switches and also the possibility to insert a delay function for each set-point.

The cell factor K may be adjusted over a wide range by means of a coarse and fine control.

It also features the automatic and manual compensation of the temperature by means of the Pt100 sensor with the display of the temperature coefficient and a digital readout of the solution's temperature. The controller provides an output of 0/20 or 4/20 mA selectable proportional to the meter reading, for driving a recorder or remote readout having a non-grounded input. A unique characteristic of this instrument is the possibility to connect the Conductivity cell for measurement in microSiemens range, the 4-electrodes cell + microtransmitter type 080310 and the electrodeless cell + microtransmitter 080315 for measurement in mSiemens range.

### Specifications

*Add the following to the common Specifications shown overleaf*

**Input:** from conductivity cell (2 electrodes)  
from microtransmitter mod. 080310 for 4-electrodes cell  
from microtransmitter mod. 080315 for electrodeless cell  
from RTD Pt100

**Scales with 2-electrodes cell installed:** 0/1.999 0/19.99  
0/199.9 0/1999 microSiemens

**Scales with 080310 or 080315 microtransmitter installed:**  
0/1.999 0/19.99 0/199.9 0/1999 milliSiemens

**Temperature readout:** 0/100.0 °C

**Operating Frequency:** 200 Hz 800 Hz 4.500 Hz selectable

**Temp. compensation:** manual and automatic 0/100 °C

**Temp. Coefficient:** 0 to 5.5 %/°C

**Temperature sensor:** RTD Pt 100

**K adjustment:** 0 to 2 (coarse)

## OD 565.2

### Dissolved Oxygen controller

- **Input** polarographic cell  
galvanic cell (option)  
microtransmitter
- **Scales PPM - % air saturation - % O<sub>2</sub> - mmHg**
- **Temperature and Temperature Coefficient display**
- **Manual and automatic Temperature compensation**



### General informations

This instrument presents all the advantages of a modern and reliable measurement of dissolved oxygen in industrial plants.

Input comes either from a polarographic cell or from a microtransmitter (Galvanic cell as option).

It also features manual and automatic temperature compensation by means of a Pt100 sensor and the display and the adjustment of the temperature coefficient.

The temperature value is adjusted by the trimmer on the front panel.

The temperature readout, both in manual and automatic temperature operation, is obtained by pushing a button on the front panel.

The two set-points are independent and programmable by a front-panel control with the possibility of selecting the min/max function by rear selectors and also the possibility to insert a delay up to 5 seconds.

The controller provides an output of 0/20 or 4/20 mA selectable, proportional to the meter reading, for driving a recorder or remote readout having a non-grounded input.

### Specifications

*Add the following to the common Specifications shown overleaf*

**Input:** from polarographic O<sub>2</sub> cell  
from microtransmitter mod. 080610  
from RTD Pt100  
from galvanic cell (option)

**Scales:** 0 to 199.9 % O<sub>2</sub> (in air value 20.9)  
0 to 199.9 % (in air value 100.0)  
0 to 199.9 mmHg (in air value 155.5)  
0 to 19.99 mg/l (in air value 9.20)

**Temperature readout:** 0/100.0 °C

**Temp. compensation:** manual and automatic 0/100 °C

**Temp. Coefficient:** 0 to 5.5 %/°C

**Temperature sensor:** RTD Pt 100

**Cell Current in air:** 30 nA (others as requested)

# Electrochemical Monitors

## TR 545.2 Temperature controller

- **Input from Pt 100 (3 wires)**
- **Sensitivity 0.1 °C**
- **Easy installation and maintenance**



### General informations

This instrument presents all the advantages of a precise and reliable measurement and regulation of temperature in industrial applications.

It is suitable for use in fermentation plants. With a special U.R. transmitter whose output signal is adapted to the standard Pt100, the instrument works as a Relative Humidity meter/regulator.

There are two independent on-off regulators with the possibility of selecting the min/max function by rear switches and also the possibility to insert a delay function for each set-point.

The controller provides an output of 0/20 mA or 4/20 mA selectable and proportional to the meter reading, for driving a recorder or remote readout having a non-grounded input.

**Specifications**

*Add the following to the common specifications shown overleaf*

---

**Input:** from thermoresistance Pt100

---

**Scale:** -20/+120 °C

---

## AF 511.2 Antifoam

- **Bar graph indicator**
- **Easy installation and maintenance**



### General informations

This instrument is suitable for use in fermentation plants as it measures the conductivity of foam.

The measurement value is displayed by means of a LED bar graph.

It is possible to select the set-point in each type of measurement.

It is also possible to adjust the instrument's sensitivity.

**Specifications**

*Add the following to the common specifications shown overleaf*

---

**Input:** Conductivity sensor

---

**Scale:** 100% at 100 µS

---

**Sensitivity:** 10 µS (middle scale)

---

**Analog output:** not available

---

### Accessories for 565 Series

**BC 912**  
Cabinet designed for two modules  
**Dimensions:** 250x190x220 mm • **Protection:** IP 41

**BC 913**  
Cabinet designed for three modules  
**Dimensions:** 250x280x220 mm • **Protection:** IP 41

**BC 914**  
Cabinet designed for four modules  
**Dimensions:** 250x370x220 mm • **Protection:** IP 41

**BC 931.1**  
Water-tight enclosure for one module  
**Dimensions:** 270x180x238 mm • **Protection:** IP 65 (NEMA 4X)  
**Dimensions:** 270x180x238 mm • **Protection:** IP 65 (NEMA 4X)

# Electrochemical Monitors

## MICROTRANSMITTERS for industrial probes

- Suitable for 7685 Series and 565 Series
- IP 65 water-tight protection
- Water-tight output connector
- For immersion and in-line probes
- Easy installation and maintenance

### 080102.1 pH and O.R.P. microtransmitter

New



The microtransmitter is a differential preamplifier enclosed in a water-tight housing and makes the characteristics of the measuring electrodes signal compatible to those of a normal connection cable.

With this technically advanced solution it is possible to make connections at considerably long distances between the measuring probe and the control panel without the use of a shielded cable maintaining a high signal response speed and the complete absence of interferences, therefore greater precision.

The connection between the microtransmitter and the panel regulator is made using a 4-pin waterproof connector type SZ 9490 and a normal 4-wire cable.

The accessory type SZ 9491 consisting of SZ 9490 + 10 m marked cable is available.

The microtransmitter is protected against eventual connection inversions. It is mounted in the usual way on ST type probes.

For unfixed mounting, the SZ 911 accessory must be used.  
Recommended cable: 4 x 0.5 mm or 4 x 0.75 mm non shielded.

### Accessories

- SZ 9490** IP 67 connector for cable  
**SZ 9491** 10 mt cable and SZ 9490 connector  
**SZ 911** Stopper



### 080310 E. Conductivity microtransmitter

This miniature preamplifier is realised in a water-tight enclosure with a waterproof connector for a shielded 7-wire cable for the transmission of Conductivity and Temperature signals.

Normally, as an input, a four-electrode cell with a temperature compensation element is connected, while as an output, the models C 7685 or C 565.2 are connected and automatically assume measuring scales in mS.

The connection between the microtransmitter and the controller is made using a 7-pin waterproof connector (cod. 2231520).

#### Specifications

**Input:** for 4 electrodes cell and Pt 100

**Conductivity range:** 0/20 S

**Adjustment:** zero and sensitivity

#### Accessories

See accessories for 080315.

### 080610.2 Dissolved Oxygen microtransmitter

This miniature preamplifier is realised in a water-tight enclosure with a waterproof connector for a shielded 7-wire cable for the transmission of dissolved oxygen and temperature signals.

Input comes from polarographic cells and from Pt100 devices. It is used together with the OD 7685 or OD 565.2 models in cases where there are long distances between the oxygen cell and the controller.

The transmitter can be adjusted as far as the zero point, the sensitivity and the cell polarization is concerned.

The connection between the microtransmitter and the panel regulator is made using a 7-pin waterproof connector (cod. 2231520).

#### Specifications

Standard cables with connector are also available:

**SZ 9481:** 2231520 + cable length 10 m (33 feet)

**SZ 9483:** 2231520 + cable length 30 m (100 feet)

**Recommended cable:** 7 x 0.25 mm shielded

#### Accessories

See accessories for 080315.

# Electrochemical Monitors

## 080315

### Electrodeless Conductivity microtransmitter



This miniature preamplifier is realised in a water-tight enclosure with a waterproof connector for a shielded 7-wire cable for the transmission of conductivity and temperature signals.

Normally, as an input, an electrodeless cell model SI 315 with a temperature compensation element is connected, while as an output, the models C 7685 or C 565.2 are connected.

By means of this microtransmitter the above standard conductivity controllers can be used as electrodeless conductivity controllers and assume measuring scales in mS.

The connection between the microtransmitter is made using a 7-pin waterproof connector (cod. 2231520).

#### Specifications

**Input:** from electrodeless probe

**Recommended cable:** 7 x 0.25 mm shielded

**Conductivity range:** 0/40 S

**Adjustment:** zero and sensitivity

#### Accessory

Standard cables with connector are also available:

**SZ 9481:** 2231520 + cable length 10 m (33 feet)

**SZ 9483:** 2231520 + cable length 30 m (100 feet)

**SZ911** for unfixed mounting

## Electrodeless Conductivity

### General informations

In a conventional 2-electrode or 4-electrode Conductivity cell there is a contact to the solution and an alternating current, proportional to the solution Conductivity, is passed between the electrodes.

The contamination on the electrodes will usually give a low reading. Similarly the polarization of the electrode surface can lead to erroneous measuring.

All these conditions occur at the electrode/solution interface and their elimination is concerned in the Electrodeless cell.

With electrodeless system two toroidally wound coils on a common axis are encapsulated to form the sensor.

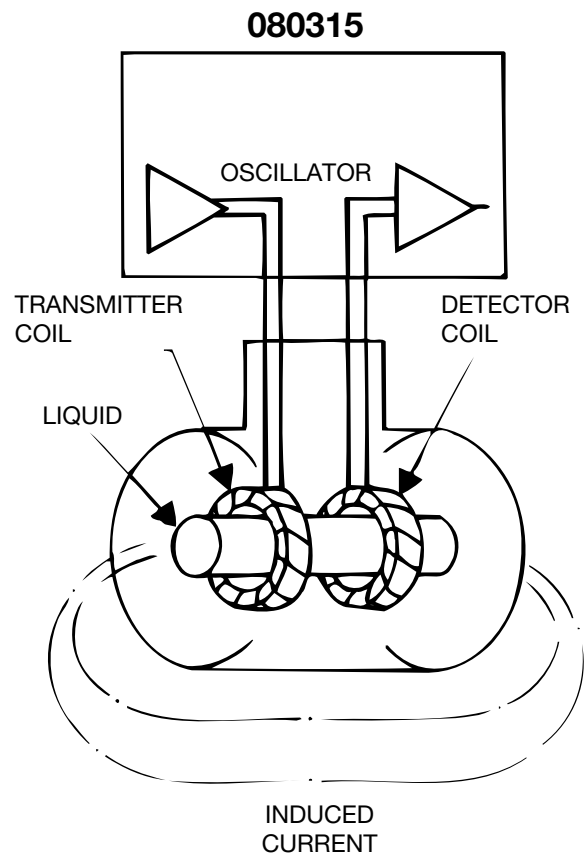
When the sensor is immersed in the solution, a conductivity loop is created through the sensor.

An alternating current is applied to the transmitter coil which induces a current in the Detector coil, proportional to the solution Conductivity.

The advantages of the electrodeless method are more apparent at higher conductivities, in the range above 2 mS.

By using the electrodeless system maintenance is reduced and reliable measurements can be achieved over extended periods of time.

The connection between the microtransmitter and the controller is made using a 7-pin waterproof connector (cod. 2231520).



# Electrochemical Monitors

## 7615 SERIES

96x96 DIN 43700

- High quality
- 3 1/2 digit LED display
- Automatic Temperature compensation
- 0/20mA 4/20mA adjustable output
- 2 min/max control relays
- Extractable terminal blocks
- Isolated output as option



## General informations

This series of controllers has been designed to carry out the measurement and the regulation of:

- pH
- O.R.P
- E. Conductivity
- Dissolved Oxygen
- Free Chlorine
- Temperature
- General purpose

in industrial processes, with continuous readings on digital indicators.

These instruments give both a valid, low cost measurement and regulation system for small industrial and ecological plants, and they can be used as 0/20 mA or 4/20 mA visualized transmitters for field applications.

