

The new series  
of mini controllers  
for pH, ORP,  
TDS, EC  
and Resistivity.

IT'S WHAT YOU'VE ASKED FOR...

# MINI CONTROLLERS

B L S E R I E S



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Traditionally, process monitoring and control has required considerable investment in system design, equipment, maintenance and training. With the introduction of the BL Series Mini-Controllers, Hanna provides a solution for industries that require reliable, efficient and affordable process monitoring and control.

The new BL Series Mini-Controllers are easy to use, durable and provide precise monitoring and control of pH, ORP, TDS, EC, and Resistivity.

Each Mini-Controller is 8 x 5 cm (3 x 2") in size and weighs less than 9 oz. The compact size and simplicity of design allows for easy installation and integration into almost any existing system.

Each model is a single set point controller designed to control the operation of a pump, valve or mechanical device for dosing, filling and emptying tanks and rerouting flow.

The control action of each Mini-Controller can be disabled, set to automatic or manually operated directly from the front panel.

A selectable "Overtime" overdosing system can deactivate a valve, pump, or other connected device if activation continues for more than the set time, which is adjustable from 5 up to 30 minutes.

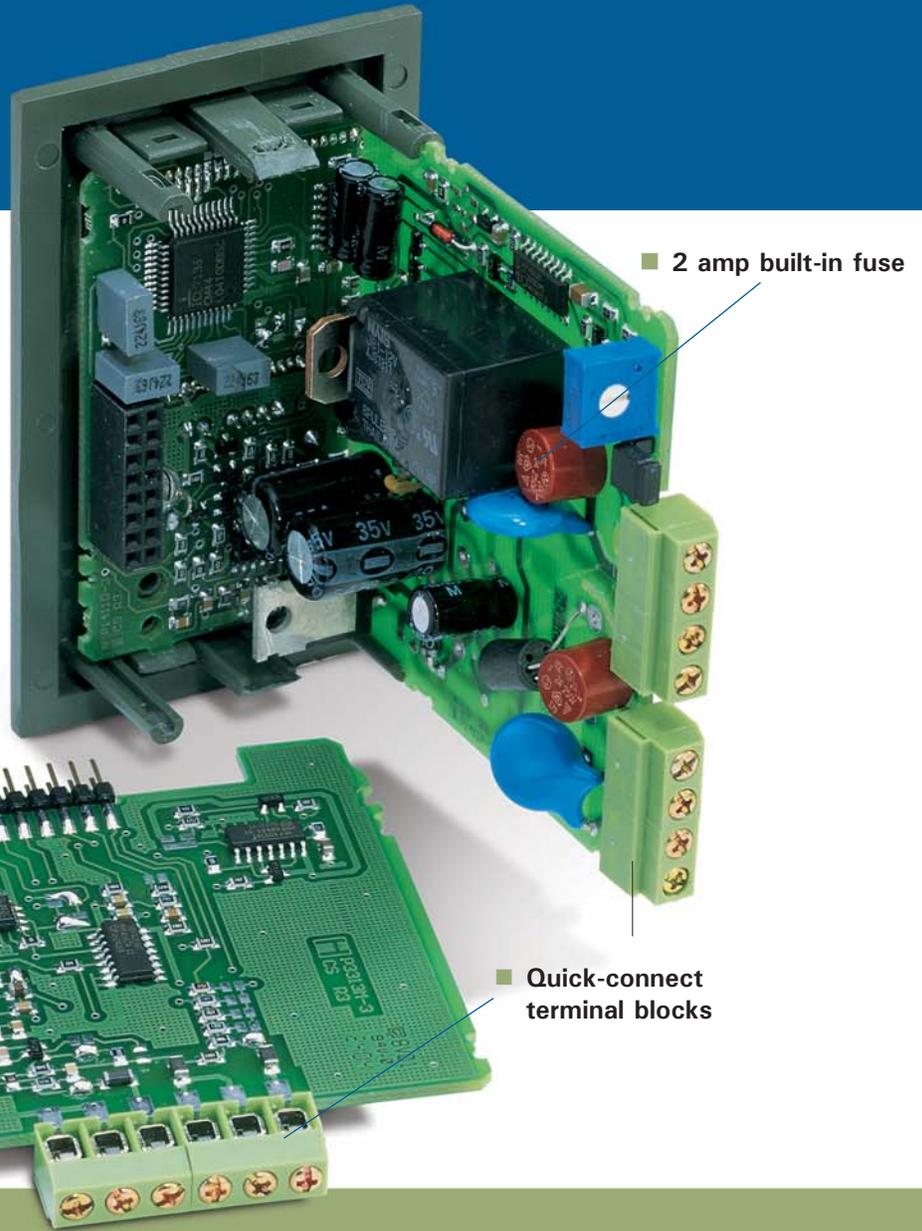
Hanna Mini  
Controllers are  
the perfect solution  
for Water Analysis  
and Control

Any system can  
be cost effectively  
monitored 24  
hours a day.



