



Models available
with 4-20 mA
galvanic isolated
output with
external dosing
disable contact

BL Series
Mini Controllers
pH, ORP, EC, TDS and Resistivity



BL mini controllers are the perfect solution for water analysis and control.

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 boiler feed water conditioning, a pH of 8.5 is necessary to prevent scaling and corrosion of critical components. Maintaining a pH of 7.4 is fundamental for proper and efficient sanitization in swimming pools and spas. The efficacy of sanitizers, such as chlorine, is dependent on a controlled pH value.

ORP mini controllers

ORP (oxidation reduction potential) is a dependable and consistent indicator of sanitizing effectiveness of a pool, spa, or water treatment. As oxidizers, chlorine, peroxide, and ozone are added, 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 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 indicates 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. Water with a conductivity value of 0 to 140 $\mu\text{S}/\text{cm}$ is considered "very soft," while 640 to 840 $\mu\text{S}/\text{cm}$ 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. In these applications, high conductivity will cause scaling and corrosion of piping and damage to critical components.

TDS mini controllers

A TDS (total dissolved solids) measurement is an important indicator of water quality. An increase in TDS 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. In these applications, high TDS will cause scaling and corrosion of piping and damage to critical components.

A TDS measurement is also an important indicator of the effectiveness of water conditioning. 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 $\Omega \cdot \text{M}$, is the optimal way to measure the quality of water produced by high purity systems, such as reverse osmosis (RO) systems and water conditioning equipment. As resistivity is the inverse of conductivity, it provides a more accurate characterization of water with very low conductive ability. 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 18 $\text{M}\Omega \cdot \text{cm}$.

Any system can be cost effectively monitored 24/7





BL981411 pH Mini Controller

- Large, clear LCD
- Fire retardant casing
- BNC connection
- Splash-resistant cover

The BL981411 is a compact, pH process controller designed for applications where space and/or cost are important. The device contains a high impedance pH input and may be used with any pH electrode with a standard BNC connector. Users may choose from automatic or manual dosing modes allowing for easy maintenance and troubleshooting.

Features

Adjustable dosing relay

The BL981411 features a dosing relay which may be configured to dose above or below a user programmable pH setpoint.

Selectable overdose protection

The mini controller may be programmed to deactivate a valve, pump, or connected device if its activation continues over a selected time; adjustable from 5 to 30 minutes.

Relay control override

With the flick of a switch the mini controller's relay can be disabled (OFF), placed in control (AUTO), or be activated for manual operation (ON) which is useful for priming a dosing pump.

Fuse protected dosing contacts

The relay dosing contact is rated for up to a 2A load and is fuse protected.

Easy peripheral connection

Quick-connect terminal blocks provide for easy connection to power, communication, dosing control, or sensors.

Matching pin connection

A built-in matchin pin helps protect the sensor from ground loop effects that may lead to erratic readings or system damage.

Specifications	BL981411
Range	0.0 to 14.0 pH
Resolution	0.1 pH
Accuracy (@25°C/77°F)	±0.2 pH
Calibration	manual, through CAL (offset) trimmer
Dosing Relay	maximum 2A (fuse protected), 250 Vac, 30 VDC
Dosing Selection	acid or alkaline contact open=acid dosage=relay ON if measurement > setpoint contact closed=alkaline dosage=relay ON if measurement < setpoint
Setpoint	adjustable from 0 to 14 pH
Overtime	adjustable, from 5 to approximately 30 minutes
Input Impedance	10 ¹² Ohm
Power Supply	BL981411-0: 12 VDC adapter (included); BL981411-1: 115/230 VAC; 50/60Hz
Dimensions	83 x 53 x 99 mm (3.3 x 2.1 x 3.9")
Weight	BL981411-0: 200 g (7.1 oz.); BL981411-1: 300 g (10.6 oz.)
Ordering Information	BL981411-0 (12 VDC) and BL981411-1 (115/230 VAC) are supplied with mounting brackets, transparent cover and instruction manual.
Recommended Probe	HI1001 PVDF body pH electrode with 1/2" NPT thread, BNC connector and 3 m (9.8') cable for continuous flow-thru monitoring (not included).



BL931700 pH Mini Controller

with 4-20 mA Recorder Output

- Large, clear LCD
- Fire retardant casing
- BNC connection
- Splash-resistant cover

The BL931700 is a compact single setpoint pH controller designed for applications where space and/or cost are important. Users may choose from automatic or manual dosing modes allowing for easy maintenance and troubleshooting. The device contains a high impedance pH input and may be used with any pH electrode that has a standard BNC connector.

Features

Enhanced accuracy and precision

The BL931700 model offers a manual two-point calibration with pH values displayed out to two decimal places.

External disabling feature

A normally open contact may connect to a level controller or flow monitor. This safety feature may be used to prevent continuous dosing in the event of specific or undesired system conditions.

Adjustable dosing relay

The BL931700 features a dosing relay which may be configured to dose above or below a user programmable pH setpoint.

Selectable overdose protection

The mini controller may be programmed to deactivate a valve, pump, or connected device if its activation continues over a selected time; adjustable from 5 to 30 minutes.

Relay control override

With the flick of a switch the mini controller's relay can be disabled (OFF), placed in control (AUTO), or be activated for manual operation (ON) which is useful for priming a dosing pump.

Analog output communication

The BL931700 features a 4 - 20 mA analog output for connection to a data logger, chart recorder, or other device.

Fuse protected dosing contacts

The relay dosing contact is rated for up to a 2A load and is fuse protected.

Easy peripheral connection

Quick-connect terminal blocks provide for easy connection to power, communication, dosing control, or sensors.

Matching pin connection

A built-in matching pin helps protect the sensor from ground loop effects that may lead to erratic readings or system damage.

Specifications

Specifications	BL931700
Range	0.00 to 14.00 pH
Resolution	0.01 pH
Accuracy (@25°C/77°F)	±0.02 pH
Calibration	manual, through offset and slope trimmers
Dosing Relay	maximum 2A (fuse protected), 250 Vac, 30 VDC
Dosing Selection	acid or alkaline contact open=acid dosage=relay ON if measurement > setpoint contact closed=alkaline dosage=relay ON if measurement < setpoint
Setpoint	adjustable from 0 to 14 pH
Overtime	adjustable, from 5 to approximately 30 minutes
Recorder Output	4 to 20 mA, accuracy ±0.20 mA, 500 Ω maximum load
Input Impedance	10 ¹² Ohm
Power Supply	BL931700-0: 12 VDC adapter (included); BL931700-1: 115/230 VAC; 50/60Hz
Dimensions	83 x 53 x 99 mm (3.3 x 2.1 x 3.6")
Weight	BL931700-0: 200 g (7.1 oz.); BL931700-1: 300 g (10.6 oz.)
Ordering Information	BL931700-0 (12 VDC) and BL931700-1 (115/230 VAC) are supplied with mounting brackets, transparent cover and instruction manual.
Recommended Probe	HI1001 PVDF body pH electrode with 1/2" NPT thread, BNC connector and 3 m (9.8') cable for continuous flow-thru monitoring (not included).