Connections are made by means of two extractable terminal blocks on the rear side of the instrument, which allow easy cables connection and easy maintenance of the instrument.

The panel mounting instrument's enclosure is designed according to the DIN 43700 standards and it consists of a plastic case with metallic front panel coated with a polycarbonate membrane, to ensure the maximum anticorrosion characteristics.

A transparent splashproof front door can be added to the housing, in order to protect the unit from excessive moisture or corrosive fumes. The package is supplied complete with fixing clamps for panel mounting.

## Functional specifications

### Display

The controller provides a digital readout on a 3 1/2 digit display that allows reading even at long distances.

### Calibration

The zero and the sensitivity adjustment is done by means of trimmers mounted on the front panel.

### Control relays

The controller features two on-off regulators.

Set-points are independent and their value is displayed by pushing a button on the front panel.

Relays activation is displayed on the front panel by their corresponding LEDs.

### Analog output

Instruments provide a 0/20 mA analog output (4/20 mA, volt on request). The 0/20 mA output may be adjusted to 4/20 mA by the operator.

## Options

Functional features may be extended by following options:

**091.203:** 0/5 s delay and selectable min/max relays function

**091.311:** 4/20 mA output

**091.362:** isolated analog output

**091.403:** 24 Vac power supply

## Common Specifications

**Zero:** adjustment:  $\pm 15\%$

**Slope adjustment:**  $\pm 20\%$

**Output:** 0/20 mA dc 300 ohm max.

**Regulator hysteresis:**  $\pm 0,25\%$

**Switching Time:**  $< 0.5$  s

**Relay contacts:** SPDT 5 A 220 V resistive load

**Temperature:** 0/50 °C

**Humidity:** 95% without condensate

**Voltage:** 110/220 V  $\pm 10\%$  50/60 Hz

**Power:** 3 VA max.

**Terminal blocks:** extractable

**Weight:** 500 g

**Size:** 96 x 96 x 150 mm (1/4 DIN)

# Electrochemical Monitors



## PH 7615 pH controller

Input signal comes directly from pH electrode.  
The controller provides an Automatic Temperature Compensation with the Pt100 device.

### Specifications

**Input:** pH electrode (glass/Ref)  
**ATC:** RTD Pt100  
**Scale:** 0/14.00 pH  
**Input Current:** < 2 pA  
**Input Impedance:** > 10<sup>12</sup> ohm

## MV 7615 O.R.P. controller

Input signal comes directly from an O.R.P. combination electrode (Pt/Ref. - Au/Ref. - Ag/Ref. etc..)

### Specifications

**Input:** ORP electrode  
**Display scale:** ±1500 mV  
**Regulators scale:** 0/1000 mV  
**Input Current:** <2 pA  
**Input Impedance:** > 10<sup>12</sup> ohm

## C 7615 E. Conductivity controller

The instrument is provided with 3 inputs corresponding to 3 scales. Automatic Temperature Compensation by means of an RTD Pt100 and scales up to 200 mS are available as options for OEM applications.

### Specifications

**Input:** from conductivity cell  
**Scales:** 0/19.99 - 0/199.9 - 0/1999 µS  
**K adjustment:** from 0 to 2  
**Frequency:** selectable  
**Option 091.131:** scales 0/1.999 - 0/19.99 - 0/199.9 mS  
**Option 091.532:** ATC with Pt100 (Temperature Coefficient 2 %/°C)



## C 7615.010 E. Conductivity controller

The instrument is provided with 3 inputs corresponding to 3 scales, scale extension up to 199.9 mS, adjustable delay on relays activation and selectable min/max function.

Automatic Temperature Compensation by means of an RTD Pt100 is available.

### Specifications

**Input:** from conductivity cell and Pt100  
**Scales:** 0/19.99 - 0/199.9 - 0/1999 µS  
0/1.999 - 0/19.99 - 0/199.9 mS  
**Decimal point:** selectable  
**K adjustment:** from 0 to 2  
**Frequency:** selectable  
**Temperature compensation:** automatic 0/100 °C  
**Temperature coefficient:** 2 %/°C  
**Temperature reference:** 20 °C  
**Min/max relays function:** selectable  
**Relays delay:** 0/5 s

## OD 7615 Dissolved Oxygen controller

This instrument presents all the advantages of a modern and reliable measurement of dissolved oxygen in industrial plants and fermentation. Input signal comes from a polarographic cell.

It also features Automatic Temperature Compensation by means of a Pt100 device.

The controller provides a digital readout of dissolved oxygen in % of air (selectable in PPM by internal switches).

### Specifications

**Input:** from 3 nA/PPM polarographic cell  
from RTD Pt100  
**Scale:** 0/199.9 % of Air saturation (0/19.99 PPM selectable)  
**Temperature compensation:** automatic 5/45 °C  
**Cell voltage:** 675 mV (others on request)  
**Option 091.101:** special scales  
**Option 091.114:** input from 30 nA/PPM cell

# Electrochemical Monitors

## CL 7615

### Potentiostatic Chlorine controller



This unit, together with the flow cell and the potentiostatic electrode, is the best and most advanced system for chlorine measurement.

Because of the potentiostatic measuring method, it is not necessary to recalibrate the zero, the measuring is very accurate and direct chlorine readout appears on the display.

Also this accurate method prevents the fluctuation of the chlorine levels as on the amperometric and ORP methods.

This potentiostatic system represents the state of the art in the drinking water, swimming pool industry and others.

#### Specifications

**Input:** from potentiostatic electrode SZ 283

**Scale:** 0/5.00 PPM (others as requested)

**Hysteresis:**  $\pm 0.03$  PPM

## Accessories

### SZ 283

Potentiostatic electrode



### SZ 7231

Flow cell for chlorine sensor

### SZ 7233

Flow cell for 3 sensors:  
Chlorine, pH, ORP



### SZ 7251

Autocleaning flow cell for chlorine sensor



## TR 7615

### Temperature controller

This instrument presents all the advantages of a precise and reliable measurement and regulation of temperature in industrial applications.

It is suitable for use in fermentation plants.

#### Specifications

**Input:** from thermoresistance Pt100

**Scale:** 0/199.9 °C

**Resolution:** 0.1 °C

**Sensor connection:** 3 wires

## BC 7615

### Digital controller

This general purpose instrument completes the 7615 series.

It allows the display of any type of measurement made by instruments with a 0/20 mA output current.

It also has a 0/20 mA negative input, therefore its applications can be extended to the display and regulation of the difference between two measured values.

#### Specifications

**Input:** +0/20 mA and -0/20 mA (others on request)

**Scale:** 0/100% (others on request)

**Option 091.115:** input 0/5 V

**Option 091.116:** input  $\pm 4/20$  mA

## BC 7615.101

### Toxic gas controller

This instrument maintains the specifications of the BC 7615 model.

It is designed to be used with a 2-wire toxic gas transmitter, 4/20 mA.

#### Specifications

**Input:** 4/20 mA

**Scale:** 0/10.0 (others on request)

**Option 091.1351:** scale 0/1,00 PPM

**Option 091.1352:** scale 0/14.0 pH

**Option 091.1353:** scale 0/5.00 PPM

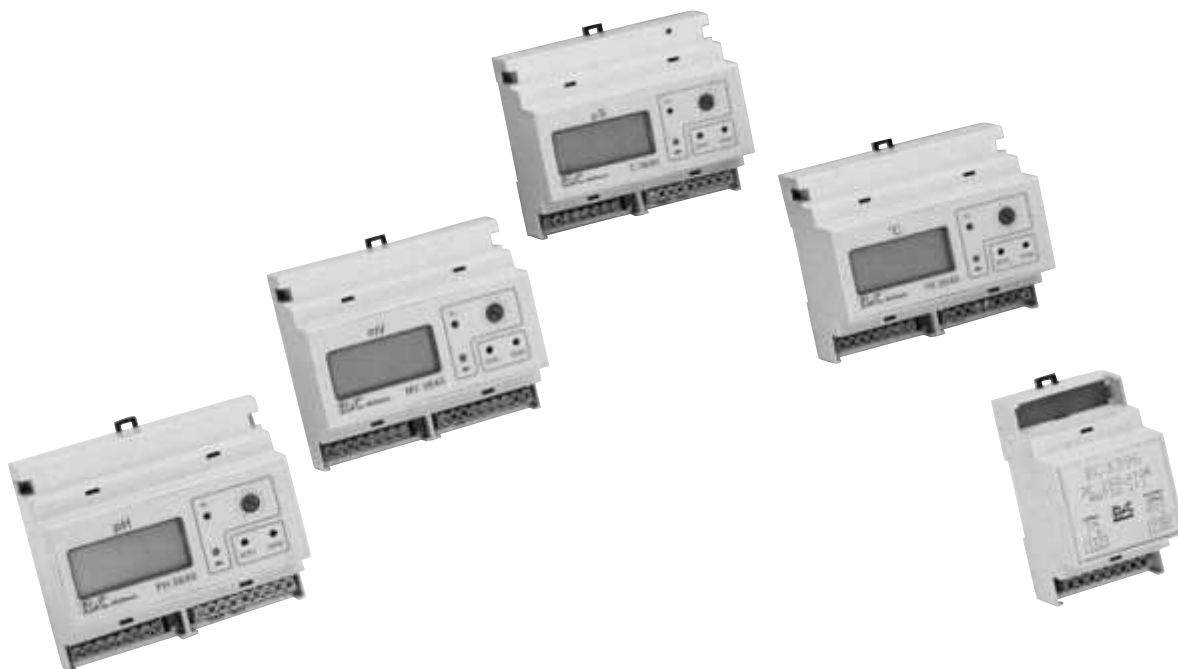
**Option 091.1354:** scale 0/50.0 PPM

**Option 091.1361:** scale 0/29.0 mg/m<sup>3</sup>

## Accessories for the 7615 Series

See accessories of 7685 Series on page 28.

# Electrochemical Monitors



## 3000 SERIES DIN Rail

- **High accuracy**
- **High reliability**
- **Modular design**
- **Low installation costs**
- **Compact size**

This series of analyzers and transmitters has been designed for the measurement and control of:

- **pH**
- **O.R.P.**
- **Conductivity**
- **Electrodeless Conductivity**
- **Dissolved Oxygen**
- **Residual Chlorine**
- **Temperature**

for OEM applications in industrial process, with continuous readings on LCD display.

These instruments provide accurate, low cost measuring and control for industrial process, water treatment and wastewater applications.

## Accessories

### **BC 95106**

Frame for panel mounting of DIN Rail instrument (6 modules).



### **BC 9408**

Water-tight enclosure for 1 unit  
Protection: IP 65 (NEMA 4X)  
Dimensions: 205 x 220 x 140 mm

### **BC 9412**

Water-tight enclosure for 2 units  
Protection: IP 65 (NEMA 4X)  
Dimensions: 275 x 220 x 140 mm

### **BC 9491**

Wall mounting brackets for BC 9408 and BC 9412



**BC 9408**

**BC 9412**

*example of installation in BC 9408 and BC 9412*

# Electrochemical Monitors

## 3645 - 3655 Models



- **LCD Display**
- **Automatic Temperature Compensation**
- **Set point values display**
- **HI/LO selectable limits**
- **Adjustable relay time delay**
- **4/20 mA output**
- **Detachable terminal block**

### PH 3645 pH controller

**Scale:** 0/14.00 pH  
**ATC:** NTC 10K

### MV 3645 O.R.P. controller

**Scale:** 0/1000 mV

### C 3645 E. Conductivity controller

**Scale:** 0/1999  $\mu$ S (options 199.9  $\mu$ S and 19.99 mS)  
**Input:** 2-electrode E.C. cell 4-electrode E.C. cell  
**ATC:** NTC 10K  
**Temperature coefficient:** 2 %/°C

### OD 3645 Dissolved Oxygen controller

**Scale:** 0/199.9 % air saturation (others as requested)  
**Input:** polarographic cell  
**Input Current:** 250 nA (others as requested)  
**Polarization:** 675 mV  
**ATC:** NTC 10K (Temperature coefficient: as requested)

### OD 3645.012 Dissolved Oxygen controller

**Scale:** 0/19.99 PPM - 0/100.0% air saturation  
**Input:** galvanic cell  
**Slope:** 6.0/35.0 mV in air at 20 °C  
**ATC:** dual NTC 100 K

### TR 3645 Temperature controller

**Scale:** -20/+120 °C  
**Input:** RTD Pt 100 (3 wire)

### C 3655

#### Electrodeless Conductivity controller

**Scale:** 0/199.9 mS  
**Electrodeless Cell:** type SI 315 or SI 315.1  
**Automatic Temperature Compensation:** Pt100 sensor  
**Temperature coefficient:** 2 %/°C  
**Option 091.1331:** scale 0/19.99 mS  
**Option 091.1333:** scale 0/1999 mS