## Features

- Fire retardant casing
- Larger LCD
- Selectable overdose protection system
- External disable feature
- Selectable control override
- Matching pin connection
- 4-20 mA analog output



■ Removable modules for easy maintenance

■ Quick-connect terminal blocks

Specifications	BL 981411-0 and BL 981411-1	BL 931700-0 and BL 931700-1	BL 982411-0 and BL 982411-1	BL 932700-0 and BL 932700-1
Range	0.0 to 14.0 pH	0.00 to 14.00 pH	0 to 1000 mV	± 1000 mV
Resolution	0.1 pH	0.01 pH	1 mV	1 mV
Accuracy (@20°C/68°F)	± 0.2 pH	± 0.02 pH	± 5 mV	± 5 mV
Typical EMC Deviation	± 0.1 pH	± 0.10 pH/± 0.10 mA	± 5 mV	± 5 mV / ± 0.10 mA
Calibration	Manual, through CAL (offset) trimmer	Manual, through offset & slope trimmers	Manual, through CAL trimmer	Manual, through CAL trimmer
Dosing Contact	Maximum 2A (fuse protected), 250 VAC, 30 VDC	Maximum 2A (fuse protected), 250 VAC, 30 VDC	Maximum 2A (fuse protected), 250 VAC, 30 VDC	Maximum 2A (fuse protected), 250 VAC, 30 VDC
Dosing Selection	Acid or Alk, selectable on the back panel	Acid or Alk, selectable on the back panel	Rdx or Dxd, selectable on the back panel	Rdx or Dxd, selectable on the back panel
Contact Open	= Acid dosage = Relay ON if Measure > Setpoint	= Acid dosage = Relay ON if Measure > Setpoint	= Reductant dosage = Relay ON if Measure > Setpoint	= Reductant dosage = Relay ON if Measure > Setpoint
Contact Close	= Alk dosage = Relay ON if Measure < Setpoint	= Alk dosage = Relay ON if Measure < Setpoint	= Oxidant dosage = Relay ON if Measure < Setpoint	= Oxidant dosage = Relay ON if Measure < Setpoint
Setpoint	Adjustable, from 0 to 14 pH		Adjustable, from 0 to 1000 mV	Adjustable, from -1000 to 1000 mV
Recorder Output		4 to 20 mA, accuracy ± 0.20 mA, 500 Ω maximum load		4 to 20 mA, accuracy ± 0.20 mA, 500 Ω maximum load

Specifications	BL 983313-0 and BL 983313-1	BL 983327-0 and BL 983327-1	BL 983320-0 and BL 983320-1	BL 983322-0 and BL 983322-1
Range	0 to 1999 μS/cm	0.00 to 10.00 mS/cm	0.0 to 199.9 μS/cm	0.00 to 19.99 μS/cm
Resolution	1 μS/cm	0.01 mS/cm	0.1 μS/cm	0.01 μS/cm
Accuracy (@20°C/68°F)	± 2% f.s.	± 2% f.s.	± 2% f.s.	± 2% f.s.
Typical EMC Deviation	± 2% f.s.	± 2% f.s.	± 2% f.s.	± 2% f.s.
Probe	HI 7634-00 EC/TDS probe (optional)	HI 7632-00 EC/TDS probe (optional)	HI 7634-00 EC/TDS probe (optional)	HI 7634-00 EC/TDS probe (optional)
Temperature Compensation	Automatic from 5 to 50°C (41 to 122°F); β = 2%/°C	Automatic from 5 to 50°C (41 to 122°F); β = 2%/°C	Automatic from 5 to 50°C (41 to 122°F); β = 2%/°C	Automatic from 5 to 50°C (41 to 122°F); β = 2%/°C
Calibration	Manual, through CAL trimmer			
Dosing Contact	Maximum 2A (fuse protected), 250 VAC, 30 VDC	Maximum 2A (fuse protected), 250 VAC, 30 VDC	Maximum 2A (fuse protected), 250 VAC, 30 VDC	Maximum 2A (fuse protected), 250 VAC, 30 VDC
Setpoint	Adjustable, from 0 to 1999 μS/cm	Adjustable, from 0 to 10 mS/cm	Adjustable, from 0 to 199.9 μS/cm	Adjustable, from 0 to 19.99 μS/cm