BL982411 ORP Mini Controller

- Large, clear LCD
- Fire retardant casing
- BNC connection
- Splash-resistant cover

The BL982411 is a compact, easy to handle, efficient, ORP process controller designed for applications where space or cost is important. The device may be used with any ORP electrode with a standard BNC connector. Users may choose from automatic or manual dosing modes allowing for easy maintenance and troubleshooting.

Features

Adjustable dosing relay

The BL982411 features a dosing relay which may be configured to dose above or below a user programmable mV setpoint.

Selectable overdose protection

The mini controller may be programmed to deactivate a valve, pump, or connected device if its activation continues over a selected time; adjustable from 5 to 30 minutes.

Relay control override

With the flick of a switch the mini controller's relay can be disabled (OFF), placed in control (AUTO), or be activated for manual operation (ON) which is useful for priming a dosing pump.

Fuse protected dosing contacts

The relay dosing contact is rated for up to a 2A load and is fuse protected.

Easy peripheral connection

Quick-connect terminal blocks provide for easy connection to power, communication, dosing control, or sensors.

Matching pin connection

A built-in matching pin helps protect the sensor from ground loop effects that may lead to erratic readings or system damage.

Specifications	BL982411
Range	0 to 1000 mV
Resolution	1 mV
Accuracy (@25°C/77°F)	±5 mV
Calibration	manual, with CAL trimmer
Dosing Relay	maximum 2A (fuse protected), 250 Vac, 30 VDC
Dosing Selection	reducing or oxidizing, selectable on the back panel contact open=reductant dosage=relay ON if measure > setpoint contact closed=oxidant dosage=relay ON if measure < setpoint
Setpoint	adjustable, from 0 to 1000 mV
Overtime	adjustable, from 5 to approximately 30 minutes
Input Impedance	10 ¹² Ohm
Power Supply	BL982411-0: 12 VDC adapter (included); BL982411-1: 115/230 VAC; 50/60Hz
Dimensions	83 x 53 x 99 mm (3.3 x 2.1 x 3.9")
Weight	BL982411-0: 200 g (7.1 oz.); BL982411-1: 300 g (10.6 oz.)
Ordering Information	BL982411-0 (12 VDC) and BL982411-1 (115/230 VAC) are supplied with mounting brackets, transparent cover and instruction manual.
Recommended Probe	HI2001 PVDF body ORPelectrode with 1/2" NPT thread, BNC connector and 3 m (9.8') cable for continuous flow-thru monitoring (not included).



BL932700 ORP Mini Controller

with 4-20 mA Recorder Output

- Large, clear LCD
- Fire retardant casing
- BNC connection
- Splash-resistant cover

The BL932700 is a compact, ORP process controller designed for applications where space or cost is important. The device may be used with any ORP electrode with a standard BNC connector. Users may choose from automatic or manual dosing modes allowing for easy maintenance and troubleshooting.

Features

Adjustable dosing relay

The BL932700 features a dosing relay which may be configured to dose above or below a user programmable mV setpoint.

Selectable overdose protection

The mini controller may be programmed to deactivate a valve, pump, or connected device if its activation continues over a selected time; adjustable from 5 to 30 minutes.

Relay control override

With the flick of a switch the mini controller's relay can be disabled (OFF), placed in control (AUTO), or be activated for manual operation (ON) which is useful for priming a dosing pump.

Analog output communication

The BL932700 features a 4 - 20 mA analog output for connection to a data logger, chart recorder, or other device.

External disabling feature

A normally open contact may connect to a level controller or flow monitor. This safety feature may be used to prevent continuous dosing in the event of specific or undesired system conditions.

Matching pin connection

A built-in matching pin helps protect the sensor from ground loop effects that may lead to erratic readings or system damage.

Specifications

	BL932700
Range	±1000 mV
Resolution	1 mV
Accuracy (@25°C/77°F)	±5 mV
Calibration	manual, with CAL trimmer
Dosing Relay	maximum 2A (fuse protected), 250 Vac, 30 VDC
Dosing Selection	reducing or oxidizing, selectable on the back panel contact open=reductant dosage=relay ON if measure > setpoint contact closed=oxidant dosage=relay ON if measure < setpoint
Setpoint	adjustable from -1000 to 1000 mV
Overtime	adjustable, from 5 to approximately 30 minutes
Recorder Output	4 to 20 mA, accuracy ±0.20 mA, 500 Ω maximum load
Input Impedance	10 ¹² Ohm
Power Supply	BL932700-0: 12 VDC adapter (included); BL932700-1: 115/230 VAC; 50/60Hz
Dimensions	83 x 53 x 99 mm (3.3 x 2.1 x 3.9")
Weight	BL932700-0: 200 g (7.1 oz.) BL932700-1: 300 g (10.6 oz.)
Ordering Information	BL932700-0 (12 VDC) and BL932700-1 (115/230 VAC) are supplied with mounting brackets, transparent cover and instruction manual.
Recommended Probe	HI2001 PVDF body ORPelectrode with 1/2" NPT thread, BNC connector and 3 m (9.8') cable for continuous flow-thru monitoring (not included).

HI1001 • HI2001

pH Electrode and ORP Electrode with Pt sensor for Continuous Flow-thru Monitoring

Specifically Built for Industrial Applications

The HI1001 (pH) and HI2001 (ORP) are flow-thru monitoring electrodes with BNC connection and 3 m cable that have been specifically built for industrial applications. These durable electrodes have a PVDF body with a protective PEI sleeve around the glass bulb for resistance against mechanical stress. This sensor provides a rapid response and high accuracy measurements for industrial applications.

Features

Spherical glass tip

The spherical shaped tip design allows for a wide area of contact with the sample. This permits a faster electrode response with a higher degree of stability.

PVDF body

Resistant to most chemicals and solvents, the PVDF body has high abrasion resistance, mechanical strength, and resistance to ultraviolet and nuclear radiation. PVDF is also resistant to fungal growth.

PTFE junction

This type of junction is often used on electrodes with polymer electrolytes. Porous polytetrafluoroethylene (PTFE) is a hydrophobic material that is available with different porosities that helps to minimize clogging. Because of its chemical advantages, PTFE is widely used in industrial applications.

