Control and measuring instruments

500 Series

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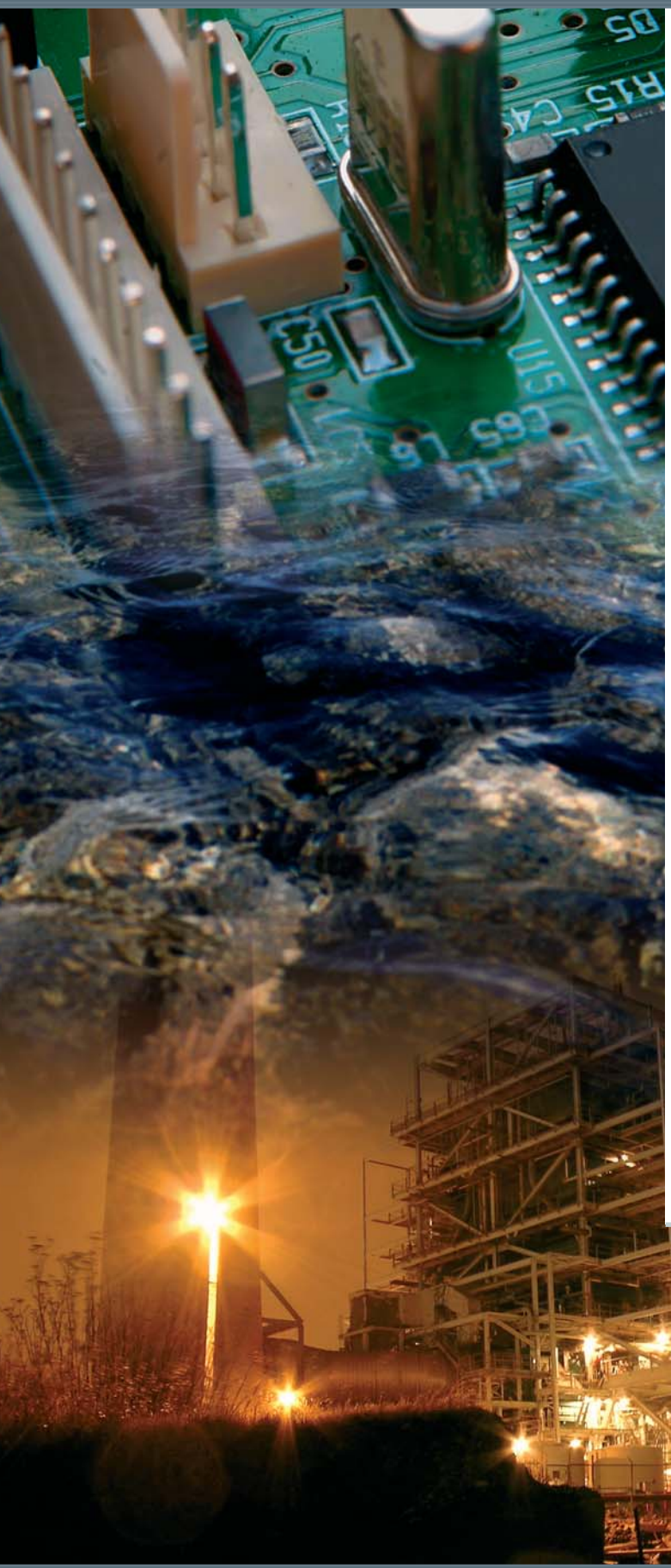
Series 500 The Measurement And Control



SEKO introduces the 500 Series family of industrial control instruments designed for measuring:

- **pH**
- **Redox**
- **Oxigen**
- **Conductivity**
- **Turbidity**

Design compliant with EMI regulations

All instruments comply with the 73/23 EC, 89/336 EC, 92/31 EC and 93/68 EC directives, in order to guarantee maximum Electromagnetic Compatibility.

Serial Communication (RS485)

All instruments are designed for use with RS485 communication serial port, to monitor measurements and data recording.

Multilingual Communication

The units features a simple and user-friendly interface.
The communication language is selectable with English, French, Spanish, German and Italian available.

Graphic Display

The graphic display, with 128x64 pixel resolution, ensures simultaneous display of the chemical measurement, the measurement of the temperature and the status of the various control outputs, by means of icons, throughout the entire process.

Power-assisted adjustment with probe effectiveness test

The user-friendly software functions are designed to supply fast and effective assistance to the operator. This guarantees excellent calibration results. The system will inform the user about the quality of the electrode in use.