### CL 3655.012 Residual Chlorine controller

**Scale:** 0/1.999 PPM (others on request)  
**Temperature compensation:** automatic with Pt100  
**Chlorine sensor:** CL 7901  
**D. Ozone sensor:** OZ 7901

### BC 3396 Galvanic isolator

This loop powered DC/DC converter transfers the primary 0/20 mA on the galvanically isolated secondary circuit.  
**Voltage:** 15 Vdc max. (Internal loss 5 Vdc)  
**Dimensions:** 52.5 x 95 x 58 mm (3 DIN Rail modules)

### Specifications

(3645 and 3655 models)

**Display:** LCD

**Zero Adjustment:**  $\pm$  15%

**Slope Adjustment:**  $\pm$  20%

**Automatic Temperature Compensation:** NTC 10K

**Output:** 4/20 mA dc 300 ohm max

**Relay contacts:** SPDT 220 V 5 A resistive load

**Hysteresis:**  $\pm$  0.25%

**Switching Time:** < 0.5 s

**Relay Time Delay:** adjustable 0/40 s

**Operating Temperature:** 0/50 °C

**Operating Humidity:** 0/95% R.H. non-condensing

**Power supply:** 110/220 V  $\pm$ 10% 50/60 Hz 2 VA

**Isolation:** 4 kV (Iec 348)

**Weight:** 265 g

**Dimensions:** 105 x 95 x 90 mm (6 DIN Rail modules)

**Mounting:** DIN Rail (35 x 7.5 mm Rail)

**Option 091.402:** 24 Vac power supply

*The technical specifications could be changed without notice.*

# Electrochemical Monitors

## 3647 Models

Dual set-point

### PH 3647

PH controller

- LCD Display
- Automatic Temperature Compensation
- Dual set points
- Set point values display
- HI/LO selectable limits
- Adjustable relay time delay
- 4/20 mA output
- DIN Rail mounting
- Detachable terminal block connectors

### General informations

The pH controller incorporates a large LCD display which is easily readable even from considerable distances.

The controller will display set point values by depressing a button on the front panel next to the corresponding adjustment potentiometer.

The HI/LO function may be selected for each relay.

Dead Band relay adjustment allows relay activation to be delayed from 0/40 Seconds.

Automatic Temperature Compensation is achieved with use of a NTC 10K.

The 4/20 mA output is available for input into recorders or other devices requiring a 4/20 mA input signal.

Zero and sensitivity (span) calibration adjustments are located on the front panel and are easily accessible.

The controller may be powered by an external power supply 110/220 Vac.

All plastic construction provides maximum resistance to corrosion.

Detachable terminal block connectors and DIN Rail mounting provide for easy field installation.

### Accessories

See Series 3000 accessories.



### Specifications

**Display:** LCD

**Input:** pH electrode  
NTC 10 Kohm

**Output:** 4/20 mA dc 300 ohm max.

**Scale:** 0.00/14.00 pH

**Temperature Compensation:** automatic 0/80 °C  
error < ± 0.2 pH

**Zero:** adjustable ± 10 %

**Sensitivity:** adjustable from -5% to +15%

**Input Current:** < 2 pA

**Input Resistance:** > 10<sup>12</sup> ohm

**Set points:** dual

**Relays contacts:** SPST 220 Vac 5 A (resistive load)

**Hysteresis:** ± 0.4 %

**Relay Time Delay:** adjustable 0/40 s

**Operating Temperature:** 0/50 °C

**Operating Humidity:** 0/95% R.H. non-condensing

**Power Supply:** 110/220 V 50/60 Hz 3 VA

**Terminal block:** detachable

**Net Weight:** 265 g

**Dimensions:** 105 x 95 x 58 mm (6 modules)

**Mounting:** DIN Rail (35 x 7.5 mm Rail)

**Option 091.402:** 24 Vac power supply

*The technical specifications could be changed without notice.*

# Electrochemical Monitors

## MV 3647 O.R.P. controller

- LCD Display
- Dual set points
- Set point values display
- HI/LO selectable limits
- Adjustable relay time delay
- 4/20 mA output
- DIN Rail mounting
- Detachable terminal block connectors

### General informations

The O.R.P. controller incorporates a large LCD display which is easily readable even from considerable distances.

The controller will display set point values by depressing a button on the front panel next to the corresponding adjustment potentiometer.

The HI/LO function may be selected for each relay.

Dead Band relay adjustment allows relay activation to be delayed from 0/40 Seconds.

The 4/20 mA output is available for input into recorders or other devices requiring a 4/20 mA input signal.

Zero and Sensitivity (Span) calibration adjustments are located on the front panel and are easily accessible.

The controller may be powered by an external power supply 110/220 Vac.

All plastic construction provides maximum resistance to corrosion.

Detachable terminal block connectors and DIN Rail mounting provide for easy field installation.

### Accessories

See Series 3000 accessories.



### Specifications

**Display:** LCD

**Input:** O.R.P. electrode

**Output:** 4/20 mA dc 300 ohm max.

**Scale:** 0/1000 mV

**Zero:** adjustable  $\pm 10\%$

**Sensitivity:** adjustable from  $-5\%$  to  $+15\%$

**Input Current:**  $< 2\text{ pA}$

**Input Resistance:**  $> 10^{12}\text{ ohm}$

**Set points:** dual

**Relays contacts:** SPST 220 Vac 5 A resistive

**Hysteresis:**  $\pm 0.4\%$

**Relay Time Delay:** adjustable 0/40 Seconds

**Operating Temperature:** 0/50 °C

**Operating Humidity:** 0/95% R.H. non-condensing

**Power Supply:** 110/220 V 50/60 Hz 3 VA

**Terminal block:** detachable

**Net Weight:** 265 g

**Dimensions:** 105 x 95 x 58 mm (6 modules)

**Mounting:** DIN Rail (35 x 7.5 mm Rail)

**Option 091.402:** 24 Vac Power supply

*The technical specifications could be changed without notice.*

# Electrochemical Monitors

## 3630 Models

Two-wire transmitters

### PH 3630

pH Transmitter

### MV 3630

O.R.P. Transmitter

- Two wire 4/20 mA operation
- Isolated current loop output
- LCD display
- Automatic or Manual Temperature Compensation (pH)
- Temperature display (pH)
- 10/30 Vdc power supply
- Direct connection to PC's
- Din Rail mounting
- Detachable terminal block connectors

### General informations

pH and O.R.P. transmitters incorporate a large LCD display which is easily readable even from considerable distances.

Transmitters are powered by an external power supply from 10 to 30 Vdc. The same two wires which provide power to the transmitter also carry the 4/20 mA output pH signal.

Zero and Sensitivity (span) calibration adjustments are located on the front panel and are easily accessible.

The 4/20 mA output is isolated for input into recorders or other devices requiring a 4/20 mA signal.

The input/output isolation also allows input into PLC, DCS or Personal Computers accepting 4/20 mA signals.

A common power supply may be used to power other transmitters without interference from other measurement devices or sensors.

All plastic construction provides maximum resistance to corrosion. Detachable terminal block connectors and Din Rail mounting provide for easy field installation.

The PH 3630 transmitter will display temperature values of manual or automatic temperature compensation devices.

Automatic Temperature Compensation is achieved with use of a 100 ohm platinum RTD.



### Specifications

**Display:** LCD

**Inputs pH 3630:** pH electrode Pt100 3 wire

**Input MV 3630:** O.R.P. electrode

**Output:** 4/20 mA dc isolated

**Scales PH 3630:** 0/14.00 pH -10.0/120.0 °C

**Scale MV 3630:** 0/1000 mV

**Temperature Compensation:** manual or automatic (PH 3630 only)

**Zero:** adjustable  $\pm 15\%$

**Sensitivity:** adjustable from 86% to 112%

**Input Current:** < 2 pA

**Input Resistance:** >  $10^{12}$  ohm

**Operating Temperature:** 0/50 °C

**Operating Humidity:** 0/95% R.H. non-condensing

**Power supply:** 10/30 Vdc

**Isolation:** 500 V input to output

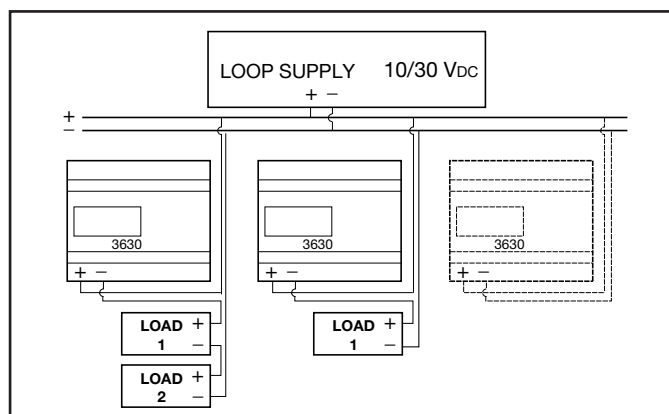
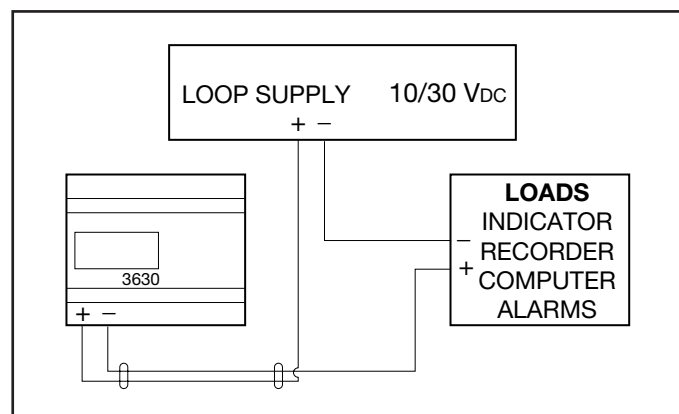
**Terminal block:** detachable

**Net Weight:** 200 g

**Dimensions:** 105 x 95 x 58 mm (6 modules)

**Mounting:** DIN Rail (35 x 7.5 mm Rail)

*The technical specifications could be changed without notice.*



# Electrochemical Monitors

## C 3630

### E. Conductivity Transmitter

- Two wire 4/20 mA Operation
- Isolated Current loop output
- LCD Display
- 3 selectable scales
- Accepts 2 or 4 electrodes E.C. cell
- Automatic or Manual Temperature Compensation
- Temperature Display
- Frequency selectable
- Decimal point selectable
- 10/30 Vdc Power Supply
- Direct Connection to PC's
- Din Rail mounting
- Detachable terminal block connectors

### General informations

The conductivity transmitter incorporates a large LCD display which is easily readable even from considerable distances.

The transmitter will display temperature values of manual or automatic Temperature compensation devices.

Automatic Temperature Compensation is achieved with use of a 100 ohm platinum RTD, with temperature coefficient display.

The transmitter is powered by an external power supply from 10 to 30 Vdc. The same two wires which provide power to the transmitter also carry the 4/20 mA output conductivity signal.

Zero and sensitivity (span) calibration adjustments are located on the front panel and are easily accessible.

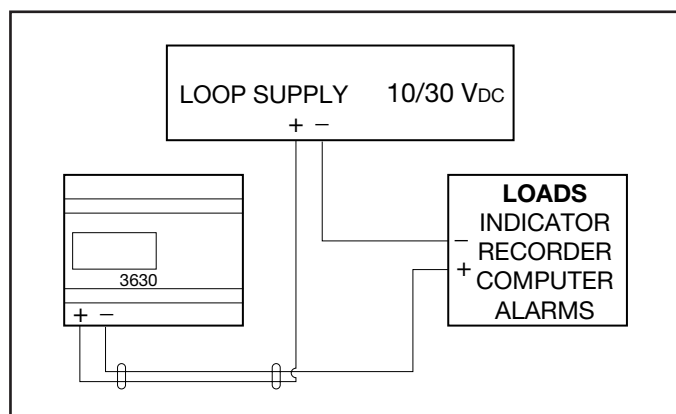
The 4/20 mA output is isolated for input into recorders or other devices requiring a 4/20 mA input signal.

The input/output isolation also allows input into Personal Computers accepting 4/20 mA inputs.

A common power supply may be used to power other transmitters without interference from other measurement devices or sensors.

All plastic construction provides maximum resistance to corrosion.