Double junction reference

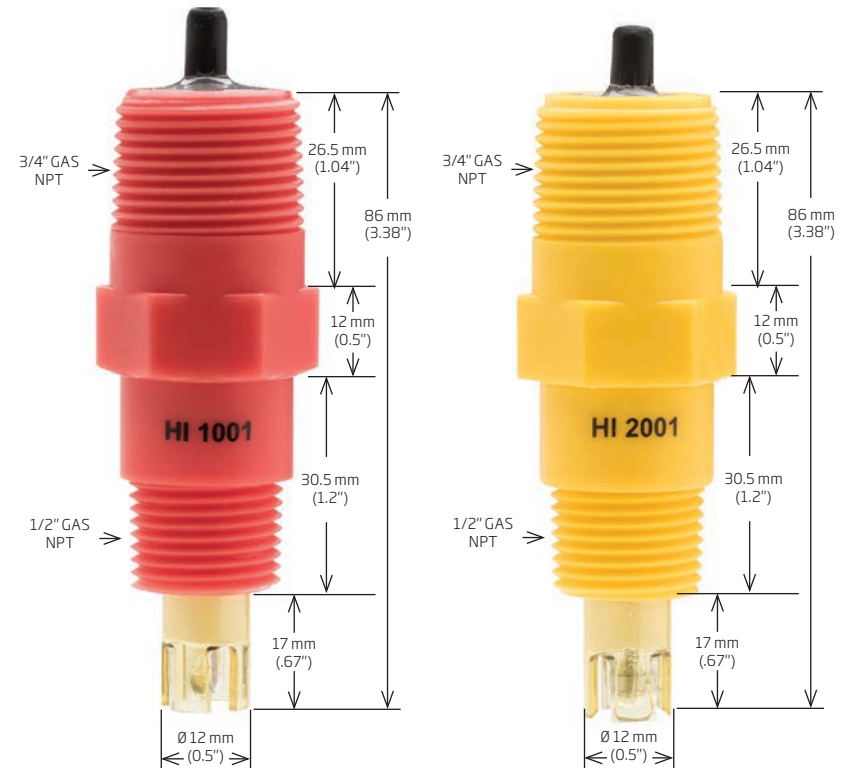
The double junction design presents a silver-free electrolyte solution interacting with the sample, making the electrode less susceptible to clogging and guaranteeing a fast response and stable reading. This design allows measurement in applications where silver ions in the sample are undesirable or silver precipitates on the junction are likely to form.

BNC connector

HI1001 and HI2001 use a BNC connector. This type of connector is universal in that it can be used on any pH meter that has the female BNC probe input.

External thread

The top 1/2" NPT thread of the HI1001 and HI2001 allows for in-line installation while the bottom 3/4" thread (cable side) allows for submersion mounting.



Specifications

	HI1001	HI2001
Measurement	pH	ORP
Junction	double, PTFE	double, PTFE
Electrolyte	polymer	polymer
Temperature	-5 to 80°C (23 to 176°F) - HT	-5 to 80°C (23 to 176°F)
Max Pressure	6 bar (87 psi)	6 bar (87 psi)
Connector	BNC	BNC
Cable	3 m	3 m
Ordering Information	HI1001 with 3 m (9.84') of cable attached	HI2001 with 3 m (9.84') of cable attached
Recommended Controllers	BL981411, BL931700	BL982411, BL932700



BL983313 • BL983320 • BL983322 EC Mini Controllers

Measuring in µS/cm

- Models available with 4-20 mA galvanic isolated output with external dosing disable contact
- Large, clear LCD
- Fire retardant casing
- Splash-resistant cover

These compact, panel mounted, process controllers are for measuring electrolytic conductivity (EC) of a process stream. Users may choose from automatic or manual dosing modes. When in automatic mode the dry contact relay is activated when a reading is above the set point.

HI983313's relay can be used to activate a dosing pump or a solenoid that controls a valve. HI983313 is ideal for source water or rinse water applications.

BL983320's relay can be used to activate a solenoid that switches from one DI (deionized) tank to another or to open a valve that will allow lower EC water to flow into a tank being monitored in order to lower its EC. The BL983320 can also be used to monitor the quality of water produced from ion exchange, reverse osmosis (RO) or distillation.

BL983322's relay can be used to activate a solenoid that switches from one DI (deionized) tank to another or to open a valve that will allow lower EC water to flow into a tank being monitored in order to lower its EC. The BL983322 can also be used to monitor the quality of water from DI tanks or from a distillation apparatus.

Features

Adjustable dry contact dosing relay

These mini controllers feature a dosing relay that is activated when the reading is above a user programmable set point.

Programmable overdose protection

For enhanced safety the mini controller can be programmed to deactivate the dosing relay if the set point is not reached within a specified time interval. The overdosing timer is programmable from 5 to 30 minutes or disabled.

Relay control override

With the flick of a switch the mini controller's relay can be disabled (Off), placed in control (Auto), or be activated for manual operation (On) which is useful for priming a dosing pump.

Multicolor LED indicator

Multicolor LED indicator allows an operator to quickly check the status of the controller. Green = Meter in measurement mode and reading is below the set point. Orange/Yellow = Reading is above the set point and the relay is activated. Blinking Red = Indicates an alarm condition such as when the maximum dosing time has been exceeded.

Fuse protected dosing contacts

The relay dosing contact is rated for up to a 2A load and is fuse protected.

Labeled termination connections

Quick-connect terminal blocks are clearly labeled for easy connection to power, conductivity probe and relay that can be used to operate a dosing pump, valve, audible alarm, or light.

Specifications	BL983313	BL983320	BL983322
Range	0 to 1999 µS/cm	0.0 to 199.9 µS/cm	0.00 to 19.99 µS/cm
Resolution	1 µS/cm	0.1 µS/cm	0.01 µS/cm
Accuracy	±2% f.s. at 25 °C (77 °F)		
Temperature Compensation	automatic from 5 to 50°C (41 to 122°F) with $\beta = 2\%/^{\circ}\text{C}$		
Calibration	manual, with calibration trimmer		
Output	galvanic isolated 4-20 mA output; accuracy ± 0.2 mA; 500 Ω maximum load (BL9833XX-2 only)		
Dosing	adjustable setpoint	covers measure range	
	relay	relay closes when reading > setpoint	
	dosing contact	maximum 2A (internal fuse protection), 250 VAC or 30 VDC	
	overtime	Dosing relay is disabled if setpoint is not reached within the set time interval. Timer adjustable between approx. 5 to 30 minutes, or disabled by jumper.	
	external disable input	Normally Open: enable / Closed: disable dosing (BL9833XX-2 only)	
Power Supply	models "-0": 12 VDC adapter (included) models "-1": 115/230 VAC; 50/60Hz models "-2": 115/230 VAC, 4-20 mA Output input: 10 VA for 115/230 VAC, 50/60 Hz models; 3 W for 12 VDC models; fuse protected; installation category II.		
Dimensions	83 x 53 x 99 mm (3.3 x 2.1 x 3.9")		
Weight	12 VDC models, 200 g (7.1 oz); 115/230 VAC models 300 g (10.6 oz)		
Ordering Information	BL983313-0 (12 VDC), BL983313-1 (115/230 VAC), BL983313-2 (115/230 VAC, 4-20 mA Output), BL983320-0 (12 VDC), BL983320-1 (115/230 VAC), BL983320-2 (115/230 VAC, 4-20 mA Output) BL983322-0 (12 VDC) and BL983322-1 (115/230 VAC) and BL983322-2 (115/230 VAC, 4-20 mA Output) are supplied with mounting brackets, transparent cover and quick reference guide with instrument quality certificate.		
Recommended Probe	HI7634-00 EC/TDS probe with internal temperature sensor and 2 m (6.6') cable (not included). HI7634-00/4 EC/TDS probe with internal temperature sensor and 4 m (13.1') cable (not included). HI7634-00/5 EC/TDS probe with internal temperature sensor and 5 m (16.4') cable (not included).		