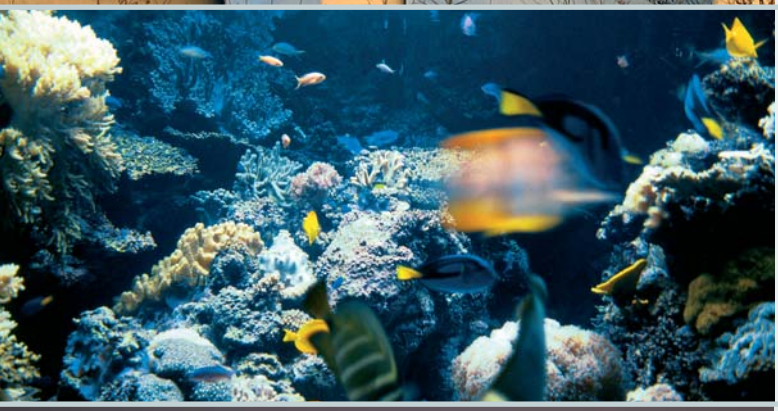
Flexible enclosure design

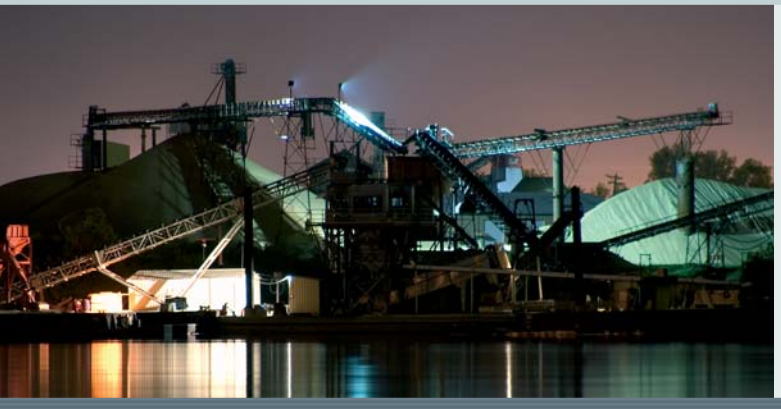
The enclosure allows various mounting options, such as panel, wall or pole mounting.

Control Functions

The instruments can be supplied with different software functions, ranging from Proportional-Integrated-Derived (PID), Timed and ON/OFF.

index





PR500 pH/Redox Instruments

Main Specifications

Measuring Range

pH Measurement Range	0 ÷ 14 pH
pH Resolution	0,01 pH
pH Precision	98%
Redox Measurement Range	± 1500 mV
Redox Resolution	1 mV
Redox Precision	98%
Probe Connection	BNC
Temperature Range	-10 °C ÷ +150 °C (+14 °F ÷ +302 °F)
Temperature Resolution	0,1°C (0,1°F)
Temperature Precision	98%

Power Requirements

Universal Input	80÷265 Vac (24 Vac on demand)
Power Consumption	10 VA

Mechanical Characteristics

Dimensions	144x144x112 mm and 96x96x130 mm
Box Material	ABS (96x96) and PP (144x144)
Protection Degree	IP65 (144x144) and IP54 (96x96)

Interface

Keypad	4 keys for setting the parameters
Graphic Display	128x64 pixel with backlighting
Multilingual Menu	English, Italian, French, Spanish, German

Control Outputs

- **Dual mA output, galvanically separated**
- **Double Relay, double exchange for dosing Set Point (Dry contact)**
- **Designated relay for probe cleansing (Dry contact)**
- **Relay with remote alarm (Dry contact)**
- **RS485 serial port interface**

Inputs

- **Voltage 15÷30 Vac/dc (in order to fix the instrument in Hold status)**
- **pH Probe with BNC connector**
- **NTC Temperature sensor with screw connector**

Control Functions and Settings

Control	1. PID control (mA 2 output) 2. Timed 3. ON/OFF

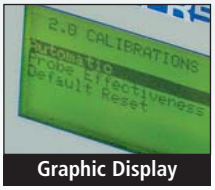
- **Delay function for relay activation**
- **Manual control of all outputs**
- **Assisted adjustment with probe effectiveness evaluation**
- **Modify Set Point Value with designated menu**
- **Setup Protection with Password**

Mechanical Mounting

Wall	144x144 Box
Panel	144x144 and 96x96 Box
Pole	144x144 Box

pH and Redox Devices

User-Friendly Keyboard


Graphic Display

Descriptive Display

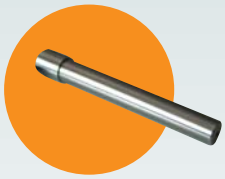
pH/Redox Probes

pH and Redox Probes

pH and Redox instruments fuction by measuring the electric potential of a chemical reaction, which is read by the sensor, called an electrode. Electrodes are active elements with a limited lifespan and must be periodically adjusted with buffer solutions (Calibration solutions).

The electrodes are all of the combined type (**Measurement/Reference**), without maintenance, and are classified by their chemical-physical characteristics, which makes them adaptable to multiple applications.

The elements to be considered when choosing an electrode are: measurement range, temperature, pressure, chemical substances present in the process, type of assembly of the electrode within the system.