Detachable terminal block connectors and Din Rail mounting provide for easy field installation.



### Specifications

**Display:** LCD

**Inputs:** 2-electrodes E.C. cell 4-electrodes E.C. cell  
RTD Pt 100 2 or 3 wire

**Output:** 4/20 mA isolated

**Scales:** 0/199.9 µS 0/1999 µS 0/19.99 mS -10.0/120.0 °C

**Temperature Compensation:** manual or automatic

**Temperature Compensation Coefficient:** 0/4.0 %/°C adjustable

**Temperature Compensation Reference:** 20 °C

**Zero:** adjustable ±15%

**Sensitivity:** adjustable from 86% to 112% narrow range  
adjustable 0/160% wide range

**Operating Temperature:** 0/50 °C

**Operating Humidity:** 0/95% R.H. non-condensing

**Power supply:** 10/30 Vdc

**Isolation:** 500 V input to output

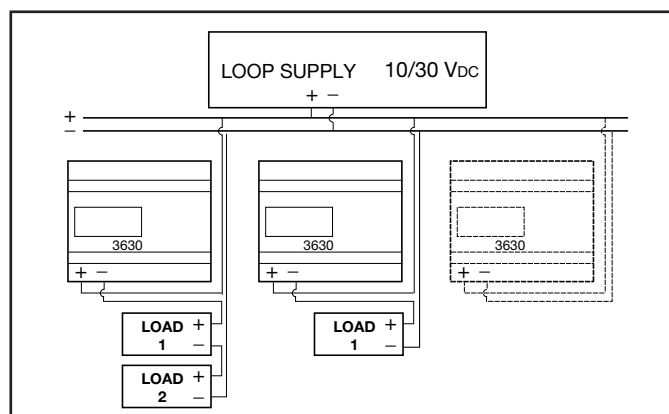
**Terminal block:** detachable

**Net Weight:** 200 g

**Dimensions:** 105 x 95 x 58 mm (6 modules)

**Mounting:** DIN Rail (35 x 7.5 mm Rail)

*The technical specifications could be changed without notice.*



# Electrochemical Monitors *(new products soon available)*

## 3630 SERIES

Two-wire transmitters



### CL 3630

Residual Chlorine transmitter  
Dissolved Ozone transmitter

### OD 3630

Dissolved Oxygen transmitter

Ask our sales department for more information

## 7635 SERIES

Microprocessor-based



• Available controllers:

- **PH 7635** pH - ORP - Temperature
- **C 7635** E.Conductivity - Resistivity
- **CL 7635** Residual Chlorine - Dissolved Ozone
- **OD 7635** Dissolved Oxygen
- **BC 7635** General purpose

• Display: LED 3 1/2 digit

• Selectable scales

• Temperature readout

• Automatic/manual Temperature compensation

• 0/20 or 4/20 mA isolated output

• Dual Set-point with min/max and delay functions

• Alarm relay with min/max and delay function

• Set-point and alarm parameters readout

• Relays status visualization

• Software:

- user friendly
- messages sent to the display
- access code to the configuration

# Probes - Sensors

## SUBMERSIBLE PROBES

### pH - ORP - Dissolved Oxygen



**ST 683**      **ST 181.1**      **SI 181**

*examples of immersion probes*

The probes include the sensors.  
They have an adjustable collar for the immersion depth.  
SZ 740 junction box and SZ 901 autoclean fitting may be installed on the probes.

**SI 111**  
pH probe with electrode type SZ 165. Length 210 mm.

**SI 161**  
pH probe with electrode type SZ 165. Length 720 mm.

**SI 181**  
pH probe with electrode type SZ 165. Length 1170 mm.

**SI 262**  
ORP probe with electrode type SZ 265 (Gold/Ref.). Length 720 mm.

**SI 263**  
ORP probe with electrode type SZ 275 (Platinum/Ref.). Length 720 mm.

**SI 683**  
D.Oxygen probe with polarographic sensor type SZ 654.1. Length 1170 mm.

#### Specifications

**Body:** PVC

**Diameter:** 34 mm.

**Depth:** adjustable

**Operating temperature:** 40 °C max.

**Options:** special materials and length

## Submersible probes with microtransmitter

### pH - ORP - D.Oxygen

The probes include the sensor and microtransmitter.  
They have an adjustable collar for the immersion depth.  
SZ 901 autoclean fitting may be installed on the probes.

**ST 161.1**  
pH probe with electrode type SZ 171 and microtransmitter 080102.  
Length 750 mm.

**ST 181.1**  
pH probe with electrode type SZ 171 and microtransmitter 080102.  
Length 1200 mm.

**ST 262.1**  
ORP probe with electrode type SZ 265 (Gold/Ref.) and microtransmitter 080102. Length 750 mm.

**ST 282.1**  
ORP probe with electrode type SZ 265 (Gold/Ref.) and microtransmitter 080102. Length 1200 mm.

**ST 263.1**  
ORP probe with electrode type SZ 275 (Platinum/Ref.) and microtransmitter 080102. Length 750 mm.

**ST 283.1**  
ORP probe with electrode type SZ 275 (Platinum/Ref.) and microtransmitter 080102. Length 1200 mm.

**ST 683**  
D.Oxygen probe with polarographic sensor type SZ 654.1 and microtransmitter 080610.2. Length 1200 mm.

#### Specifications

**Body:** PVC

**Diameter:** 34 mm.

**Depth:** adjustable

**Operating Temperature:** 40 °C max.

**Options:** special materials and length

## Accessories

**SZ 901** Fitting for chemical autocleaning

**SZ 740** Junction box for probes type SI

**SZ 911** Stopper for SZ 740 and microtransmitters (used when not installed on the top of the probe)



**SZ 740**

**SZ 911**

**SZ 901**

# Probes - Sensors

## E. Conductivity probes

Two electrodes



### SI 301

In-line E. Conductivity probe

**Applications:** from 0 to 2 mS

**Cell constant:** K=1

**SI 301 Body:** PVC

**2 Electrodes:** 316 S.Steel

**Thread:** 1" BSP

**Operating Temperature:** 40 °C max.

**Operating Pressure:** 3 bar max. at 25 °C

**Option:** non standard materials and cell constant.

### SI 3013

In-line E. Conductivity probe

**Applications:** from 0 to 2 mS

**Cell constant:** K=1

**SI 3013 Body:** Polypropilene

**2 Electrodes:** 316 S.Steel

**Thread:** 1" BSP

**Operating Temperature:** 50 °C max.

**Operating Pressure:** 3 bar max. at 25 °C

**Option:** non standard materials and cell constant.



### SI 308T

In-line E. Conductivity probe + Pt100

**Applications:** for high purity water.

**Cell constant:** K=0.01

**Body:** PVC

**Electrodes:** 316 S.Steel

**Temperature sensor:** Pt100

**Thread:** 1" BSP

**Operating Temperature:** 50 °C max.

**Operating Pressure:** 3 bar max. at 25 °C

## Special E. Conductivity probes

Two electrodes



SZ 3320.1

SZ 3330.1



SAN 621



SZ 3300.1

### SZ 3320.1 - SZ 3330.1

For high Temperature/Pressure.

**Applications:** High purity water.

**Cell constant SZ 3320.1:** K = 0.1 cm<sup>-1</sup>

**Cell constant SZ 3330.1:** K = 1 cm<sup>-1</sup>

**Thermocompensator:** Pt100

**Material in contact with liquids:** S. Steel, PEEK L=55 mm

**Temperature:** 205 °C max.

**Pressure:** 16 bar max. at 25 °C

**Connector:** 4-pin

**Thread:** 3/4" NPT

### SAN 621-3-1-5S

Pressurizable/Sterilizable.

**Applications:** High purity water, pharmaceutical industry.

**Cell constant:** K = 0.1 cm<sup>-1</sup>

**Thermocompensator:** Pt100

**Material in contact with liquids:** S. Steel, PEEK L=55 mm

**Temperature:** 121 °C max.

**Pressure:** 6 bar (10 bar at 20 °C).

**Connector:** 4-pin

**Fixing:** Tri-Clamp 2"

### SZ 3300.1

Graphite Electrodes.

**Applications:** From 200 µS to 200 mS.

**Cell constant:** K = 1 cm<sup>-1</sup>

**Thermocompensator:** Pt100

**Material in contact with liquids:** PES-graphite L=55 mm

**Temperature:** 150 °C max. at 10 bar

**Pressure:** 16 bar at 20 °C.

**Connector:** 4-pin

**Thread:** 3/4" NPT

# Probes - Sensors

## E. Conductivity probes

### Four electrodes



#### SI 311

4-Electrode E. Conductivity probe + Pt100

**Applications:** for immersion and in-line applications.  
Suitable for microtransmitter type 080310.

**Cell constant:** K=1

**Body:** Polypropylene

**Electrodes:** 316 S.Steel

**Temperature sensor:** Pt100

**Thread:** 1" BSP

**Operating Temperature:** 80 °C max.

**Operating Pressure:** 3 bar max. at 25 °C

**Cable:** 3 m



#### SZ 312.4

4-Electrode E. Conductivity probe + NTC 10K

**Applications:** for immersion and in-line applications.  
Suitable for C 3645.

**Cell constant:** K=0.7

**Body:** PVDF

**Electrodes:** 316 S.Steel

**Temperature sensor:** NTC 10K

**Thread:** 1/2" BSP on the top of the sensor

**Operating Temperature:** 80 °C max.

**Operating Pressure:** 3 bar max. at 25 °C

**Cable:** 3 m

## E. Conductivity probes

### Four electrodes with microtransmitter



#### ST 311

4-Electrode Conductivity probe with microtransmitter 080310.

For in-line and immersion applications.

This probe is an assembling of SI 311 + 080310 microtransmitter, suitable for C 7685 or C 565.2 controllers.

Connection by cables + connector type SZ 9481 (10 m) or SZ 9483 (30 m).

**Measuring range:** 0/2000 mS

**Operating Temperature:** 80 °C max. (body)  
40 °C max. (microtransmitter)

**Length:** 210 mm (other as requested)



#### ST 31011

4-Electrode Conductivity probe with microtransmitter 080310.

For in-line and immersion applications.

Suitable for C 7685 or C 565.2 controllers connected by SZ 9481 (10 m) or SZ 9483 (30 m) cables + connector.

**Measuring range:** 0/2000 mS

**Body:** PVDF

**Operating Temperature:** 100 °C max. (body)  
40 °C max. (microtransmitter)

**Length:** 210 mm (other as requested)

**Fixing:** DN 25 tapered collar

## Accessories

**SZ 9481** 10 m cable with connector 2231520

**SZ 9483** 30 m cable with connector 2231520

# Probes - Sensors

## Electrodeless Conductivity Probes



### SI 315

Electrodeless conductivity probe + Pt100

In-line and immersion applications.

Suitable for microtransmitter 080315 and C 3655 controller.

**Applications:** from 2000  $\mu$ S to 20 S, food, chemical, galvanic industry

**Body:** PVDF in contact with the liquid

**Temperature sensor:** Pt100 built-in

**Operating Temperature:** 80 °C max

**Operating Pressure:** 3 bar max. at 25 °C

**Length:** 200 mm

**Diameter:** 34 mm

**Cable:** 3 m

**Fixing:** by fitting SZ 724

**Option:** non standard length



### SI 315.1

Electrodeless Conductivity probe + Pt100

In-line and immersion applications.

Suitable for microtransmitter 080315 and C 3655 controller.

**Applications:** from 2000  $\mu$ S to 20 S, food, chemical, galvanic industry

**Body:** PVDF in contact with the liquid

**Temperature sensor:** Pt100 built-in

**Operating Temperature:** 80 °C max

**Operating Pressure:** 3 bar max. at 25 °C

**Length:** 200 mm

**Diameter:** 34 mm

**Cable:** 3 m

**Fixing:** DIN 32 tapered collar for DIN 11851-52

**Option:** non standard length

## E. Conductivity Probes with microtransmitter



### ST 315

Electrodeless Conductivity probe with microtransmitter 080315.

For in-line and immersion applications.

This probe is an assembling of SI 315 + 080315 microtransmitter, suitable for C 7685 or C 565.2 controllers.

Connection by cables + connector type SZ 9481 (10 m) or SZ 9483 (30 m).