BL983317 • BL983327 EC Mini Controllers

Measuring in mS/cm

- Models available with 4-20 mA galvanic isolated output with external dosing disable contact
- Large, clear LCD
- Fire retardant casing
- Splash-resistant cover

The BL983317 and BL983327 are compact, panel mounted, process controllers for measuring conductivity of a process stream. The device features a large LCD with protective cover. Users may choose from automatic or manual dosing modes.

BL983317: When in automatic mode, the dry contact relay is activated when a reading is below the set point. The relay can be used to activate a dosing pump to add chemical until the desired set point is reached. Chemicals that can be dosed include nutrient solutions.

BL983327: When in automatic mode, the dry contact relay is activated when a reading is above the set point. The relay can be used to activate a solenoid valve to open and drain a tank (i.e. boiler bleed and feed) or add freshwater until the desired set point is reached.

Features

Adjustable dry contact dosing relay

The BL983317 features a dosing relay that is activated when the reading is below a user programmable set point.

The BL983327 features a dosing relay that is activated when the reading is above a user programmable set point.

Programmable overdose protection

For enhanced safety the mini controller can be programmed to deactivate the dosing relay if the set point is not reached within a specified time interval. The overdosing timer is programmable from 5 to 30 minutes or disabled.

Relay control override

With the flick of a switch the mini controller's relay can be disabled (Off), placed in control (Auto), or be activated for manual operation (On) which is useful for priming a dosing pump.

Multicolor LED indicator

Multicolor LED indicator allows an operator to quickly check the status of the controller. Green = Meter in measurement mode and reading is above (BL983317) or below (BL983327) the set point. Orange/Yellow = Reading is below (BL983317) or above (BL983327) the set point and the relay is active. Blinking Red = Indicates an alarm condition such as when the maximum dosing time has been exceeded.

Fuse protected dosing contacts

The relay dosing contact is rated for up to a 2A load and is fuse protected.

Labeled termination connections

Quick-connect terminal blocks are clearly labeled for easy connection to power, conductivity probe and relay that can be used to operate a dosing pump, valve, audible alarm, or light.

Specifications	BL983317	BL983327	
Range	0.00 to 10.00 mS/cm		
Resolution	0.01 mS/cm		
Accuracy	±2% f.s. at 25 °C (77 °F)		
Temperature Compensation	automatic, from 5 to 50°C (41 to 122°F) with $\beta=2\%/^{\circ}\text{C}$		
Calibration	manual, with calibration trimmer		
Output	galvanic isolated 4-20 mA output; accuracy ±0.2 mA; 500 Ω maximum load (BL9833XX-2 only)		
Dosing	adjustable setpoint	adjustable setpoint: covers measure range	
	relay	relay closes when reading < setpoint	relay closes when reading > setpoint
	dosing contact	maximum 2A (internal fuse protection), 250 VAC or 30 VDC	
	overtime	dosing relay is disabled if setpoint is not reached within the set time interval. Timer adjustable between approx. 5 to 30 minutes, or disabled by jumper.	
	external disable input	Normally Open: enable / Closed: disable dosing (BL9833XX-2 only)	
Power Supply	models "-0": 12 VDC adapter (included) models "-1": 115/230 VAC; 50/60Hz models "-2": 115/230 VAC, 4-20 mA Output input: 10 VA for 115/230 VAC, 50/60 Hz models; 3 W for 12 VDC models; fuse protected; installation category II.		
Dimensions	83 x 53 x 99 mm (3.3 x 2.1 x 3.9")		
Weight	12 VDC models, 200 g (7.1 oz); 115/230 VAC models 300 g (10.6 oz)		
Ordering Information	BL983317-0 (12 VDC), BL983317-1 (115/230 VAC), BL983317-2 (115/230 VAC, 4-20 mA Output), BL983327-0 (12 VDC), BL983327-1 (115/230 VAC), BL983327-2 (115/230 VAC, 4-20 mA Output) are supplied with mounting brackets, transparent cover and quick reference guide with instrument quality certificate.		
Recommended Probe	HI7632-00 EC/TDS probe with internal temperature sensor and 2 m (6.6') cable (not included). HI7632-00/6 EC/TDS probe with internal temperature sensor and 6 m (19.7') cable (not included).		



**BL983315 • BL983319
BL983321 • BL983329**

TDS Mini Controllers

- Models available with 4-20 mA galvanic isolated output with external dosing disable contact
- Large, clear LCD
- Fire retardant casing
- Splash-resistant cover

These compact, panel mounted, process controllers are for measuring total dissolved solids (TDS) of a process stream. The controllers feature a large LCD with protective cover. Users may choose from automatic or manual dosing modes.

BL983315: When in automatic mode, the dry contact relay is activated when a reading is above the set point. The relay can be used to supply power to a dosing pump or a solenoid connected to a valve. The BL983315 can also be used to monitor the quality of water produced from ion exchange, reverse osmosis (RO) or distillation.

BL983315 uses a 0.5 conversion factor in which 1.0 $\mu\text{S}/\text{cm}$ = 0.5 ppm.

BL983319: When in automatic mode, the dry contact relay is activated when a reading is below the set point. The relay can be used to supply power to a dosing pump to add fertilizer to a nutrient solution in order to maintain an ideal concentration.

BL983319 uses a 0.65 conversion factor in which 100 $\mu\text{S}/\text{cm}$ = 65 ppm.

BL983321: When in automatic mode, the dry contact relay is activated when a reading is above the set point. The relay can be used to activate a solenoid that switches from one DI (deionized) tank to another or to open a valve that will allow lower TDS water to flow into a tank being monitored in order to lower its TDS. The BL983321 can also be used to monitor the quality of water produced from ion exchange, reverse osmosis (RO) or distillation.

BL983321 uses a 0.5 conversion factor in which 1.00 $\mu\text{S}/\text{cm}$ = 0.50 ppm.