Temperature sensor NTC-Sensor			
Measuring Range		**Pressure**	7 bar max
-10 °C ÷ +150 °C (+14 °F ÷ +302 °F)		**Body**	12x100 mm (Ø-L)
Cable	3 m max	**Materials**	SS 304

	pH				Redox	
Probe Type	**SPH3-WW**	**SPH4-HP**	**SPH4-HT**	**SPH4-LC**	**SRH3-PT**	**SRH4-HTPT**
pH/Redox Range	2 ÷ 14 pH	2 ÷ 14 pH	0 ÷ 14 pH	0 ÷14 pH	±1000 mV	±1000 mV
Minimum Conductivity	5 µ	5 µS	50 µS	< 0,2 µS	-	-
Maximum Temperature	80 °C	90 °C	130 °C	0 ÷ 40°C	80 °C	130 °C
Maximum Pressure	6 bar	6 bar	16 bar(*)	6 bar	6 bar	16 bar(*)
Diaphragm Type	Single Pore	Double Pore	3 Ceramic	3 Ceramic	Single Pore	3 Ceramic
Reference	GEL	GEL Polilyte	GEL	GEL	GEL	GEL
Connections	S7	S7	S7	S7	S7	S7
Mounting	PG 13,5	PG 13,5	PG 13,5	PG 13,5	PG 13,5	PG 13,5
Body	Glass 12x120	Glass 12x120	Glass 12x120	Glass 12x120	Glass 12x120	Glass 12x120

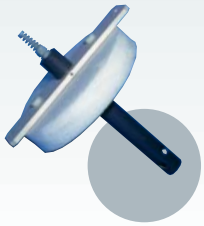
(*) The maximum pressure of 16 Bar is guaranteed at 25 °C. As the temperature increases, the pressure drops linearly; at 100 °C the maximum pressure is 6 bar.

Probe holder & Accessories

PI-PVC: Immersion probe holder at a fixed height
Available lengths: 400 mm, 800 mm, 1000 mm
Max temperature: 40°C

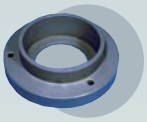
PIR-PVC: Adjustable height immersion probe holder
Available lengths: 400 mm, 800 mm, 1000 mm • Max temperature: 40°C

PIR-2-PP: Immersion probe holder for 2 probes
Available lengths: 400 mm, 800 mm, 1000 mm • Max temperature: 80°C



PI-G: Floating probe holder in PVC
Available lengths: 250 mm • Max temperature: 40°C

B-PI-G: Mounting bracket in PVC with hinges
Available lengths: 2 metres • Max temperature: 40°C



FER: Counter-flange for rapid extractions in PVC external Ø 140 mm • internal Ø 65 mm

PSS7: Probe holder for wall mounting
3 electrodes with transparent (SAN) and matt (anti-acid PVC) probe holder
Max pressure: 6 bar
Max temperature: 40°C

Buffer solutions 4 • 7 • 9.22 pH – 250 ml phials

PIA-PVC:
Probe holder with probe cleaning system
Available lengths: 400 mm and 800 mm
Pressure: 2 ÷ 6 bar
Max temperature: 40°C

SPP FIL:
Probe holder in PP for in-line mounting
Connection: 3/4" or 1"1/4 GAS M
Max pressure: 16 bar
Max temperature: 80°C

SPP: Probe holder in PP+PVC for in-line mounting
Connection: 1" GAS F
Max. pressure: 16 bar
Max. temperature: 60°C

pH and Redox probe connection cables (S7/BNC)
Model CE-1 (all models) Model CS-1-B (all models)

CD500 Conductivity Instrument

Main Specifications

Measuring Range

Conductivity Measurement Range	
0 ÷ 20 µS; 0 ÷ 200 µS; 0 ÷ 2000 µS; 0 ÷ 20000 µS.	
Conductivity Resolution	0,01 µS; 0,1 µS; 1 µS; 10 µS
Conductivity Accuracy	98%
Probe Connection	Screw Connector
Temperature Range	-10 ÷ +150 °C (+14 ÷ +302 °F)
Temperature Resolution	0,1°C (0,1°F)
Temperature precision	98%

Power Requirements

Universal Input	80÷265 Vac (24 Vac on demand)
Power Consumption	10 VA

Mechanical Characteristics

Dimensions	144x144x112 mm and 96x96x130 mm
Box Material	ABS (96x96) and PP (144x144)
Protection Degree	IP65 (144x144) and IP54 (96x96)

Interface

Keypad	4 keys for setting the parameters
Graphic Display	128x64 pixel with backlighting
Multilingual Menu	English, Italian, French, Spanish, German

Control Outputs

Dual mA output, galvanically separated
Double Relay, double exchange for dosing Set Point (Dry contact)
Designated relay for probe cleansing (Dry contact)
Relay with remote alarm (Dry contact)
RS485 serial port interface

Inputs

Voltage 15÷30 Vac/dc (in order to fix the instrument in Hold status)
pH Probe with BNC connector
NTC Temperature sensor with screw connector

Control Functions and Settings

Control	1. PID control (mA 2 output) 2. Timed 3. ON/OFF
Delay function for relay activation	
Manual control of all outputs	
Assisted adjustment with probe effectiveness evaluation	
Modify Set Point Value with designated menu	
Setup Protection with Password	