### Specifications for All Models

Overtime	Adjustable, typically from 5 to approx. 30 min.	Power supply:	External (fuse protected)	Dimensions	79 x 49 x 95 mm (3.1 x 1.9 x 3.7 )
Power Consumption	10 VA	BL XXXXXX-0	12 VDC		
Installation Category	II	BL XXXXXX-1	115/230 VAC (fuse protected); 50/60 Hz		

pH & ORP

EC

# 32 Models To Measure Conductivity, TDS, Resistivity, pH and ORP

## pH Mini-Controllers

Monitoring and controlling pH in water conditioning and industrial applications is essential for water quality and maintaining infrastructure (piping and equipment). In the case of industrial effluent, neutralization of acidic waste is vital for environmental safety and public health. In industrial applications such as boiler feed water conditioning, a higher pH of 8.5 is necessary to prevent scaling and corrosion of critical components. Maintaining a pH of 7.2 is fundamental for proper and efficient sanitization in swimming pools and spas. The effectiveness of sanitizers such as chlorine is dependent on a controlled pH value.

## ORP Mini-Controllers

ORP (Oxidation Reduction Potential) is the most dependable and consistent indicator of the sanitizing effectiveness of your pool, spa or treatment water. As oxidizers such as chlorine, peroxide and O-zone are added to water for the purpose of sanitization, the ORP value increases, providing a clear indication of the cleansing power of the water. Typically, an ORP value of 650 to 700 mV at a pH of 7.2 indicates that your water is properly treated and all harmful bacteria are killed in less than 1 second. ORP is also essential in chemical processing where reducing agents are used and a negative ORP value is an indicator of proper neutralization.

## Conductivity Mini-Controllers

In water, an increase in conductivity indicates an increase in water hardness and a decrease in purity.

Conductivity monitoring and control is essential in reducing water hardness and maintaining water quality. For instance, water with a conductivity value in the range of 0-140  $\mu$ S is considered "very soft" where as water with a range of 640-840  $\mu$ S is considered "hard" water. An increase in conductivity indicates an increase in the amount of damaging dissolved solids (salts) present in water. Conductivity monitoring and control is essential in industrial applications such as feed water control, blow down activation in cooling towers and water management where high conductivity will cause scaling and corrosion of piping and damage to critical components.

## TDS Mini-Controllers

TDS measurement is an important indicator of water quality. An increase in the TDS reading indicates an increase in the amount of dissolved solids (salts) present in the water. TDS monitoring and control is imperative in industrial applications such as feed water control, blow down activation in cooling towers and water management where high TDS will cause scaling and corrosion of piping and damage to critical components.

TDS measurement is also an important indicator of the effectiveness of water conditioning since an increase in TDS indicates an increase in water hardness and a decrease in purity. This will affect the quality of drinking water, feed water and rinse water. TDS monitoring and control is crucial in reducing water hardness and maintaining water quality and usability.



## Resistivity Mini-Controller

Resistivity, measured in M $\Omega$  (Ohm's), is the optimal way to measure the quality of water produced by high purity systems such as R.O systems and water conditioning equipment. As filter systems become less effective, the resistivity value will decrease indicating a need for maintenance and/or replacement of filters and critical components. Properly functioning RO and water conditioning systems will consistently produce water with resistivity readings in the range of 16 to 18M $\Omega$ .