BL983329: When in automatic mode, The dry contact relay is activated when a reading is above the set point. The relay can be used to supply power to a dosing pump or a solenoid connected to a valve.

BL983329 uses a 0.5 conversion factor in which 100 $\mu\text{S}/\text{cm}$ = 50 ppm.

Specifications	BL983315	BL983319	BL983321	BL983329
Range	0.0 to 199.9 mg/L (ppm)	0 to 1999 mg/L (ppm)	0.00 to 19.99 mg/L (ppm)	0 to 999 mg/L (ppm)
Resolution	0.1 mg/L (ppm)	1 mg/L (ppm)	0.01 mg/L (ppm)	1 mg/L (ppm)
Accuracy	$\pm 2\%$ f.s. at 25 °C (77 °F)			
TDS Factor	0.5	0.65	0.5	0.5
Temperature Compensation	automatic from 5 to 50°C (41 to 122°F) with $\beta = 2\%/^{\circ}\text{C}$			
Calibration	manual, with calibration trimmer			
Output	galvanic isolated 4-20 mA output; accuracy ± 0.2 mA; 500 Ω maximum load (BL9833XX-2 only)			
Dosing	adjustable setpoint	adjustable setpoint: covers measure range		
	relay	relay closes when reading > setpoint	relay closes when reading < setpoint	relay closes when reading > setpoint
	dosing contact	maximum 2A (internal fuse protection), 250 VAC or 30 VDC		
	overtime	dosing relay is disabled if setpoint is not reached within the set time interval. Timer adjustable between approx. 5 to 30 minutes, or disabled by jumper.		
	external disable input	Normally Open: enable / Closed: disable dosing (BL9833XX-2 only)		
Power Supply	models "-0": 12 VDC adapter (included) models "-1": 115/230 VAC; 50/60Hz models "-2": 115/230 VAC, 4-20 mA Output input: 10 VA for 115/230 VAC, 50/60 Hz models; 3 W for 12 VDC models; fuse protected; installation category II.			
Dimensions	83 x 53 x 99 mm (3.3 x 2.1 x 3.9")			
Weight	12 VDC models, 200 g (7.1 oz); 115/230 VAC models 300 g (10.6 oz)			
Ordering Information	BL983315-0 (12 VDC), BL983315-1 (115/230 VAC), BL983315-2 (115/230 VAC, 4-20 mA Output), BL983319-0 (12 VDC), BL983319-1 (115/230 VAC), BL983319-2 (115/230 VAC, 4-20 mA Output), BL983321-0 (12 VDC), BL983321-1 (115/230 VAC), BL983329-0 (12 VDC), BL983329-1 (115/230 VAC), and BL983329-2 (115/230 VAC, 4-20 mA Output), are supplied with mounting brackets, transparent cover and quick reference guide with instrument quality certificate.			
Recommended Probe	HI7634-00 EC/TDS probe with internal temperature sensor and 2 m (6.6') cable (not incl). HI7634-00/4 EC/TDS probe with internal temperature sensor and 4 m (13.1') cable (not incl). HI7634-00/5 EC/TDS probe with internal temperature sensor and 5 m (16.4') cable (not incl).			



Features

Adjustable dry contact dosing relay

The BL983318 features a dosing relay that is activated when the reading is above a user programmable set point.

Programmable overdose protection

For enhanced safety the mini controller can be programmed to deactivate the dosing relay if the set point is not reached within a specified time interval. The overdosing timer is programmable from 5 to 30 minutes or disabled.

Relay control override

With the flick of a switch the mini controller's relay can be disabled (Off), placed in control (Auto), or be activated for manual operation (On) which is useful for priming a dosing pump.

Multicolor LED indicator

Multicolor LED indicator allows an operator to quickly check the status of the controller. Green = Meter in measurement mode and reading is below the set point. Orange/Yellow = Reading is above the set point and the relay is active. Blinking Red = Indicates an alarm condition such as when the maximum dosing time has been exceeded.

Fuse protected dosing contacts

The relay dosing contact is rated for up to a 2A load and is fuse protected.

Labeled termination connections

Quick-connect terminal blocks are clearly labeled for easy connection to power, conductivity probe and relay that can be used to operate a dosing pump, valve, audible alarm, or light.

BL983318

TDS Mini Controllers

0 to 10,000 ppm

- Large, clear LCD
- Fire retardant casing
- Splash-resistant cover

The BL983318 is a compact, panel mounted, process controller for measuring total dissolved solids (TDS) of a process stream. The device features a large LCD with protective cover. Users may choose from automatic or manual dosing modes. When in automatic mode the dry contact relay is activated when a reading is above the set point. The relay can be used to activate a solenoid valve to open and drain a tank (i.e. boiler bleed and feed) or add freshwater until the desired set point is reached. The BL983318 uses a 0.5 conversion factor in which 1.00 mS/cm = 0.50 ppt. The BL983318 can measure TDS from 0.00 to 10.00 ppt (g/L).

Specifications

Specifications		BL983318
Range		0.00 to 10.00 g/L (ppt)
Resolution		0.01 g/L (ppt)
Accuracy		±2% f.s. at 25 °C (77 °F)
TDS Factor		0.5
Temperature Compensation		automatic from 5 to 50°C (41 to 122°F) with $\beta = 2\%/^{\circ}\text{C}$
Calibration		manual, with calibration trimmer
Dosing	adjustable setpoint	covers measure range
	relay	relay closes when reading > setpoint
	dosing contact	maximum 2A (internal fuse protection), 250 VAC or 30 VDC
	overtime	dosing relay is disabled if setpoint is not reached within the set time interval. Timer adjustable between approx. 5 to 30 minutes, or disabled by jumper.
Power Supply		models "-0": 12 VDC adapter (included) models "-1": 115/230 VAC; 50/60Hz input: 10 VA for 115/230 VAC, 50/60 Hz models; 3 W for 12 VDC models; fuse protected; installation category II.
Dimensions		83 x 53 x 99 mm (3.3 x 2.1 x 3.9")
Weight		12 VDC models, 200 g (7.1 oz); 115/230 VAC models 300 g (10.6 oz)
Ordering Information		BL983318-0 (12 VDC) and BL983318-1 (115/230 VAC) are supplied with mounting brackets, transparent cover and quick reference guide with instrument quality certificate.
Recommended Probe		HI7632-00 EC/TDS probe with internal temperature sensor and 2 m (6.6') cable (not included). HI7632-00/6 EC/TDS probe with internal temperature sensor and 6 m (19.7') cable (not included).



Features

Adjustable dry contact dosing relay

The BL983324 features a dosing relay that is activated when the reading is above a user programmable set point.

Programmable overdose protection

For enhanced safety the mini controller can be programmed to deactivate the dosing relay if the set point is not reached within a specified time interval. The overdosing timer is programmable from 5 to 30 minutes or disabled.