Mechanical Mounting

Wall	144x144 Box
Panel	144x144 and 96x96 Box
Pole	144x144 Box

Conductivity Devices

Graphic Display

User-Friendly Keyboard

Descriptive Display

Conductivity Probes

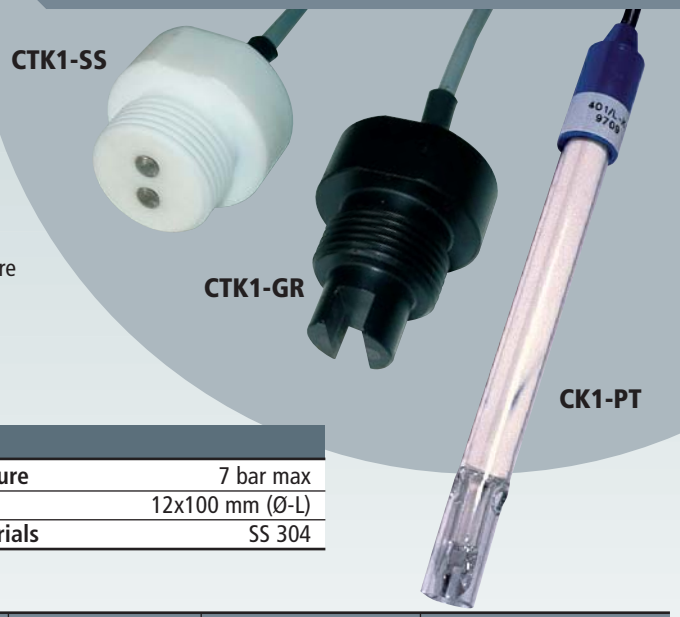
Conductivity Probes

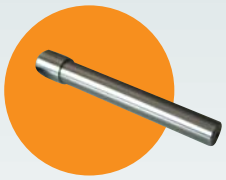
Our range of conductivity probes was specifically designed for industrial applications with our measuring instruments. The various available models allow to cover a very wide range of measurements.

Probe versions available with temperature sensor, particular versions with graphite or platinum electrodes, PTFE cell bodies with IP67 connectors.

The conductivity measurement is carried out by immersing two metal electrodes into the solution to be measured. The current passing between the two electrodes allows the electrical resistance of the liquid, and therefore its conductivity.

NB. All models are guaranteed for a maximum pressure of 6 Bar.



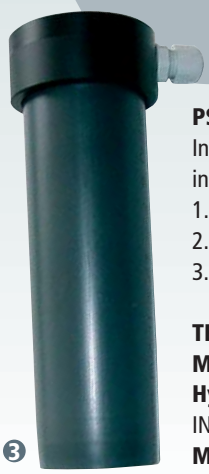


Temperature sensor NTC-Sensor			
Measuring Range		**Pressure**	7 bar max
-10 °C ÷ +150 °C (+14 °F ÷ +302 °F)		**Body**	12x100 mm (Ø-L)
Cable	3 m max	**Materials**	SS 304

Probe type	Conductivity range	C - K	Max. Temperature	Body	Mounting	Electrical Connections
CTK1-SS*	0,01 µS ÷ 20 mS	C=1 cm-1 K=1 cm	100°C	PTFE	1"GAS	5 m or 10 m two wire cable
CTK1-GR*	0,01 µS ÷ 20 mS	C=1 cm-1 K=1 cm	50°C	PVC	1"GAS	5 m or 10 m two wire cable
CK1-PT	1 µS ÷ 20 mS	C=1 cm-1 K=1 cm	120°C	Glass - Platinum	Ø 12 mm L=120 mm	6 m two wire cable

(*) The maximum pressure of 6 bar is guaranteed at 25 °C. As the temperature increases, the pressure drops linearly; at 50 or 100 °C, the maximum pressure is 1 bar.
Temperature Sensor included in the conductivity body.

Probe holder & Accessories



PSS-COND (CTK1-SS • CTK1-GR)
In-line probe holder with probe cleaning in black pvc
1. With washing (PSS-COND-W)
2. Standard (PSS-COND)
3. Probe cable protection (included)

TECHNICAL CHARACTERISTICS
Mechanical connection: 1"
Hydraulic connection:
IN/OUT 3/4" GAS
Mounting: wall by means of dowels

PSS7(CK1-PT):
Probe holder for wall mounting
3 electrodes with transparent (SAN) and matt (anti-acid PVC) probe holder
Max pressure: 6 bar
Max temperature: 40°C

SPP FIL(CK1-PT):
Probe holder in PP for in-line mounting
Connection: 3/4" or 1"1/4 GAS M
Max pressure: 16 bar
Max temperature: 80°C

SPP(CK1-PT):
Probe holder in PP+PVC for in-line mounting
Connection: 1" GAS F
Max. pressure: 16 bar
Max. temperature: 60°C

CERTIFIED CONDUCTIVITY BUFFER SOLUTIONS

Name	Value	Quantity	Exp. date
STMS-8	84 µS/cm 25°C	500 ml	24 months
STMS-14	1423 µS/cm 25°C	500 ml	24 months
STMS-128	12880 µS/cm 25°C	500 ml	24 months