**Applications:** from 2000  $\mu$ S to 20 S, food, chemical, galvanic industry

**Cell constant:**  $K = 1 \text{ cm}^{-1}$

**Body:** PVDF in contact with the liquid

**Temperature sensor:** Pt100 built-in

**Operating Temperature:** 80 °C max at 1 bar

**Operating Pressure:** 3.5 bar max. at 25 °C

**Length:** 255 mm

**Diameter:** 34 mm

**Fixing ST315:** by fitting SZ 724

**Option:** non standard length

## Accessories

**SZ 9481** 10 m cable with connector 2231520

**SZ 9483** 30 m cable with connector 2231520

**2231520** IP 67 connector for cable

**2423407** 7 wires cable



**SZ 724** Fittings for DN40 fixing.

To be used with SI 315 and ST 315

# Toroidal E. Conductivity

## ST 315.21 Submersible probe



### Principle of operation

When the electrodeless conductivity sensor is immersed in the solution to be measured, a conductive loop is created through the two toroidally wound coils. An alternating current is applied to one of the coils which induces a current in the conductive loop. The second coil is used to measure the conductivity which is proportional to the induced current in the solution. The advantages of the electrodeless method are more apparent in measurement applications in which electrodes contamination and polarization of a conventional conductivity system can lead to erroneous readings.

### Probe assembly

The submersible probe is a 5 part assembly:

- a sensing toroidal element with a built-in temperature sensor
- a mounting adapter screwed to the back of the sensing element. The back end is FNPT threaded for 1" pipe mounting.
- a mounting adapter screwed to the bottom of the microtransmitter. The back end is FNPT threaded for 1" pipe mounting.
- a microtransmitter type 080315
- an extension pipe threaded two ends MNPT, not included in the package

This probe is compatible with C 7685 and C 565.2 Nieuwkoop controllers.

### Specifications

**Installation:** submersible

**Microtransmitter:** model 080315 (PVC housing)

**Cell:** toroidal

**Temperature sensor:** Pt100

**Materials:** PVC

**Extension:** 3 m max

**Max. Temperature:** 40 °C part in contact with liquid

**Temperature coeff.:** TC of the liquid + 0.3 %/°C

**Max. Pressure:** 3 Atm. at 25 °C

**Cable length:** 3.5 m

**Protection:** IP68

### Accessories

**SZ 9481** 10 m cable with connector 2231520

**SZ 9483** 30 m cable with connector 2231520

**2231520** IP67 connector for cable

## Toroidal E. Conductivity Loop powered transmitters



**New**

**ST 3254.1** 0/10 mS range

**ST 3254.2** 0/100 mS range

**ST 3254.3** 0/1000 mS range

**ST 3214.5** 0/200 mS range

This E. Conductivity monitoring system consists of a loop powered transmitter and an electrodeless conductivity sensor in a single package. Temperature compensation is accomplished with a built-in sensor. Applications include water treatment, cooling tower and water monitoring. Three models are available for specific measuring range.

### Principle of operation

When the electrodeless conductivity sensor is immersed in the sample to be measured, a conductive loop is created through the two toroidally wound coils. An alternating current is applied to one of the coils which induces a current in the conductive loop.

The second coil is used to measure the conductivity which is proportional to the induced current in the solution.

The advantages of the electrodeless method are more apparent in measurement applications in which electrodes contamination and polarization of a conventional conductivity system can lead to erroneous readings.

Each probe contains:

- two measuring toroidal coils
- temperature sensor
- 4/20 current loop amplifier

### Specifications

**Measuring method:** toroidal

**Power supply:** 11/30 Vdc

**Temperature sensor:** built-in

**Load:** 600 ohm max. at 24 Vdc

**Max. temperature:** 50 °C part in contact with liquid

**Temperature Coefficient:** 2.2 %/°C (2.0 for ST 3214.5)

**Temperature Reference:** 25 °C (20 °C for ST 3214.5)

**Max. Pressure:** 10 bar at 25 °C

**Length:** 207 mm

**Thread:** 1 1/2" MNPT (both sides)

**Body:** PVC-C

**Cable length:** 3 m    **Installation:** in-line or submersible

# Probes - Sensors

## Temperature probes Industrial



**SI 520**

**SI 520**

In-line Temperature probe. Sensor: RTD Pt100 DIN 0.5

**Sensor:** RTD Pt100 DIN 0.5

**Body:** 316 S.Steel

**Length:** rod 150 mm

**Diameter:** 8 mm

**Fixing:** 1/2" BSP

**SI 540**

Immersion Temperature probe. Sensor: RTD Pt100 DIN 0.5

**Sensor:** RTD Pt100 DIN 0.5

**Body:** 316 S.Steel

**Length:** rod 500 mm

**Diameter:** 6 mm



**SI 540**

## Temperature probes Portable



**SP 51501 - SP 510**

**SP 510**

Temperature probes for portable meters.

**Sensor:** RTD Pt100 DIN 0.5

**Body:** 316 S.Steel

**Length:** 100 mm

**Diameter:** 5 mm

**Cable:** 1.5 m with jack connector

**SP 514**

Temperature probes for portable meters.

**Sensor:** RTD Pt100 DIN 0.5

**Body:** 316 S.Steel

**Length:** 100 mm

**Diameter:** 5 mm

**Cable:** 5 m

**SP 51501**

Temperature probe for portable meters.

**Sensor:** RTD Pt1000 DIN 0.5

**Body:** 316 S.Steel

**Length:** 100 mm

**Diameter:** 5 mm

**Cable:** 1.5 m with jack connector

**SP 51511**

Temperature probes for laboratory/portable meters.

**Sensor:** RTD Pt1000 DIN 0.5

**Body:** epoxy

**Length:** 110 mm

**Cable:** 1.5 m with jack connector



**SP 51511**

# Probes - Sensors



Ask for special electrodes not included in the following list.

## Epoxy pH electrodes



**SZ 142** pH electrode Glass/Ref. combination, epoxy body, Gel sealed, cable 1.5 m with BNC.

**Applications:** clean water, portable instruments, swimming-pools.

**SZ 145** pH electrode Glass/Ref. combination, epoxy body, Gel sealed, cable 9 m.

**Applications:** clean water at room temperature, industrial instruments. In-line up to 7 bar.

**SZ 1021** pH electrode, Glass/Ref. combination, sealed Gel, epoxy body. Low cost (10 pcs minimum order), cable 1 m with BNC.

**Applications:** portable instruments.

**SZ 1025** pH electrode, Glass/Ref. combination, sealed Gel, epoxy body. Low cost (10 pcs minimum order), cable 9 m.

**Applications:** clean water at room temperature, industrial instruments. In-line up to 7 bar.



**SZ 151** pH electrode glass/Ref. double junction combination, epoxy body for high temperature applications, cable 1.5 m with BNC.

**Applications:** very contaminated liquids or high temperature.



**SZ 1075** Antimony pH electrode, combination, epoxy body, cable 9 m.

**Applications:** liquids with HF acid contents. It requires a special input pHmeter.

## Glass pH electrodes



**SZ 160** pH Electrode Glass/Ref combination, glass body, anular junction, S7 connector.

**Applications:** contaminated liquids, portable instruments, laboratory.



**SZ 161** pH Electrode Glass/Ref combination, glass body, anular junction, cable 1.5 m with BNC.

**Applications:** contaminated liquids, portable instruments, laboratory. In line up to 10 bar.

**SZ 165** pH Electrode Glass/Ref combination, glass body, anular junction, cable 9 m.

**Applications:** general purpose, industrial meters, in line up to 10 bar.



**SZ 171** Same as SZ 173. Cable 1.5 m with BNC.

**Applications:** contaminated liquids, amplified probes, portable instruments.

**SZ 173** pH Electrode Glass/Ref combination, glass body, double anular junction, cable 9 m.

**Applications:** contaminated liquids, amplified probes, industrial and heavy applications. In line up to 10 bar.



**SZ 191** pH Electrode Glass/Ref combination, glass body, double anular junction with Gel for high temperature, cable 1.5 m with BNC.

**Applications:** high temperature liquids, O.E.M.

**SZ 195.1** pH Electrode Glass/Ref combination, glass body, dome bulb, low alkaline error, double anular junction, high temperature gel, cable 9 m.

**Applications:** contaminated and high temperature liquids, industrial and heavy applications. In line up to 10 bar.



**SZ 1031** pH electrode, Glass/Ref. combination refillable, glass body, cable 1.5 m with BNC.

**Applications:** very contaminated liquids, portable instruments, laboratory.

# Probes - Sensors



**SZ 1131** Puncture tip pH electrode, epoxy body, PTFE junction. 1 m cable with BNC.

**Applications:** Green houses, agriculture.



**SZ 1093** Hydroponic pH electrode, epoxy body L=85 mm, cable 3 m with BNC.

**Applications:** Green houses, agriculture. In-line up to 7 bar.

## Specifications

Type	Membrane	R. Mohm at 25 °C	Range pH	Temperature °C	Length mm	Diameter mm	Reference
SZ 142	GX 2	50	0 / 13	0 / 60	110	12	Ag/AgCl
SZ 145	GX 2	50	0 / 13	0 / 60	110	12	Ag/AgCl
SZ 1021	GX 2	50	0 / 13	0 / 60	110	12	Ag/AgCl
SZ 1025	GX 2	50	0 / 13	0 / 60	110	12	Ag/AgCl
SZ 151	GX 2	100	0 / 13	-5 / 130	110	12	Ag/AgCl and KNO3
SZ 160	GX 2	50	0 / 13	0 / 100	110	12	Ag/AgCl
SZ 161	GX 2	50	0 / 13	0 / 100	110	12	Ag/AgCl
SZ 165	GX 2	50	0 / 13	0 / 100	110	12	Ag/AgCl
SZ 171	GX 2	50	0 / 13	0 / 100	110	12	Ag/AgCl and KNO3
SZ 173	GX 2	50	0 / 13	0 / 100	110	12	Ag/AgCl and KNO3
SZ 191	GX 2	100	0 / 13	5 / 130	110	12	Ag/AgCl and KNO3
SZ 195.1	GX3 dome	200	0 / 14	-5 / 130	110	12	Ag/AgCl and KNO3
SZ 1031	GX2	50	0 / 13	0 / 80	110	12	Ag/AgCl
SZ 1075	Antimonium	-	2 / 11	-5 / 100	110	12	Ag/AgCl
SZ 1093	GX2	50	0 / 13	0 / 80	80	12	Ag/AgCl
SZ 1131	GX1	300	0 / 12	-5 / 100	110	9.5	Ag/AgCl

## pH autoclean flat electrodes

This is a new and more rugged flat electrodes generation.

They may be used in immersion or in-line for an autoclean effect by the liquid flow.

The reference electrode is a double junction in order to ensure a long life even in liquid containing Ammonia, Chlorine, Cyanide, Sulfide and other contaminating ions.

The body is in PVDF, corrosion resistant and food compatible.

The special shape protects mechanically the sensing parts.

### SZ 1140

pH electrode, double junction, polymeric gel.

**Range:** 0/12 pH

**Temperature:** 0/100 °C

**Pressure:** 10 bar

**Body:** in PVDF, DL connector, 3/4" NPT thread

**Length:** 140 mm (45 mm in immersion)

**Cable:** SZ 947, L=8 m (not included)



### SZ 1150

pH electrode, double junction, polymeric gel, built-in Pt100.

**Range:** 0/12 pH

**Temperature:** 0/100 °C

**Pressure:** 10 bar

**Body:** in PVDF, Military 4-pin connector, 3/4" NPT thread

**Length:** 140 mm (45 mm in immersion)

**Cable SZ 9441:** 10 m + connector (to be order separately)



**SZ 9441**



**SZ 1150**

## ORP autoclean flat electrodes

### SZ 2060

ORP electrode, double junction, polymeric gel.

**Electrode:** Platinum disk

**Temperature:** 0/100 °C

**Pressure:** 10 bar

**Body:** in PVDF, DL connector, 3/4" NPT thread

**Length:** 140 mm (45 mm in immersion)

**Cable:** SZ 947, L=8 m (not included)



# Probes - Sensors

## Epoxy O.R.P. electrodes



**SZ 240** Gold/Reference combination electrode. Sealed Gel, epoxy body, S7 connector.

**Applications:** clean water, portable instruments, laboratory.

**SZ 250** Platinum/Reference combination electrode. Sealed Gel, epoxy body, S7 connector.

**Applications:** clean water, portable instruments, laboratory.



**SZ 245** Gold/Reference combination electrode. Sealed Gel, epoxy body, cable 9 m.

**Applications:** cyanide treatment, industrial instruments.

**In-line up to 7 bar.**



**SZ 2011** Platinum wire/Reference combination electrode. Sealed Gel, epoxy body, cable 1.5 m with BNC connector.

O.E.M. low cost version. (10 pcs. minimum order)

**Applications:** Swimming pools, portable and industrial instruments. **In-line up to 7 bar.**



**SZ 2055** Platinum/Reference combination electrode. Sealed Gel, epoxy body, double junction, cable 9 m.

O.E.M. low cost version. (10 pcs. minimum order)

**Applications:** liquid with HF acid contents, high temperature; industrial instruments. **In-line up to 10 bar.**



**SZ 251** Platinum/Reference combination electrode. Sealed Gel, epoxy body, cable 1.5 m with BNC connector.

**Applications:** clean water, swimming pools, portable instruments, laboratory. **In-line up to 7 bar.**

**SZ 255** Platinum/Reference combination electrode. Sealed Gel, epoxy body, cable 9 m.

**Applications:** clean water, swimming pools, industrial instruments. **In-line up to 7 bar.**

**SZ 2035** ORP electrode Band-Platinum/Ref. combination, epoxy body, Gel sealed, cable 9 m. Low cost (10 pcs minimum order).