Relay control override

With the flick of a switch the mini controller's relay can be disabled (Off), placed in control (Auto), or be activated for manual operation (On) which is useful for priming a dosing pump.

Multicolor LED indicator

Multicolor LED indicator allows an operator to quickly check the status of the controller. Green = Meter in measurement mode and reading is below the set point. Orange/Yellow = Reading is above the set point and the relay is activated. Blinking Red = Indicates an alarm condition such as when the maximum dosing time has been exceeded.

Fuse protected dosing contacts

The relay dosing contact is rated for up to a 2A load and is fuse protected.

Labeled termination connections

Quick-connect terminal blocks are clearly labeled for easy connection to power, conductivity probe and relay that can be used to operate a dosing pump, valve, audible alarm, or light.

BL983324

TDS Mini Controllers

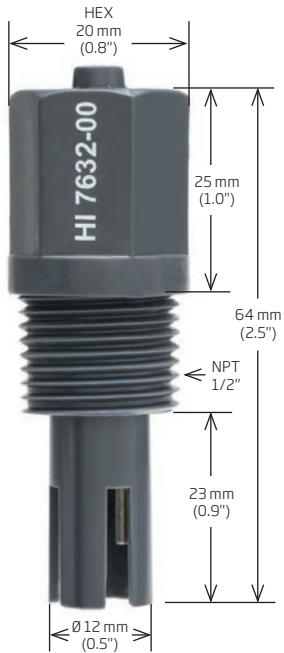
- Large, clear LCD
- Fire retardant casing
- Splash-resistant cover

The BL983324 is a compact, panel mounted, process controller for measuring total dissolved solids (TDS) of a process stream that is within the 0.0 to 49.9 ppm (mg/L) range. The device features a large LCD with protective cover. Users may choose from automatic or manual dosing modes. When in automatic mode the dry contact relay is activated when a reading is above the set point. The relay can be used to supply power to a dosing pump or a solenoid connected to a valve. The BL983324 can also be used to monitor the quality of water produced from ion exchange, reverse osmosis (RO) or distillation.

The BL983324 uses a 0.5 conversion factor in which 1.0 $\mu\text{S}/\text{cm} = 0.5 \text{ ppm}$.

Specifications

Specifications		BL983324
Range		0.0 to 49.9 mg/L (ppm)
Resolution		0.1 mg/L (ppm)
Accuracy		$\pm 2\%$ f.s. at 25 °C (77 °F)
TDS Factor		0.5
Temperature Compensation		automatic, from 5 to 50°C (41 to 122°F) with $\beta=2\%/^{\circ}\text{C}$
Calibration		manual, with calibration trimmer
Dosing	adjustable setpoint	covers measure range
	relay	relay closes when reading > setpoint
	dosing contact	maximum 2A (internal fuse protection), 250 VAC or 30 VDC
	overtime	dosing relay is disabled if setpoint is not reached within the set time interval. Timer adjustable between approx. 5 to 30 minutes, or disabled by jumper.
Power Supply		models "-0": 12 VDC adapter (included) models "-1": 115/230 VAC; 50/60Hz input: 10 VA for 115/230 VAC, 50/60 Hz models; 3 W for 12 VDC models; fuse protected; installation category II.
Dimensions		83 x 53 x 99 mm (3.3 x 2.1 x 3.9")
Weight		12 VDC models, 200 g (7.1 oz); 115/230 VAC models 300 g (10.6 oz)
Ordering Information		BL983324-0 (12 VDC) and BL983324-1 (115/230V) are supplied with mounting brackets, transparent cover and quick reference guide with instrument quality certificate.
Recommended Probe		HI7634-00 EC/TDS probe with internal temperature sensor and 2 m (6.6') cable (not included). HI7634-00/4 EC/TDS probe with internal temperature sensor and 4 m (13.1') cable (not included). HI7634-00/5 EC/TDS probe with internal temperature sensor and 5 m (16.4') cable (not included).

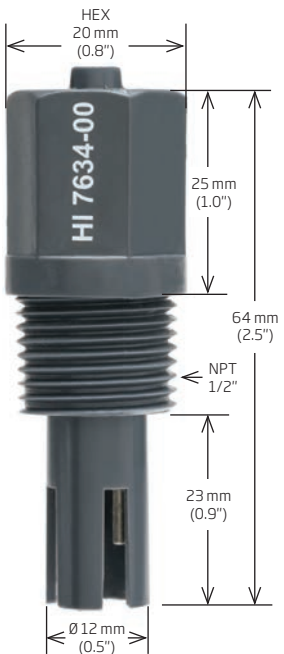


High Range Probe for EC/TDS Mini Controllers (mS/cm and ppt)

- Two-pole amperometric probe
- Internal temperature sensor
- High range measurement (mS/cm and ppt)

The HI7632-00 is a two-pole amperometric EC/TDS probe for panel mounted mini controllers that measure in the **high range (mS/cm and ppt)**. This probe has a built-in temperature sensor for Automatic Temperature Compensation and a 1/2" male NPT threaded connection for insertion mounting. The HI7632-00 probe provides a rapid response and high accuracy EC or TDS measurement.

Specifications	HI7632-00
Type	Two-pole Amperometric
NTC Sensor	4.7 K Ω
Cell Constant	1 cm ⁻¹
Materials	PVC body; AISI 316 electrodes
Temperature	5 to 50 °C (41 to 122 °F)
Maximum Pressure	3 bar
Probe Length	64 mm (2.5")
Connection	1/2" NPT thread
Cable Length	2 m (6.6') and 6 m (19.7') available
Ordering Information	HI7632-00 with 2 m (6.6') of cable attached HI7632-00/6 with 6 m (19.7') of cable attached
Recommended Controllers	BL983317, BL983318, BL983327



Low Range Probe for EC/TDS Mini Controllers (μ S/cm and ppm)

- Two-pole amperometric probe
- Internal temperature sensor
- Low range measurement (μ S/cm and ppm)

The HI7634-00 is a two-pole amperometric EC/TDS probe for panel mounted mini controllers that measure in the **low range (μ S/cm and ppm)**. This probe has a built-in temperature sensor for Automatic Temperature Compensation and a 1/2" male NPT threaded connection for insertion mounting. The HI7634-00 probe provides a rapid response and high accuracy EC or TDS measurement.