OX500 Oxygen Instrument

Main Specifications

Measuring Range

Oxygen Measurement Range	0 ÷ 20 ppm
Oxygen Resolution	0,1 ppm
Oxygen Accuracy	98%
Probe Connection	Connector
Temperature Range	-10 ÷ +150 °C (+14 ÷ +302 °F)
Temperature Resolution	0,1°C (0,1°F)
Temperature Precision	98%

Power Requirements

Universal Input	80÷265 Vac (24 Vac on demand)
Power Consumption	10 VA

Mechanical Characteristics

Dimensions	144x144x112 mm and 96x96x130 mm
Box Material	ABS (96x96) and PP (144x144)
Protection Degree	IP65 (144x144) and IP54 (96x96)

Interface

Keypad	4 keys for setting the parameters
Graphic Display	128x64 pixel with backlighting
Multilingual Menu	English, Italian, French, Spanish, German

Control Outputs

Dual mA output, galvanically separated
Double Relay, double exchange for dosing Set Point (Dry contact)
Designated relay for probe cleansing (Dry contact)
Relay with remote alarm (Dry contact)
RS485 serial port interface

Inputs

Voltage 15÷30 Vac/dc (in order to fix the instrument in Hold status)
pH Probe with BNC connector
NTC Temperature sensor with screw connector

Control Functions and Settings

Control	1. PID control (mA 2 output) 2. Timed 3. ON/OFF
Delay function for relay activation	
Manual control of all outputs	
Assisted adjustment with probe effectiveness evaluation	
Modify Set Point Value with designated menu	
Setup Protection with Password	

Mechanical Mounting

Wall	144x144 Box
Panel	144x144 and 96x96 Box
Pole	144x144 Box

Oxygen Devices

Graphic Display

User-Friendly Keyboard

Descriptive Display

Oxygen Probes

Oxysens Probe

The **OX500 Dissolved Oxygen instrument** allows measurement of dissolved Oxygen concentration (expressed in mg/l) in liquids, using a polarographic type, non-restorable, combined measurement probe combined with a temperature probe.

The instrument measures partial pressure of oxygen in water by way of the current generated by the polarographic probe.

The instrument sees to the automatic compensation, in a range from –10 to +150 °C, of the permeability of the membrane, by means of the temperature sensor inside the Oxygen probe, while taking into account the salinity of the liquid in question.

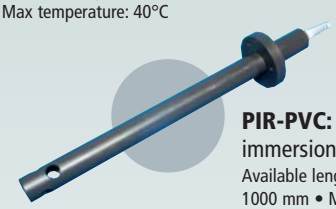
The automatic or manual adjustment function of the dissolved oxygen probe allows high precision of measurements taken over time.

Technical Characteristics

Type of electrodes	Silver – Platinum
Electrolyte	Alkaline solution
Membrane	OPTIFLOW™
Temperature Sensor	NTC 2,2 Kohm
Sensitivity	40÷80 nA at 25°C
Stabilisation Time	average 15 minutes, maximum 1 hour
Operation Temperature	0÷60 °C
Temperature Range	-10 ÷ 60 °C with water contained in a probe holder
Pressure	0÷4 bar, inserted in pipe, 0.5 bar totally submerged
Probe Body Diameter	12 mm
Mounting	pitch PG 13,5 mm
Flow	minimum 0,03 m/sec
Flow Dependence	<5% at 25°C
Consumption	20 ngr/hour, airborne at 25 °C
Residual Current	<0,5% airborne
Variation of zero	<0.5% of current every 2 months, at 25 °C in stable water
Variation of sensitivity	>10% every 2 months in stable water

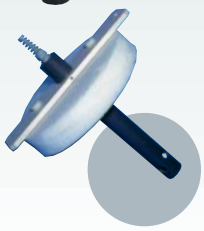
Probe holder

PI-PVC: Immersion probe holder at a fixed height
Available lengths: 400 mm, 800 mm, 1000 mm
Max temperature: 40°C



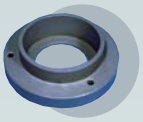
PIR-PVC: Adjustable height immersion probe holder
Available lengths: 400 mm, 800 mm, 1000 mm • Max temperature: 40°C

PIR-2-PP: Immersion probe holder for 2 probes
Available lengths: 400 mm, 800 mm, 1000 mm • Max temperature: 80°C



PI-G: Floating probe holder in PVC
Available lengths: 250 mm • Max temperature: 40°C

B-PI-G: Mounting bracket in PVC with hinges
Available lengths: 2 metres • Max temperature: 40°C



FER: Counter-flange for rapid extractions in PVC external Ø 140 mm • internal Ø 65 mm

PIA-PVC:
Probe holder with probe cleaning system
Available lengths: 400 mm and 800 mm
Pressure: 2 ÷ 6 bar
Max temperature: 40°C

PSS7: Probe holder for wall mounting
3 electrodes with transparent (SAN) and matt (anti-acid PVC) probe holder
Max pressure: 6 bar
Max temperature: 40°C

SPP FIL:
Probe holder in PP for in-line mounting
Connection: 3/4" or 1"1/4 GAS M
Max pressure: 16 bar
Max temperature: 80°C