**Applications:** clean water, industrial instruments.

**In-line up to 7 bar.**

## Glass O.R.P. electrodes



**SZ 265** Gold/Reference combination electrode. Sealed Gel, glass body, cable 9 m.

**Applications:** cyanide treatment, industrial instruments.

**In-line up to 10 bar.**



**SZ 275** Platinum/Reference combination electrode. Sealed Gel, glass body, cable 9 m.

**Applications:** general purpose, chromate treatment, swimming pools, industrial instruments. **In-line up to 10 bar.**

### Specifications

Type	Metal	Temperature °C	Length mm	Diameter mm	Reference
SZ 240	Gold	0 / 60	110	12	Ag/AgCl
SZ 245	Gold	0 / 60	110	12	Ag/AgCl
SZ 250	Platinum	0 / 60	110	12	Ag/AgCl
SZ 251	Platinum	0 / 60	110	12	Ag/AgCl
SZ 255	Platinum	0 / 60	110	12	Ag/AgCl
SZ 2035	Platinum	0 / 60	110	12	Ag/AgCl
SZ 265	Gold	-5 / 110	110	12	Ag/AgCl
SZ 275	Platinum	-5 / 110	110	12	Ag/AgCl
SZ 2011	Platinum	0 / 60	110	12	Ag/AgCl
SZ 2055	Platinum	-5 / 130	110	12	Ag/AgCl + KNO3

# Probes - Sensors

## E. Conductivity cells



**SZ 3252** Three black Platinum band electrodes, K=1 cm-1, epoxy body, cable 1.5 m with BNC connector.  
**Applications: portable instruments, laboratory.**



**SZ 3271** Two graphite electrodes, K=1 cm-1, epoxy body L=110 mm D=12 mm, cable 1.5 m with BNC connector.  
**Applications: In-line up to 10 bar and 80 °C, range 0/80 mS.**

**SZ 3273.1** Two graphite electrodes, K=1 cm-1, built-in Pt100, epoxy body L=110 mm D=12 mm, cable 3 m.  
**Applications: in-line up to 10 bar and 80 °C, range 0/80 mS.**

**SZ 3274.1** Two graphite electrodes, K=1 cm-1, built-in Pt100, epoxy body L=110 mm D=12 mm, cable 5 m.  
**Applications: in-line up to 10 bar and 80 °C, range 0/80 mS.**

**SZ 3273.4** Two graphite electrodes, K=1 cm-1, built-in NTC 10K, epoxy body L=110 mm D=12 mm, cable 3 m.  
**Applications: in-line up to 10 bar and 80 °C, range 0/80 mS.**

## Dissolved Oxygen cells



**SZ 641.2** Polarographic D.O. cell with built-in Pt1000. 250 nA. Current in air at 20 °C, Temperature 0/45 °C. Epoxy body L=110 mm, D=12 mm, cable 1.5 m with BNC/Jack connectors. Ship with spare membrane and electrolyte.  
**Applications: portable instruments.**



**SZ 654.1** Polarographic D.O. cell with built-in Pt100. 250 nA. Current in air at 20 °C, Temperature 0/45 °C. Epoxy body L=110 mm, D=12 mm, cable 5 m. Ship with spare membrane and electrolyte.  
**Applications: immersion and in-line, water treatment, industrial instruments.**  
 SZ 659.R1 spare membrane/electrolyte.



**SZ 664.2** Polarographic D.O. cell with built-in Pt1000. 250 nA. Current in air at 20 °C, Temperature 0/60 °C. Epoxy body L=125 mm, D=21.5 mm, cable 5 m with BNC/Jack connectors. Ship with spare membrane and electrolyte.  
**Applications: submersible, portable instruments in water treatment.**  
 SZ 669.R1 spare membrane/electrolyte.

Pressurizable and sterilizable probes

pH/ORP electrodes - D.O./CO<sub>2</sub> cells - Sterilizable for Biotechnology

ask for the specific catalog

# Probes - Sensors

## Ion Selective Electrodes

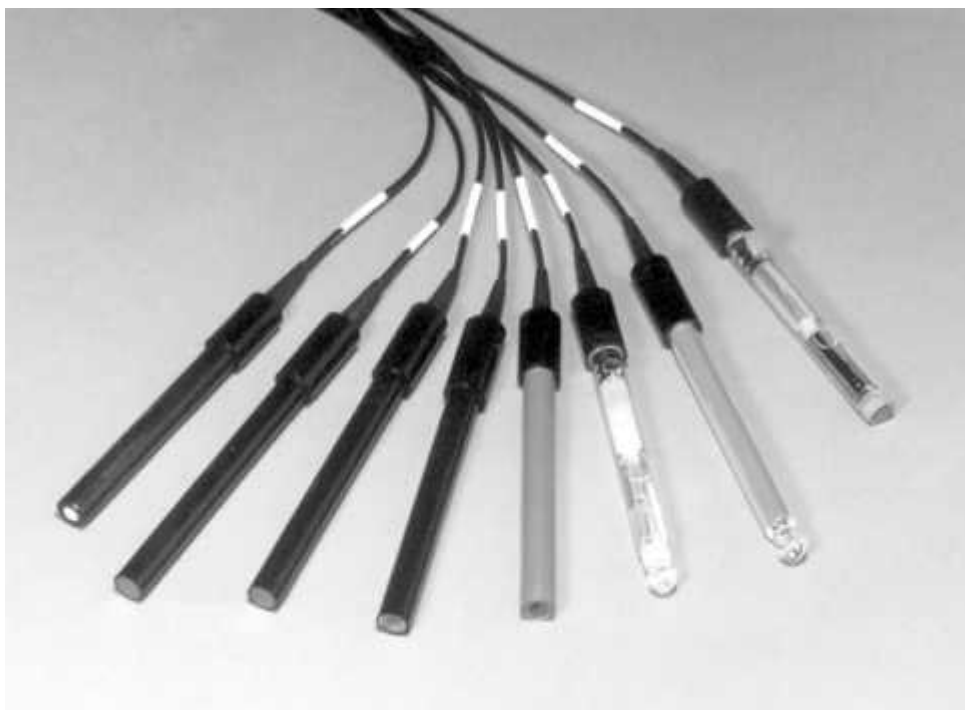
Nieuwkoop offers a wide range of Ion Selective Electrodes including:

1. Polymer Membrane Electrodes
2. Solid State Electrodes
3. Gas Sensing Electrodes
4. Glass Membrane Electrodes

Ion Selective Electrodes are available as half-cells (mono) or as glass or epoxy combination electrodes.

Measurements with half-cell electrodes require the use of an additional reference electrode.

Ask our sales department in order to select the suitable ISE for continuous operation with our IC 7685 - IC 7685.010 Ion Concentration Controllers.



Electrode	P/N	Director Measurement Range		Slope mV/decade at 25°C	pH range	Temperature range °C		Response time sec.	Interferences (95%, in 1x10 <sup>-2</sup> M)
		Molar	PPM			continuous	not continuous		
Ammonia (NH <sub>3</sub> )	NH31501	1.0 - 5x10 <sup>-7</sup>	17,000-0.01	56±3	> 11	0-50	-	30	Volatile amines
Ammonium (NH <sub>4</sub> <sup>+</sup> )	NH41501/NH41502	1.0 - 5x10 <sup>-6</sup>	18,000-0.1	56± 2	4-10	0-50	-	30	K <sup>+</sup>
Bromide (Br <sup>-</sup> )	BRO1501/BRO1502	1.0 - 5X10 <sup>-6</sup>	79,900-0.40	57±2	2-14	0-80	0-100	20	I <sup>-</sup> , CN <sup>-</sup> , S <sup>2-</sup> ; elevate conc. di Cl <sup>-</sup> , NH <sub>3</sub>
Cadmium (Cd <sup>2+</sup> )	CD21501/CD21502	1x10 <sup>-1</sup> - 1x10 <sup>-7</sup>	11,200-0.01	27±2	2-12	0-80	0-100	20	Ag <sup>+</sup> , Hg <sup>2+</sup> , Cu <sup>2+</sup> ; elevate conc. di Pb <sup>2+</sup> , Fe <sup>2+</sup>
Calcium (Ca <sup>2+</sup> )	CAL1501/CAL1502	1.0 - 5x10 <sup>-6</sup>	40,000-0.2	27±2	3-10	0-50	-	30	Pb <sup>2+</sup> , Hg <sup>2+</sup> , Cu <sup>2+</sup> , Ni <sup>2+</sup>
Carbon dioxide (CO <sub>2</sub> ) (Carbonate CO <sub>3</sub> <sup>2-</sup> )	CO21501	1x10 <sup>-2</sup> - 1x10 <sup>-4</sup>	440-4.4	56±3	4.8-5.2	0-50	-	30	Volatile weak acids
Chloride (Cl <sup>-</sup> )	CLO1501/CLO1502	1.0 - 5x10 <sup>-6</sup>	35,500-1.8	56±2	2-12	0-80	-	20	S <sup>2-</sup> , I <sup>-</sup> , CN <sup>-</sup> , Br <sup>-</sup> ,
Copper (Cu <sup>2+</sup> )	CU01501/CU01502	1x10 <sup>-1</sup> - 1x10 <sup>-8</sup>	6,350-6.4x10 <sup>-4</sup>	27±2	0-12	0-80	0-100	20	Ag <sup>+</sup> , Hg <sup>2+</sup> , elevate conc. di Cl <sup>-</sup> , Br <sup>-</sup> , Fe <sup>2+</sup>
Cyanide (CN <sup>-</sup> )	CNO1501/CNO1502	1X10 <sup>-2</sup> - 5X10 <sup>-6</sup>	260-0.13	57±2	11-13	0-80	0-100	20	S <sup>2-</sup> , I <sup>-</sup> , Br <sup>-</sup> , Cl <sup>-</sup>
Fluoride (F <sup>-</sup> )	FOO1501/FOO1502	Saturated - 1x10 <sup>-6</sup>	Saturated -0;02	57±2	5-8	0-80	0-100	20	OH <sup>-</sup>
Fluoroborate (BF <sub>4</sub> <sup>-</sup> )	BF45101 BF41502	1.0 - 7x10 <sup>-6</sup>	10,800-0.1 (as B)	57±2 56±2	2.5-11	0-50	-	30	Cl O <sub>4</sub> <sup>-</sup> , I, CN <sup>-</sup>
Iodide (I <sup>-</sup> )	IO01501/IO01502	1.0 - 5x10 <sup>-8</sup>	127,000-6x10 <sup>-3</sup>	57±2	0-14	0-80	0-100	20	S <sup>2-</sup> , CN <sup>-</sup> , NH <sub>3</sub> , S <sub>2</sub> O <sub>3</sub> <sup>2-</sup> , Cl <sup>-</sup> , Br <sup>-</sup>
Lead (Pb <sup>2+</sup> )	PB21501/PB21502	1x10 <sup>-1</sup> - 1x10 <sup>-6</sup>	20,700-0.2	25±2	3-8	0-80	0-100	20	Ag <sup>+</sup> , Hg <sup>2+</sup> , elevate conc. di Cd <sup>2+</sup> e di Fe <sup>2+</sup>
Lithium (Li <sup>+</sup> )	LIT1501/LIT1502	1.0 - 1x10 <sup>-5</sup>	6,900-0.7	56±2	5-10	0-50	-	30	Na <sup>+</sup> , K <sup>+</sup> , Ca <sup>2+</sup>
Nitrate (NO <sub>3</sub> <sup>-</sup> )	NO31501/NO31502	1.0 - 7x10 <sup>-6</sup>	62,000-0.5	57±2	2.5-11	0-50	-	30	Cl O <sub>4</sub> <sup>-</sup> , I, CN <sup>-</sup> , BF <sub>4</sub> <sup>-</sup>
Nitrogen Oxide (NO <sub>x</sub> )	NOX1501	5x10 <sup>-3</sup> - 5x10 <sup>-6</sup>	220-0.2	56±3	1.1-1.7	0-50	-	30	SO <sub>2</sub> - HF, CH <sub>3</sub> COOH
Perchlorate (Cl O <sub>4</sub> <sup>-</sup> )	PER1501/PER1502	1.0 - 7x10 <sup>-6</sup>	98,000-0.7	56±2	2.5-11	0-50	-	30	No significant interference
Potassium (K <sup>+</sup> )	KOO1501/KOO1502	1.0 - 1x10 <sup>-6</sup>	39,000-0.04	56±2	2-12	0-40	0-50	30	Cs <sup>+</sup> , NH <sub>4</sub> <sup>+</sup>
Silver/Sulfide (Ag <sup>+</sup> /S <sup>2-</sup> )	AGS1501 AGS1502	Ag <sup>+</sup> =1.0 - 1x10 <sup>-7</sup> S <sup>2-</sup> =1.0 - 1x10 <sup>-7</sup>	107,900-0.01 32,100-0.003	57±2 27	2-12	0-80	0-100	20	Hg <sup>2+</sup> , Hg <sup>+</sup>
Sodium (Na <sup>+</sup> )	NA71501/NA71502	1.0 - 1x10 <sup>-5</sup>	23,000-0.2	56±2	5-12	0-80	-	20	K <sup>+</sup> , Li <sup>+</sup> , H <sup>+</sup> , Ag <sup>+</sup> , Cs <sup>+</sup>
Surfactant (X <sup>+</sup> , X <sup>-</sup> )	SUR1501/SUR1502	5x10 <sup>-2</sup> , 1x10 <sup>-5</sup>	12,000-1.0	for titration	2-12	0-50	-	30	Similar types of Surfactants
Water Hardness (Ca <sup>2+</sup> /Mg <sup>2+</sup> )	WHA1501/WHA1502	1.0 - 1x10 <sup>-5</sup>	40,00-0.4 (as Ca)	26±3	5-10	0-50	-	20	Cu <sup>2+</sup> , Zn <sup>2+</sup> , Ni <sup>2+</sup> , Fe <sup>2+</sup>