Specifications	HI7634-00
Type	Two-pole Amperometric
NTC Sensor	9.4 K Ω
Cell Constant	1 cm ⁻¹
Materials	PVC body; AISI 316 electrodes
Temperature	5 to 50 °C (41 to 122 °F)
Maximum Pressure	3 bar
Probe Length	64 mm (2.5")
Connection	1/2" NPT thread
Cable Length	2 m (6.6'), 4 m (13.1'), and 5 m (16.4') available
Ordering Information	HI7634-00 with 2 m (6.6') of cable attached HI7634-00/4 with 4 m (13.1') of cable attached HI7634-00/5 with 5 m (16.4') of cable attached
Recommended Controllers	BL983313, BL983315, BL983319, BL983320, BL983321, BL983322, BL983324, BL983329



BL983314

Resistivity Mini Controllers

- Large, clear LCD
- Fire retardant casing
- Splash-resistant cover

The BL983314 is a simple to operate resistivity controller designed for ultra pure water, reverse osmosis, and water conditioning applications. The BL983314 resistivity controller is also ideal for continuous monitoring of process solutions. Setpoint and calibration are manually adjusted with a trimmer and the alarm relay allows for simple control.

Features

Adjustable dry contact dosing relay

The BL983314 features a dosing relay that is activated when the reading is below a user programmable set point.

Programmable overdose protection

For enhanced safety the mini controller can be programmed to deactivate the dosing relay if the set point is not reached within a specified time interval. The overdosing timer is programmable from 5 to 30 minutes or disabled.

Relay control override

With the flick of a switch the mini controller's relay can be disabled (Off), placed in control (Auto), or be activated for manual operation (On) which is useful for priming a dosing pump.

Multicolor LED indicator

Multicolor LED indicator allows an operator to quickly check the status of the controller. Green = Meter in measurement mode and reading is above the set point. Orange/Yellow = Reading is below the set point and the relay is activated. Blinking Red = Indicates an alarm condition such as when the maximum dosing time has been exceeded.

Fuse protected dosing contacts

The relay dosing contact is rated for up to a 2A load and is fuse protected.

Labeled termination connections

Quick-connect terminal blocks are clearly labeled for easy connection to power, conductivity probe and relay that can be used to operate a dosing pump, valve, audible alarm, or light.

Specifications

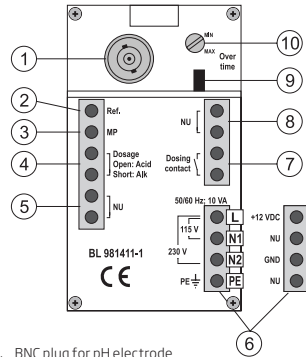
Specifications	BL983314
Range	0.00 to 19.90 MΩ•cm
Resolution	0.10 MΩ•cm
Accuracy (@25°C/ 77°F)	±2% F.S.
Temperature Compensation	automatic and linear from 5 to 50°C (41 to 122°F)
Temperature Coefficient	β=2.4 ; 3.5 ; 4.5 %/°C selectable through jumper on the rear panel
Calibration	factory calibrated
Dosing Relay	maximum 2A (fuse protected), 250 Vac, 30 VDC contact closed when measure < setpoint
Setpoint	adjustable from 0 to 19.90 MΩ•cm
Overtime	adjustable, typically from 5 to approximately 30 minutes
Power Supply	BL983314-0: 12 VDC adapter (included) BL983314-1: 115/230 VAC; 50/60Hz
Dimensions	83 x 53 x 99 mm (3.3 x 2.1 x 3.9")
Weight	BL983314-0: 200 g (7.1 oz.) BL983314-1: 300 g (10.6 oz.)
Ordering Information	BL983314-0 (12 VDC) and BL983314-1 (115/230V) are supplied with mounting brackets, transparent cover and instruction manual.
Recommended Probe	HI3314 resistivity probe with 2 m (6.6') cable (included)

Rear Connections



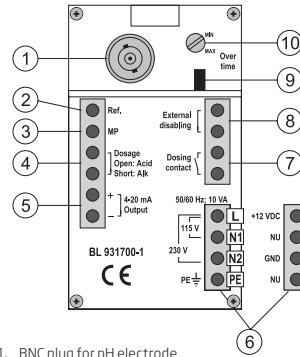
HI981411-1 rear connections example shown

BL981411



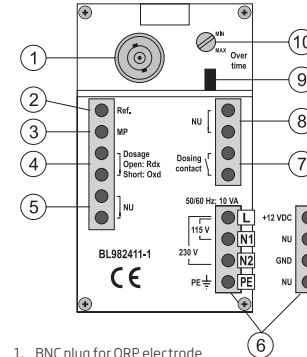
1. BNC plug for pH electrode
2. Connection for electrode reference
3. Connection for potential Matching Pin
4. Acid/Alkaline dosage selection terminal:
 - contact open = acid selection
 - contact closed = alkaline selection
5. Not Used contact
6. Power supply terminal:
 - for BL981411-0 model: 12 Vdc adapter
 - for BL981411-1 model: 115 Vac or 230 Vac option
7. This contact acts as a switch for driving the dosing system (e.g. dosing pump)
8. Not Used contact
9. Jumper for enabling (jumper in) or disabling (jumper removed) the over time control
10. Trimmer for over time setting (typically from 5 to 30 minutes)

BL931700



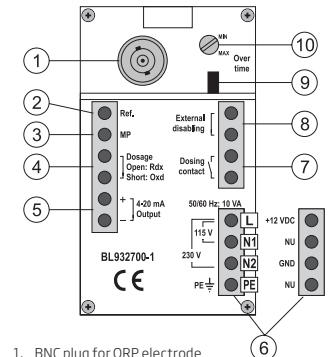
1. BNC plug for pH electrode
2. Connection for electrode reference
3. Connection for potential Matching Pin
4. Acid/Alkaline dosage selection terminal:
 - contact open = acid selection
 - contact closed = alkaline selection
5. 4-20 mA output terminal for recorder connection
6. Power supply terminal:
 - for BL931700-0 model: 12 Vdc adapter
 - for BL931700-1 model: 115 Vac or 230 Vac option
7. This contact acts as a switch for driving the dosing system (e.g. dosing pump)
8. External control and disabling of dosing system
9. Jumper for enabling (jumper in) or disabling (jumper removed) the over time control
10. Trimmer for over time setting (typically from 5 to 30 minutes)

BL982411



1. BNC plug for ORP electrode
2. Connection for electrode reference
3. Connection for potential Matching Pin
4. Rdx/Oxd dosage selection terminal:
 - contact open = reductant selection
 - contact closed = oxidant selection
5. Not Used contact
6. Power supply terminal:
 - for BL982411-0 model: 12 Vdc adapter
 - for BL982411-1 model: 115 Vac or 230 Vac option
7. This contact acts as a switch for driving the dosing system (e.g. dosing pump)
8. Not Used contact
9. Jumper for enabling (jumper in) or disabling (jumper removed) the over time control
10. Trimmer for over time setting (typically from 5 to 30 minutes)