SPP: Probe holder in PP+PVC for in-line mounting
Connection: 1" GAS F
Max. pressure: 16 bar
Max. temperature: 60°C

TB500 Turbidity Instrument

Main Specifications

Measuring Range

Turbidity Measurement Range	0,00 ÷ 1,00 FTU 0,0 ÷ 10,0 FTU; 0 ÷ 100 FTU
Turbidity Resolution	0,01 FTU; 0,1 FTU; 1 FTU
Turbidity Accuracy	98%
Probe Connection	Connector
Temperature Range	-10 ÷ +150 °C (+14 ÷ +302 °F)
Temperature Resolution	0,1°C (0,1°F)
Temperature Precision	98%

Power Requirements

Universal Input	80÷265 Vac (24 Vac on demand)
Power Consumption	10 VA

Mechanical Characteristics

Dimensions	144x144x112 mm and 96x96x130 mm
Box Material	ABS (96x96) and PP (144x144)
Protection Degree	IP65 (144x144) and IP54 (96x96)

Interface

Keypad	4 keys for setting the parameters
Graphic Display	128x64 pixel with backlighting
Multilingual Menu	English, Italian, French, Spanish, German

Control Outputs

Dual mA output, galvanically separated
Double Relay, double exchange for dosing Set Point (Dry contact)
Designated relay for probe cleansing (Dry contact)
Relay with remote alarm (Dry contact)
RS485 serial port interface

Inputs

Voltage 15÷30 Vac/dc (in order to fix the instrument in Hold status)
pH Probe with BNC connector
NTC Temperature sensor with screw connector

Control Functions and Settings

Control	1. PID control (mA 2 output) 2. Timed 3. ON/OFF
Delay function for relay activation	
Manual control of all outputs	
Assisted adjustment with probe effectiveness evaluation	
Modify Set Point Value with designated menu	
Setup Protection with Password	

Mechanical Mounting

Wall	144x144 Box
Panel	144x144 and 96x96 Box
Pole	144x144 Box

Turbidity Devices

User-Friendly Keyboard

Graphic Display

Descriptive Display

Turbidity Probes

Turby Sensor Probe

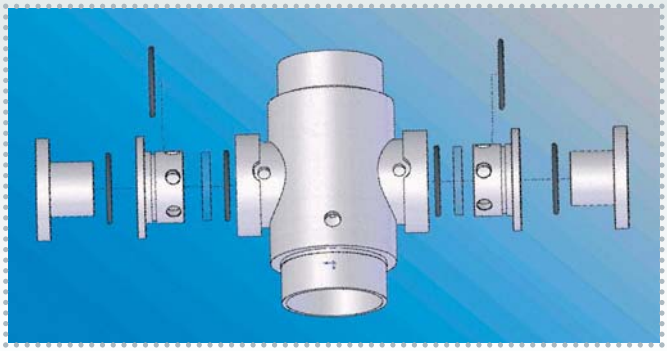
This measurement method is used to determine turbidity is the measurement of the radiation diffused inside the **"Turby Sensor"** Turbidimetric probe.

The turbidity measured by this method is expressed in formazine nephelometric units (FNU or NTU). Using the TB500 instrument, it is possible to determine turbidity between **0 and 100 FTU** in three settable scales.

With the available accessories, it is possible to have good installation flexibility with the reduction flanges. The Dehumidifier ensures that the optics remain perfectly functional in damp atmospheres.

The measuring group can be installed with the in-line probe holder with probe cleaning. Its mechanical components are easily accessible for inspection purposes. The measuring group also features automatic washing equipment.

Maximum system pressure is 1 bar.