EC & TDS  
TDS & Resistivity

Specifications	BL 983317-0 and BL 983317-1	BL 983319-0 and BL 983319-1	BL 983318-0 and BL 983318-1	BL 983329-0 and BL 983329-1
Range	0.00 to 10.00 mS/cm	0 to 1999 ppm	0.00 to 10.00 ppt	0 to 999 ppm
Resolution	0.01 mS/cm	1 ppm	0.01 ppt	1 ppm
Accuracy (@20°C/68°F)	±2% f.s.	±2% f.s.	±2% f.s.	±2% f.s.
Typical EMC Deviation	±2% f.s.	±2% f.s.	±2% f.s.	±2% f.s.
TDS Conversion Factor	-	0.65	0.5	0.5
Probe	HI 7632-00 EC/TDS probe (optional)	HI 7634-00 EC/TDS probe (optional)	HI 7632-00 EC/TDS probe (optional)	HI 7634-00 EC/TDS probe (optional)
Temperature Compensation	Automatic from 5 to 50°C (41 to 122°F); $\beta$ = 2%/°C		Automatic from 5 to 50°C (41 to 122°F); $\beta$ = 2%/°C	
Calibration	Manual, through CAL trimmer		Manual, through CAL trimmer	
Dosing Contact	Maximum 2A (fuse protected), 250 VAC, 30 VDC Contact close when measure < Setpoint		Maximum 2A (fuse protected), 250 VAC, 30 VDC Contact close when measure > Setpoint	
Setpoint	Adjustable, from 0 to 10 mS/cm	Adjustable, from 0 to 1999 ppm	Adjustable, from 0 to 10 ppt	Adjustable, from 0 to 999 ppm

Specifications	BL 983315-0 and BL 983315-1	BL 983321-0 and BL 983321-1	BL 983324-0 and BL 983324-1	BL 983314-0 and BL 983314-1
Range	0.0 to 199.9 ppm	0.00 to 19.99 ppm	0.0 to 49.9 ppm	0.00 to 19.90 M $\Omega$ /cm
Resolution	0.1 ppm	0.01 ppm	0.1 ppm	0.10 M $\Omega$ /cm
Accuracy (@20°C/68°F)	±2% f.s.	±2% f.s.	±2% f.s.	±2% f.s.
Typical EMC Deviation	±2% f.s.	±2% f.s.	±2% f.s.	±2% f.s.
TDS conversion factor	0.5	0.5	0.5	-
Probe	HI 7634-00 EC/TDS probe (optional)	HI 7634-00 EC/TDS probe (optional)	HI 7634-00 EC/TDS probe (optional)	HI 3314 resistivity probe (included)
Temperature Compensation	Automatic from 5 to 50°C (41 to 122°F); $\beta$ = 2%/°C		Automatic from 5 to 50°C (41 to 122°F); $\beta$ = 2%/°C	
Temperature Coefficient	-		Automatic and linear from 5 to 50°C (41 to 122°F) $\beta$ = 2.5, 3.5 and 4.5%/°C, user-selectable	
Calibration	Manual, through CAL trimmer		Manual, through CAL trimmer	
Dosing Contact	Maximum 2A (fuse protected), 250 VAC, 30 VDC Contact close when measure > Setpoint		Maximum 2A (fuse protected), 250 VAC, 30 VDC Contact close when measure < setpoint	
Setpoint	Adjustable, from 0 to 199.9 ppm	Adjustable, from 0 to 19.99 ppm	Adjustable, from 0 to 49.9 ppm	Adjustable, from 0 to 19.90 M $\Omega$ /cm

## Solutions



### pH Solutions

Part No.	pH Value at 25°C	Size
HI 7004L	4.01	500 mL
HI 7004/1L	4.01	1 Liter
HI 7004/1G	4.01	1 US Gallon
HI 7007L	7.01	500 mL
HI 7007/1L	7.01	1 Liter
HI 7007/1G	7.01	1 US Gallon
HI 7010L	10.01	500 mL
HI 7010/1L	10.01	1 Liter
HI 7010/1G	10.01	1 US Gallon

### pH Technical Buffers

Part No.	Description	Size
HI 5001	pH 1.00 at 25°C	500 mL
HI 5002	pH 2.00 at 25°C	500 mL
HI 5005	pH 5.00 at 25°C	500 mL
HI 5006	pH 6.00 at 25°C	500 mL
HI 5008	pH 8.00 at 25°C	500 mL
HI 5009	pH 9.00 at 25°C	500 mL
HI 5011	pH 11.00 at 25°C	500 mL
HI 5012	pH 12.00 at 25°C	500 mL
HI 5013	pH 13.00 at 25°C	500 mL

### ORP Solutions

Part No.	Description	Size
HI 7020L	Test solution 200-275 mV	460 mL
HI 7021L	Test solution 240 mV	460 mL
HI 7022L	Test solution 470 mV	460 mL

### ORP Pretreatment Solutions

Hanna storage solutions are prepared with high grade potassium chloride and potassium hydrogen phthalate by titration with NIST 2201 standardized sodium hydroxide solution, respectively.