BL932700



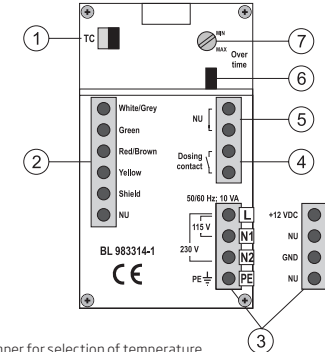
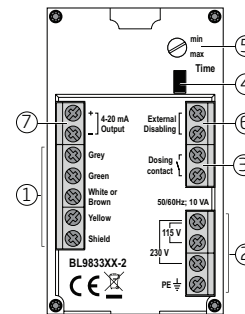
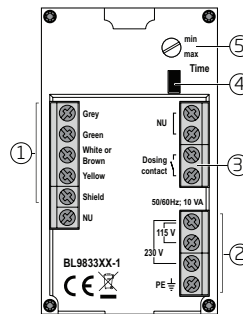
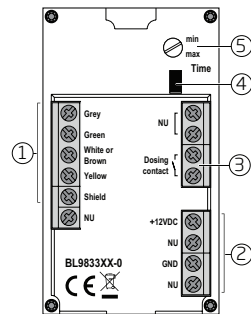
1. BNC plug for ORP electrode
2. Connection for electrode reference
3. Connection for potential Matching Pin
4. Rdx/Oxd dosage selection terminal:
 - contact open = reductant selection
 - contact closed = oxidant selection
5. 4-20 mA output terminal for recorder connection
6. Power supply terminal:
 - for BL932700-0 model: 12 Vdc adapter
 - for BL932700-1 model: 115 Vac or 230 Vac option
7. This contact acts as a switch for driving the dosing system (e.g. dosing pump)
8. External control and disabling of dosing system
9. Jumper for enabling (jumper in) or disabling (jumper removed) the over time control
10. Trimmer for over time setting (typically from 5 to 30 minutes)

BL983313, BL983315, BL983317, BL983318, BL983319, BL983320, BL983321, BL983322, BL983324, BL983327, BL983329

BL983314



HI983320-1 rear connections example shown

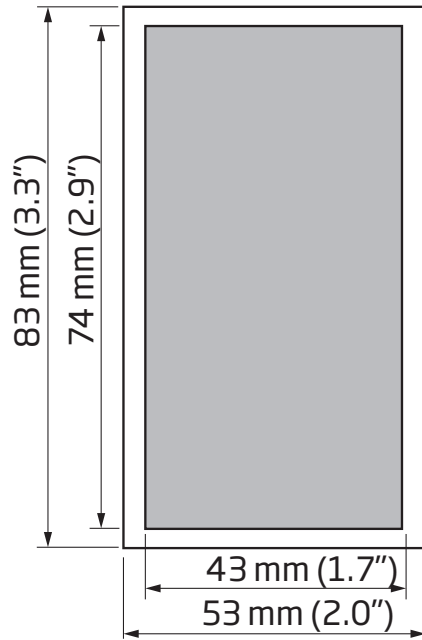


1. Probe connection terminal, low voltage connections
2. Power supply terminal
 - BL9833XX-1 & BL9833XX-2 series, high voltage connections, 115/220 VAC
 - BL9833XX-0 series, low voltage connections, 12 VDC
3. Contact acts as a switch for driving the dosing system
4. External disabling contacts
5. Jumper for enabling (jumper in) or disabling (jumper removed) the over time control
6. Trimmer for over time setting (between 5 and 30 minutes)
7. 4-20 mA output contacts
 - BL9833XX-2 series only
 - Follow lead markings +positive / -negative to ensure output leads are correctly wired

1. TC jumper for selection of temperature coefficient (β)
2. Connections for HI 3314 resistivity probe
3. Power supply terminal:
 - for BL983314-0 model: 12 Vdc adapter
 - for BL983314-1 model: 115 Vac or 230 Vac option
4. This contact acts as a switch for driving the dosing system (e.g. dosing pump)
5. Not used contact
6. Jumper for enabling (jumper in) or disabling (jumper removed) the over time control
7. Trimmer for over time setting (typically from 5 to 30 minutes)

Hanna Mini Controllers

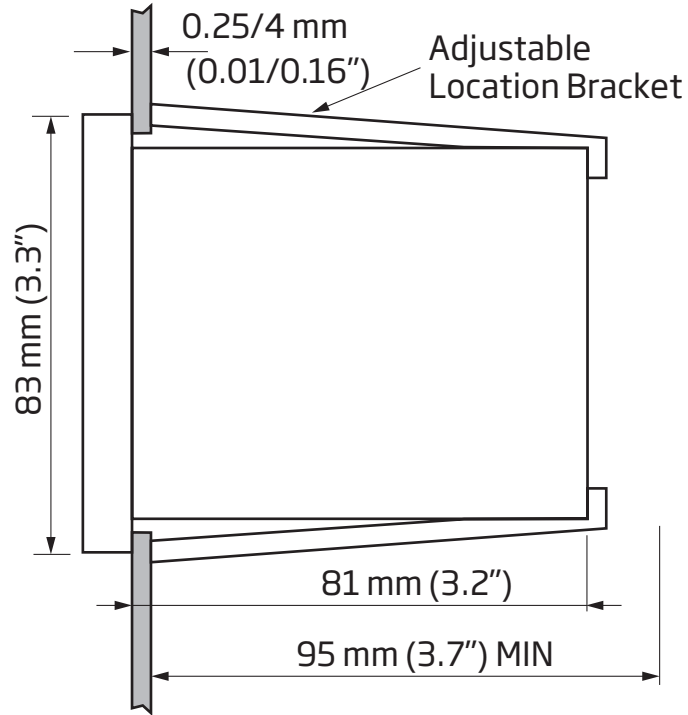
BL Series Mechanical Dimensions



Front view

Front view of the panel-mounted units.

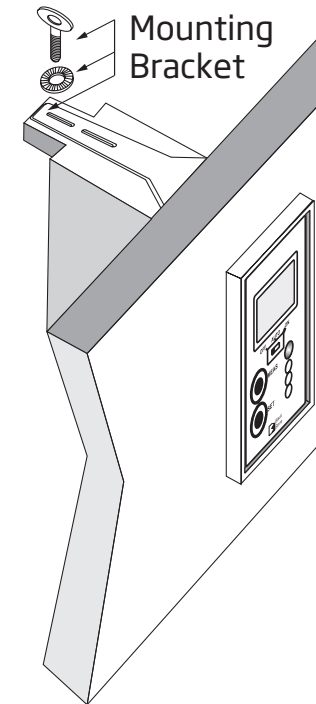
Dimensions show the cutout size for installation and also the outside dimensions of the panel.



Side view

Side view of panel-mounted controllers.

130 or 87 mm (depending on model) is the minimum amount of room required to install the unit with all wiring.



Top view

Adjustable location brackets allow the controller to slide into the cutout and will hold the unit securely in place.

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