Models 1501 are mono, 1502 are combined glass body, 1503 are combined epoxy body

# Probes & Sensors accessories

## In-line holders

**SZ 7101**  
**SZ 7105**  
**SZ 7108**



*Application examples*

### **SZ 7101**

In-line holder

Body: PVC. Sensor Diameter: 12 mm. Sensor Length: 110 mm  
Operating Temperature: 40 °C max. Operating Pressure: 10 bar max. at 20 °C  
Fixing: 1/2 " BSP for pipe 1" minimum.  
Dimensions: L = 110 mm Diameter = 25 mm

**Applications: installation in 1" pipe**

### **SZ 7105**

In-line holder

Body: PVDF. Sensor Diameter: 12 mm. Sensor Length: 110 mm  
Operating Temperature: 100 °C max. Operating Pressure: 10 bar max. at 50 °C  
Fixing: 1/2 " BSP for pipe 1" minimum.  
Dimensions: L = 110 mm Diameter = 25 mm

### **SZ 7108**

In-line holder

Body: 316 S.Steel. Sensor Diameter: 12 mm. Sensor Length: 110 mm  
Operating Temperature: 110 °C max. Operating Pressure: 10 bar max. at 50 °C  
Fixing: 1/2 " BSP for pipe 1" minimum.  
Dimensions: L = 110 mm Diameter = 25 mm

**Applications: installation in 1" pipe**

## Flow cells

**SZ 7231** Flow cell for 1 sensor  
**SZ 7233** Flow cell for 3 sensors



**SZ 7251** Autoclean flow cell



## Submersible holders

**SZ810** Immersion probe, L=210 mm PVC  
**SZ820** Immersion probe, L=400 mm PVC  
**SZ821** Immersion probe, L=400 mm PVDF  
**SZ860** Immersion probe, L=720 mm PVC  
**SZ880** Immersion probe, L=1170 mm PVC

Extension PVC, Polypropylene, S.Steel pipes are available

**SZ862** Immersion probe, L=720 mm PVC  
low cost type

**SZ882** Immersion probe, L=1170 mm PVC  
low cost type



**SZ 860** **SZ 862**

## Cables and connectors

**SZ 9211** Coax cable 2.5 mm L = 8 m  
**SZ 9215** Coax cable 2.5 mm L = 100 m  
**SZ 926** Shielded cable 7x0.25 mm Diameter 6.4 mm  
**SZ 927.1** Special extension cable for E.Conductivity cells (5 wires + coax)

**SZ 933** BNC connector  
**SZ 935** S7 connector  
**SZ 945** S7 connector + 8 m coax cable  
**SZ 947** DL connector + 8 m coax cable  
**SZ 9471** DL connector + 2 m coax cable with BNC  
**SZ 9481** 7-pin connector + 10 m cable  
**SZ 9483** 7-pin connector + 30 m cable  
**SZ 9490** 4-pin connector  
**SZ 9491** 4-pin connector + 10 m cable

## Standard solutions

**SZ 952** Buffer solution 4.01 pH 250 cc.  
**SZ 954** Buffer solution 7.00 pH 250 cc.  
**SZ 956** Buffer solution 9.21 pH 250 cc.  
**SZ 959** Buffer solutions kit 4/7/9 pH 50 cc.  
  
**SZ 961** ORP standard solution 220 mV 250 cc.  
**SZ 964** ORP standard solution 468 mV 6 x 30 cc.

## Filling solutions

**SZ 980** KCl 3M + AgCl solution 1 liter  
**SZ 982** KCl 3M + AgCl solution 200 cc.  
**SZ 9826** KCl 3M + AgCl solution for high temperature 125 cc.  
**SZ 9827** KCl 3M for high temperature 125 cc.

# Portable instruments

## PH 125.2

pH - ORP - °C  
meter



- High accuracy and reliability
- LCD display
- Temperature visualization
- Automatic or manual Temperature compensation
- Corrosion resistant

This instrument is designed for field applications in waste water, swimming pools, chemical, electroplating and food industries.

By pressing any key the instrument will switch on or will extend the operation for about 5 minutes.

The temperature compensation on the pH readout is automatic or manual. The zero and sensitivity adjustment allows a very accurate calibration of the meter.

The plastic case with the polycarbonate membrane provide a corrosion resistance in field applications.

### Accessories and sensors

to be ordered separately

**BC 921:** carrying case

**SZ 959:** buffer solutions 4/7/9 pH 50 cc.

**SZ 142 - SZ 161 - SZ 1031:** suggested pH electrodes

**SZ 251:** suggested ORP electrode

**SP 51501 - SP 51511:** suggested temperature sensors

### Specifications

**Display:** LCD 3 1/2 digit

**Scales:** 0/14.00 pH ±1000 mV -20.0/+120.0 °C

**Zero:** ± 15 %

**Sensitivity:** ± 20 % (pH only)

**Input:** from pH/ORP electrodes, BNC connectors  
from Pt1000, jack connector

**Power:** 9 V battery

**Battery life:** 100 hours operation

**Dimensions:** 92 x 155 x 33 mm

**Weight:** 300 g

## C 125.2

E. Conductivity  
Temperature meter



- High accuracy and reliability
- LCD display
- Temperature visualization
- Automatic or manual Temperature compensation
- Temperature coefficient visualization
- Corrosion resistant

This instrument is designed for field applications in waste water, swimming pools, chemical, electroplating and food industries.

By pressing any key the instrument will switch on or will extend the operation for about 5 minutes.

The Temperature compensation on the E.C. readout is automatic or manual. The operator may select the temperature coefficient for the compensation.

The zero and sensitivity adjustment allows a very accurate calibration of the meter.

The plastic case with the polycarbonate membrane provide a corrosion resistance in field applications.

### Accessories and sensors

to be ordered separately

**BC 921:** carrying case

**SZ 3252:** E.C. sensor, K=1 black platinum electrodes

**SP 51501 - SP 51511:** suggested temperature sensors

### Specifications

**Display:** LCD 3 1/2 digit

**Scales:** 0/199.9 µS - 0/1999 µS - 0/19.99 mS - -20.0/+120.0 °C

**Zero:** adjustable

**Sensitivity:** adjustable

**Input:** from 2-electrodes cell, BNC connectors  
from Pt1000, jack connector

**Power:** 9 V battery

**Battery life:** 100 hours operation

**Dimensions:** 92 x 155 x 33 mm

**Weight:** 300 g

# Portable instruments

## OD 125.2 Dissolved Oxygen Temperature meter



- High accuracy and reliability
- LCD display
- Temperature visualization
- Automatic or manual Temperature compensation
- Corrosion resistant

This instrument is designed for a reliable D. Oxygen measuring in waste water and in field applications.

By pressing any key the instrument will switch on or will extend the operation for about 5 minutes.

The temperature compensation on the readout is automatic or manual. The zero and sensitivity adjustment allows a very accurate calibration of the meter.

The plastic case with the polycarbonate membrane provide a corrosion resistance in field applications.

### Accessories and sensors

to be ordered separately

**BC 921:** carrying case

**SZ 641.2:** polarographic cell with built-in Pt1000

**SP 51501 - SP 51511:** suggested temperature sensors

### Specifications

**Display:** LCD 3 1/2 digit

**Scales:** 0/19.99 PPM    0/100 % air sat.    -20.0/+120.0 °C

**Zero:** ± 15 %                      **Sensitivity:** ± 20 %

**Input:**    from polarographic cell, BNC connectors  
              from Pt1000, jack connector

**Liquid speed:** 0.3 / 0.7 m/s

**Response time:** 15 s at 95%

**Compensation:**    error ±1% f.s. for ±5 °C  
                              from the calibration temperature

**Power:** 9 Vdc battery

**Battery life:** 100 hours operation

**Dimensions:** 92 x 155 x 33 mm    **Weight:** 300 g

## TR 125.2 Temperature meter



- High accuracy and reliability
- LCD display
- Corrosion resistant

This instrument has been designed for general field applications.

By pressing any key the instrument will switch on or will extend the operation for about 5 minutes.

The zero and sensitivity adjustment allows a very accurate calibration of the meter.

The plastic case with the polycarbonate membrane provide a corrosion resistance in field applications.

### Accessories and sensors

to be ordered separately

**BC 921:** carrying case

**SP 510:** suggested Temperature sensors

### Specifications

**Display:** LCD 3 1/2 digit

**Scales:** -20.0/+120.0 °C    - -200/+800 °C

**Input:** from Pt100, jack connector

**Power:** 9 Vdc battery

**Battery life:** 100 hours operation

**Dimensions:** 92 x 155 x 33 mm

**Weight:** 300 g

# Portable instruments

## CL 125.2

### Free Chlorine - Dissolved Ozone meter



This instrument is designed for a reliable Free Chlorine and D. Ozone measuring in swimming pools, drinking water and in field applications.

The PPM measuring is displayed by means of a potentiostatic sensor directly immersed into the water.

The measuring method requires a constant pH value and a stirring of the sensor into the water in order to replace the consumed Chlorine/Ozone by the sensor.

The calibration is performed by a comparison with an external meter (example a photometer).

By pressing any key the instrument will switch on or will extend the operation for about 5 minutes.

The temperature compensation on the readout is automatic or manual. The zero and sensitivity adjustment allows a very accurate calibration of the meter.

The plastic case with the polycarbonate membrane provides a corrosion resistance in field applications.

### Accessories and sensors

to be ordered separately

**BC 921:** carrying case

**SP 651:** potentiostatic sensor with built-in Pt1000

### Specifications

**Display:** LCD 3 1/2 digit

**Input:** from potentiostatic sensor, BNC connectors  
from Pt1000, jack connector

**Scales:** 0/1.999 PPM - 0/19.99 PPM - -20.0/120.0 °C

**Power:** 9 Vdc battery

**Battery life:** 100 hours operation

**Dimensions:** 92 x 155 x 33 mm

**Weight:** 300 g

## SIMULATORS



## BC 125

### Electrodes simulator

### Specifications

**Output pH - mV - E.C.:** error 1% max.

**Output mA:** error 2 %

**Input mV:** error 2 % max

**Input mA:** error ± 1 mV

**Battery life:** 100 hours operation

**Dimensions:** 92 x 155 x 45 mm - **Weight:** 300 g

**Cables:** included

## OD 105.1

### Dissolved Oxygen Simulator

This instrument is designed to calibrate the D.Oxygen meters and to check the D.Oxygen polarographic cells.