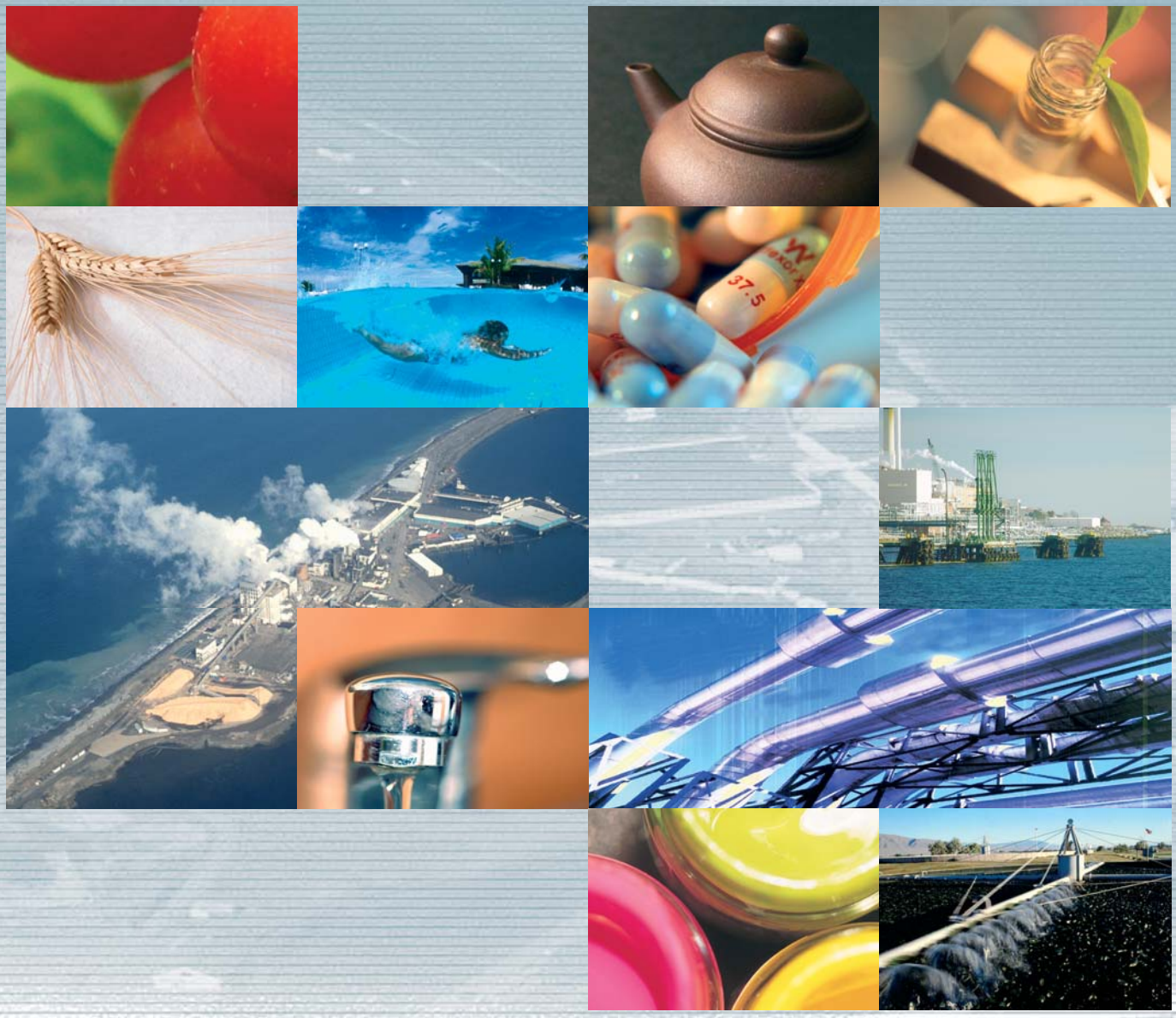
Technical Characteristics

Material	SS 304
Cell externally buffed and Black Teflon inside	
Hydraulic Connection	IN/OUT 2 1/2" GAS M
Maximum Operating Pressure	1 Bar
Floodlight Unit with 1.5W 6V Incandescence Bulb	
Sensor Group for Photoconductive Measurement	
Equipment for 1/4" Gas attachment for Washing with liquids and/or air	
Connections for 6x4 mm tube for Anti-condensate Air Input	

Accessories

REDUCTION FLANGES
IN/OUT from 2"1/2 to 1/2" GAS F

DEHUMIDIFIER:
Power Supply: 230 Vac 50Hz
Hydraulic connections: 4x6 mm



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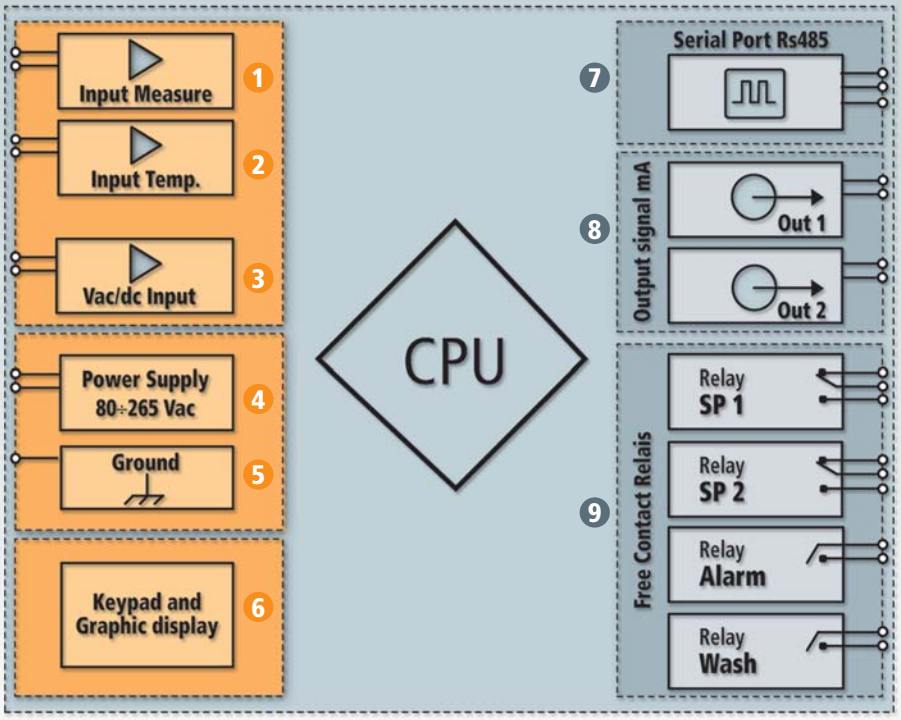
BRO 500**UK 051**