By conditioning ORP electrodes in a Hanna pretreatment solution, measurements can be sped up.

Part No.	Description	Size
HI 70300L	Storage solution	460 mL
HI 7091L	Pretreatment reducing solution	460 mL
HI 7092L	Pretreatment oxidizing solution	460 mL

### Conductivity Solutions

Part No.	Conductivity Value at 25°C	Size
HI 7030L	12880 $\mu\text{S}/\text{cm}$ ( $\mu\text{mho}/\text{cm}$ )	460 mL
HI 7031M	1413 $\mu\text{S}/\text{cm}$ ( $\mu\text{mho}/\text{cm}$ )	230 mL
HI 7033L	84 $\mu\text{S}/\text{cm}$ ( $\mu\text{mho}/\text{cm}$ )	460 mL
HI 7039L	5000 $\mu\text{S}/\text{cm}$ ( $\mu\text{mho}/\text{cm}$ )	460 mL

### Total Dissolved Solids (TDS) Solutions

Hanna is one of the few manufacturers offering preformulated Total Dissolved Solids solutions for lab and field calibration. Each solution is prepared using high grade Potassium Chloride standardized with a meter pre-calibrated with NIST 999 KCl and conforming to NIST 2201 Silver Nitrate solution.

Part No.	Conductivity Value at 25°C	Size
HI 7032L	1382 ppm (mg/L)	460 mL
HI 7036L	12.41 ppt (g/L)	460 mL

### Cleaning Solutions for Electrodes

Clean the liquid junction of the electrodes once a day or at least once a week to prevent clogging and to maintain accuracy.

Part No.	Description	Size
HI 7061L	General purpose solution	460 mL
HI 7074L	Inorganic cleaning solution	460 mL



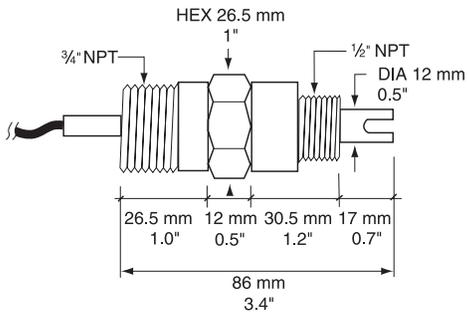
### Solutions manufactured to your application

It is difficult to exaggerate the importance of buffer and maintenance solutions. Expensive equipment is often utilized well below its full capabilities due to lack of proper maintenance of sensors. With Hanna solutions, this is no longer a problem. All solutions are prepared with carefully weighed chemicals of the highest grade following International Laboratory Practice guidelines. Due to the sheer volume of solutions produced, the quantity of chemicals used provides a much better resolution than if small volumes were prepared by a laboratory technician. HANNA solutions give the user the advantage of being able to perform accurate calibration at a minimal cost.

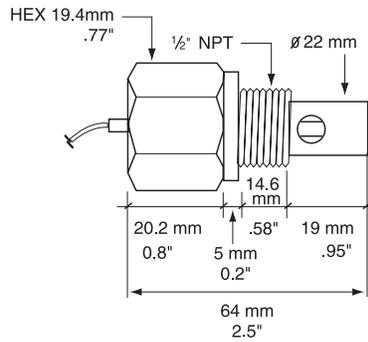
## Electrodes



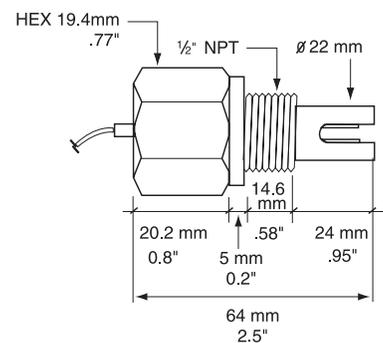
### HI 1001 Dimensions



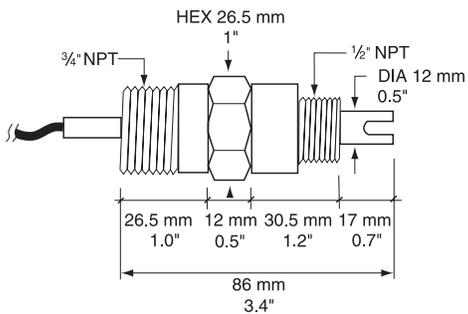
### HI 3314 Dimensions



### HI 7632-00 and HI 7634-00 Dimensions



### HI 2001 Dimensions



### BL Controller Series Dimensions