By selecting the CELL function the instrument provides the polarization voltage to the cell under test and it measures the delivered current.

By selecting the AMP function the instrument measures the polarization voltage and provides an adjustable current to test the input circuits of the D.Oxygen meter.

All data are visualized on the display.

### Specifications

**Display:** LCD 3 1/2 digit

**Polarization Voltage (output):** 0/1000 mV

**Polarization Voltage (input):** 0/1000 mV

**Output Current:** 0/199.9 nA - 0/1999 nA

**Input Current:** 0/199.9 - 0/1999 nA

**Connectors:** BNC

**Power:** 9 Vdc battery

**Battery life:** 100 hours operation

**Dimensions:** 92 x 155 x 45 mm

**Weight:** 300 g

# Gas Analyzers

## B12 Series 2-wire Gas Transmitters



Series B12 transmitters are loop-powered instruments that transmit a 4/20 mA signal linearly proportional to gas concentration.

Operated from a 24 Vdc power supply, the transmitter will drive loads up to 675 ohms, sufficient for most monitoring applications.

Alternatively, the unit can operate at 12 Vdc with reduced output load for applications requiring battery operation.

Transmitters are normally supplied with the sensor close coupled to the enclosure.

However, for special application, the unit can be supplied with separate sensor that can be located up to 25 feet from the transmitter.

## GS 1222.01 Hydrogen Cyanide transmitter

Complete with HCN sensor

**Scale:** 0/10 PPM

**0012.000088**

HCN spare sensor

## GS 1214.01 Ozone transmitter

Complete with O<sub>3</sub> sensor

**Scale:** 0/1 PPM

**0012.000002**

O<sub>3</sub> spare sensor

## Accessories and sensors

**0012.000118:** Calibration adapter

**CSA, UL, CENELEC certified models are available for hazardous applications**

## Specifications

**Gas type:** Customer selected from the sensor list

**Accuracy:** Generally  $\pm 5\%$  of value, but limited by available calibration gas accuracy

**Repeatability:**  $\pm 1\%$  of full scale (electronics)

**Linearity:**  $\pm 0.5\%$  of full scale (electronics)

**Zero drift:** Sensor dependent, but generally less than 2% of full scale per month, non-cumulative

**Span drift:** Application dependent, but generally less than 3% per month

**Output:** Loop powered 4/20 mA, 675 ohm max. at 24 Vdc

**power:** 12/30 Vdc

**Enclosure:** NEMA 4X Polystyrene

**Controls:** Zero and Span internal potentiometers

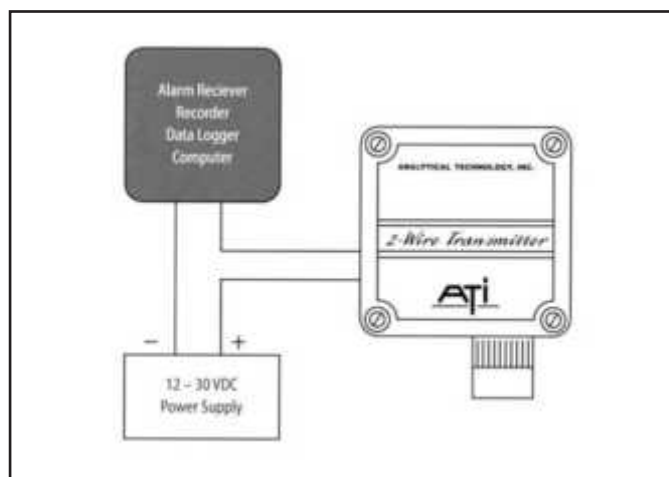
**Operating Temperature:** -30/+55 °C (Oxygen -10/+55 °C)

**Pressure limits:** 0.5/2 bar

**Weight:** 120 g

**Option:** 3 digit LCD display

Gas	Standard Range	Minimum Range	Maximum Range
Ammonia	0/100 PPM	0/100 PPM	0/500 PPM
Carbon Monoxide	0/100 PPM	0/100 PPM	0/500 PPM
Hydrogen	0/4 %	0/2000 PPM	0/10 %
Nitric Oxide	0/100 PPM	0/50 PPM	0/250 PPM
Phosgene	0/2 PPM	0/2 PPM	0/10 PPM
Bromine	0/2 PPM	0/1 PPM	0/5 PPM
Chlorine	0/10 PPM	0/5 PPM	0/50 PPM
Chlorine Dioxide	0/2 PPM	0/1 PPM	0/5 PPM
Fluorine	0/2 PPM	0/1 PPM	0/5 PPM
Iodine	0/2 PPM	0/1 PPM	0/5 PPM
Ozone	0/2 PPM	0/1 PPM	0/5 PPM
Oxygen	0/25 %	0/5 %	0/35 %
Hydrogen Peroxide	0/10 PPM	0/10 PPM	0/50 PPM
Hydrogen Chloride	0/20 PPM	0/10 PPM	0/50 PPM
Hydrogen Cyanide	0/20 PPM	0/10 PPM	0/50 PPM
Hydrogen Fluoride	0/20 PPM	0/10 PPM	0/50 PPM
Hydrogen Sulfide	0/50 PPM	0/25 PPM	0/250 PPM
Nitrogen Dioxide	0/20 PPM	0/10 PPM	0/50 PPM
Sulfur Dioxide	0/20 PPM	0/10 PPM	0/50 PPM
Arsine	0/1000 PPB	0/1000 PPB	0/5000 PPB
Diborane	0/1000 PPB	0/1000 PPB	0/5000 PPB
Germane	0/1000 PPB	0/1000 PPB	0/5000 PPB
Hydrogen Selenide	0/1000 PPB	0/1000 PPB	0/5000 PPB
Phosphine	0/1000 PPB	0/1000 PPB	0/5000 PPB
Silane	0/10 PPM	0/10 PPM	0/50 PPM
Combustible gas	0/100 % LEL	0/50 % LEL	0/100 % LEL



# Electroplating

## ELECTROPLATING INDUSTRY INSTRUMENTS

- **Total and partial electric charge measuring**
- **Automatic rectifiers control**
- **Surface/thickness programming**
- **Grams measurement of the coating**
- **Electroplating costs evaluation**
- **Automatic dosing of brighteners**
- **Suitable for all the rectifiers**



### AH 555.2 Amperhour counter and programmer

This instrument measures the electric charge and memorizes the data in a 6 digit totalizer.

The measuring is visualized and memorized in a separate 4 digit programmable counter.

At the end of the programmed counting, the programmer is zeroed and a 2 digit timer maintains activated an output relay.

The instrument is suitable for every rectifier and it may be used for the automatic rectifier interruption or the automatic feeding of reagents in the electroplating tank.

The dual counter may be independently reset and the timer may be activated manually.

An internal battery allows the data memorization even for a long switched off period.

<b>Specifications</b>
<b>Input:</b> 0/60 mV
<b>Shunt value:</b> 1/99
<b>Output:</b> isolated pulses
<b>Timer:</b> 0/99 s
<b>Relay contacts:</b> 5 A 220 Vac SPDT
<b>Power:</b> 110/220 Vac 2 VA
<b>Isolation:</b> 4000 V (IEC 348)
<b>Terminal blocks:</b> extractable
<b>Dimensions:</b> 241 x 89 x 164 mm
<b>Weight:</b> 1.02 Kg

### AH 565.2 Surface and Thickness programmer

This instrument carries out the measurement of the electric charge then memorized in a 6 digit counter.

The measurement is converted, according to the Electrochemical Equivalent and the efficiency of the specific process, to a figure corresponding to the result of surface x thickness.

The user may program the surface in dm<sup>2</sup> and the thickness in mm on the front panel 3 digit selectors, in order to activate the relay of the instrument when the counting result is corresponding to the programmed SxT.

The relay remains activated for the time programmed on the front panel time 2 digit selector or it can be deactivated by an external contact. The operator may use the relay contacts to provide an automatic interruption of the rectifier.

The reset of counters may be done manually. The instrument is adaptable to any rectifier from 1 to 9900 A.

An internal battery allows to maintain the data for long time even if the meter is switched off.

<b>Specifications</b>
<b>Input:</b> 0/60 mV
<b>Shunt value:</b> 1/99
<b>Output:</b> isolated pulses
<b>Timer:</b> 0/99 seconds
<b>Power:</b> 110/220 Vac 2 VA
<b>Terminal blocks:</b> extractable
<b>Dimensions:</b> 241 x 89 x 164 mm
<b>Weight:</b> 1 Kg

### AH 535.2 4-channel adder

This instrument receives the pulses from up to 4 amperhour counters and furnishes the total counting to the 6 digit display and to the internal memory.

It is provided with a dual 6 digit counter, a 4 digit programmer and a 2 digit timer, for the activation of the output relay.

The counters and the programmer may be reset manually.

<b>Specifications</b>
<b>Input:</b> from 4 Ah counters
<b>Timer:</b> 0/99 s
<b>Relay contacts:</b> SPDT 220 V 5 A
<b>Isolation:</b> 4 kV (IEC 348)
<b>Power:</b> 110/220 Vac 2 VA
<b>Terminal blocks:</b> extractable
<b>Dimensions:</b> 241 x 89 x 164 mm
<b>Weight:</b> 1.02 Kg

# Electroplating

## AH 515.2 Amperehour counter



This instrument measures the electric charge delivered by a rectifier in the electroplating application.

It is provided with a dual 6 digit counter.

Each counter may be reset manually.

The instrument is suitable for any rectifier from 1 to 9900 A.

An internal selector allows the instrument to measure the electric charge in ampereminute.

### Specifications

**Input:** 0/60 mV

**Scales:** in Ah and Amin

**Shunt value:** 1/99

**Output:** isolated pulses

**Isolation:** 4 kV (IEC 348)

**Power:** 110/220 Vac 2 VA

**Terminal blocks:** extractable

**Dimensions:** 241 x 89 x 164 mm

**Weight:** 1 Kg

## AH 275.2 Amperehour meter/programmer with automatic doser



*Front and back side of the instrument*

This instrument includes the electronic circuits for Amperehour counting and programming, and a bellows pump for an accurate feeding of chemical additives in the electroplating process.

It is provided with a dual 6 digit counter, a 4 digit programmer and a 2 digit timer.

It maintains the same specifications of the electronic part of the model

### Options

**091.403** Power at 24 Vac for amperehour meter.

### Spares

#### D 912

Bellow for D 611 pump

#### D 920

Fittings for pump of AH 275.2 and D 611

#### D 932

Kit OR and valves for bellows pumps

### Specifications

**Input:** 0/60 mV

**Flow:** 1/99 cc. (50 cc. factory adjustment)

**Suction:** 0.27 bar (4 PSI)

**Discharge:** 0.27 bar (4 PSI)

**Power:** 220 Vac 70 VA max.

**Dimensions:** 220 x 95 x 170 mm

**Weight:** 4.1 Kg

## Metering pumps

### Membrane metering pumps



#### Specifications

**Suction:** 1.5 m max.

**Low:** 0/100% adjustable.

**Membrane:** PTFE.

**OR and valves:** plastic.

**Power:** 220 Vac.

#### DP 11.0150

Plastic Body.

**Flow:** 0/50 l/h

**Pressure:** 1 bar.

#### DP 21.0115

Plastic Body.

**Flow:** 0/15 l/h

**Pressure:** 1 bar.

Model DP21.0115D with valves in Dutral.

#### DP 21.1002

Plastic Body.

**Flow:** 0/2,2 l/h

**Pressure:** 10 bar.

#### DP 31.0505

Plastic Body.

**Flow:** 0/5 l/h

**Pressure:** 5 bar.

## Special products

### Laser Particle Counter

This instrument is designed to provide valuable particle data by continuously monitoring particle counts in raw water, filter influent, or filter effluent.

Based on laser light blocking principle, this sensor will provide particle count data over size ranges from 2 to 200 microns.

Particles are counted in six separate channels depending of their size.

Main applications are in water towers, water treatment, pharmaceutical industry, for the detection of the Cryptosporidium (5-7 micron) or Giardia (9-11 micron), before the Turbidity values begin to rise.

### Flow

- Open channel
- Magnetic
- Doppler effect
- Paddle wheel

### Level

- Resisitive method
- Ultrasonic
- Capacitive

### Water sampler

For water treatment applications.





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