Electrical and mechanical connections drawings

Electrical connections



Input:

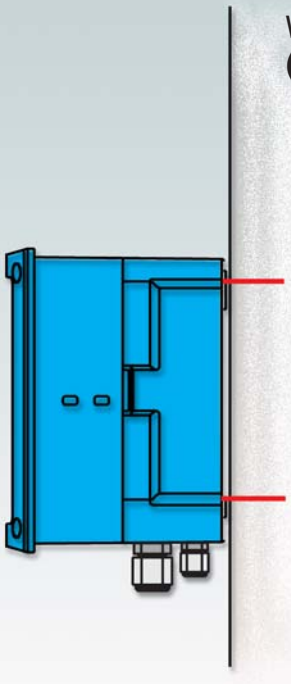
1. Chemical Measurement
2. Temperature measurement
3. Input voltage 15 – 30 Vac (if present, fix the instrument on HOLD)
4. Universal input 80 – 265 Vac
5. Earth Potential Input
6. Keypad and Display

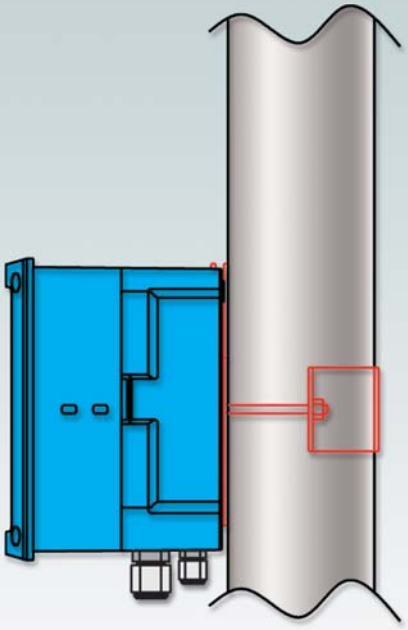
Output:

7. RS485 Serial Port
8. Current outputs
9. Dry contact relay
   - SetPoint 1
   - SetPoint 2
   - Alarm
   - Probe washing

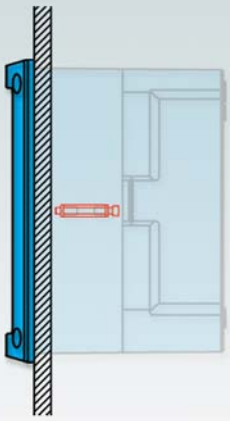
Mechanical connections

Wall Mounting
(144x144x103 mm)





Panel Mounting
(144x144x103 mm
96x96x130 mm)



Pole Mounting with bracket maximum Ø 70 mm
(144x144x103 mm)

Probes applications fields

Applications Fields	Probes										
	PR500						CD500			OX500	TB500
	SPH3 WW	SPH4 HP	SPH4 HT	SPH4 LC	SRH3 PT	SRH4 HTPT	CTK1 SS	CTK1 GR	CK1 PT	OXYSENS	TURBY SENSOR
Car Wash	•			•							
Industrial Waste Water	•	•			•	•	•	•	•	•	•
Municipal Water Treatment	•				•		•	•	•	•	•
Waste Water (small installation)	•				•		•			•	•
Potabilization	•							•	•	•	•
Boiler feed Water			•			•	•	•	•		
Cooling Tower Water			•			•	•	•	•		
Water Disinfections	•						•	•	•	•	•
Legionella Prevention	•									•	
Garden irrigation water	•						•	•	•	•	•
Fert-irrigation	•						•	•	•	•	•
Hydroponics feeding	•						•	•	•		
Potable Water (Clean Water)	•			•						•	•
Printing Ink feeding	•						•	•	•		
Reverse Osmosis	•			•			•	•	•		
Beverage	•						•	•	•	•	•
Fruit juice feeding		•					•	•	•	•	
Bottles disinfections	•		•		•		•	•	•	•	•
Chemical Process	•	•	•				•	•	•	•	•
Electroplating		•					•	•	•		
Food and beverage industries		•						•	•	•	•
Paints industry	•						•	•	•		•
Textile industry	•	•			•		•			•	•
Conditioning water recycling	•						•	•	•		
Oil & Gas		•	•			•	•	•	•		•
Product for Paper Industry	•	•					•	•	•		•
Petrochemical		•	•				•	•			•
Drain-water recycling	•								•	•	•
Fish farming	•									•	•
Ultra pure water (laboratory)				•				•	•	•	•
Diary industry	•										
Thermal power plants		•	•	•	•	•	•	•	•		
Waterworks	•									•	
Drinking Water (dispensers)	•						•	•	•	•	
Swimming pool Applications	•					•				•	•
Pulp & Paper industry	•						•	•	•		•
Metallurgy	•						•	•	•		•
Aquarium water	•						•	•	•	•	•
Wine industry	•							•	•		•
Pharmaceutical		•	•						•	•	•
Electromechanical reseller	•						•				•