

Pool  
Line



HANNA CLOUD



pH/ORP Controllers with Hanna Cloud Connectivity





HANNA

BL122  
SWIMMING POOL CONTROLLER



Pool  
Line

STATUS

SERVICE

pH

Chlorine

MANUAL MANUAL

7.17<sup>pH</sup> 769<sup>mV</sup>

22.8<sup>°C</sup>

HANNA  
instruments

# BL122 • BL123 pH/ORP Controllers with Hanna Cloud Connectivity

BL122 and BL123 are designed to maintain constant pH and disinfectant levels in swimming pools, hot tubs, and spas and offer the added benefit of allowing remote connection and access to devices via the Hanna Cloud web app.

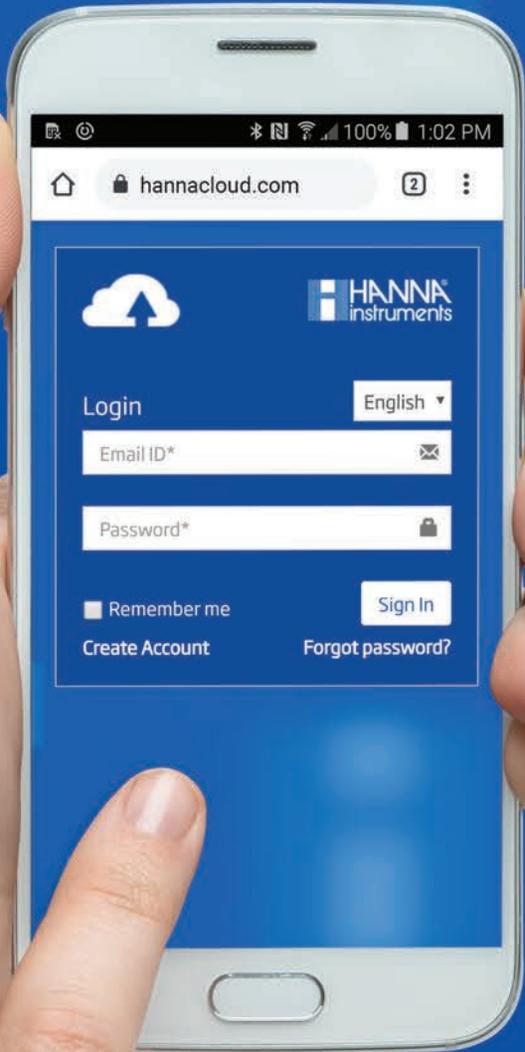
These controllers are available in two configurations. The basic version is the in-line model which allows for direct installation of probe and chemical injection fittings into existing piping. A panel mounted version with a bypass flow cell is also available. The bypass flow cell allows for calibration and maintenance of the probe without having to shut down the recirculation pump.

For compliance monitoring, BL122 and BL123 have a built-in datalogger. Measurement readings are logged every 10 seconds with a new log starting for each new day or when the instrument is calibrated. Logged data include pH, ORP, and temperature values, last calibration data, setup configuration, and any event data.

For BL123 models, three 4-20 mA analog outputs are available for users that wish to connect to an external chart recorder or datalogger to monitor any of the three measured parameters. The outputs are scalable, offering increased flexibility and better resolution as needed.

The chlorine level is measured based on the ORP or REDOX principle. An increase of the ORP value correlates with an increase of the free chlorine level. pH and disinfectant testings are made together for more efficient disinfection and control. The efficacy of sanitizers, is dependent on a controlled pH value. The ORP value is the most consistent indicator of the sanitizing effectiveness of the pool/hot tub or water treatment. Typically 650-750 mV at 7.2 pH indicates proper water treatment (all harmful bacteria are killed in less than 1s). pH and disinfectant testings are made using the HI1036-1802 combined electrode installed in-line or in flow cell. To prevent the ground loop effects from causing erratic readings and damage to the system the electrode has a matching pin considered the "earth ground" connection. It was specially designed to detect the broken electrode based on a shifted isopotential value. The HI1036-1802 uses a Ag/AgCl reference with 3.5 M KCl. The ORP values are referenced to it.





## Keep track anywhere with Hanna Cloud connectivity

### **hannacloud.com**

Hanna Cloud is a web based application that connects you to measurement devices such as the BL122 and BL123. Measurements and data storage are accessible from your PC, tablet or phone. Multiple registered devices may be connected to Hanna Cloud.

Measurements, trends, history, device settings, alarms and messages are transmitted to your "Dashboard" as your instrument measures and controls your process.

Multiple secondary users may also be added to your device account to monitor measurements and receive email or pop-up messages from your process device.

Hanna Cloud incorporates security for your personal information. We protect your information using technical and administrative security measures to reduce risks of loss or misuse. These include (but are not limited to), a secured connection, device identity registration, and password encryption.



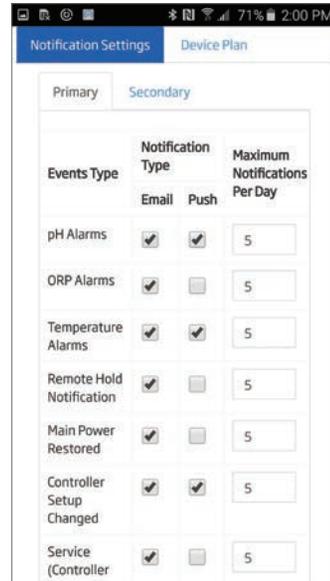
Hanna Cloud application is compatible with most modern web browsers.

# Hanna Cloud Features



## Measurement

Measurement, alarm, hold and pump status are easily viewable.



## Notifications

Select which notifications you would like to receive.



## Graphing

Use a graph to view trends over the last 12 hours or change the time period.

Log History → US122\_7A0D08 U6

Start Date: 2020-01-09 10:47:32 PM  
End Date: 2020-02-25 02:01:03 PM

pH	ORP (mV)	Temp (°C)	Acid/Base (mL)	Cl <sub>2</sub> (mL)
7.13	882	22.9	0.0	0.0
7.13	882	22.8	0.0	0.0
7.13	882	22.8	0.0	0.0

## Logging

Log history can be transferred as a PDF or .CSV.

Calibration → US122\_7A0D08 U6

Calibration Date	Offset (mV)	Slope (%)	Calibration Point 1	Calibration Point 2
2019-11-18 04:21:14 PM	35.3	100.2	4.01 pH, 35.6 mV, 21.5 °C	7.01 pH, -141.2
2019-11-18 04:13:53 PM	43.8	99.7	4.01 pH, 44.1 mV, 21.6 °C	7.01 pH, -131.9

## GLP

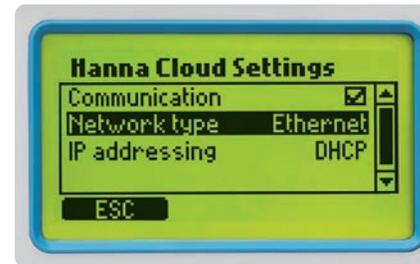
GLP data is readily available.

# Configure BL122 and BL123 for Hanna Cloud Connectivity



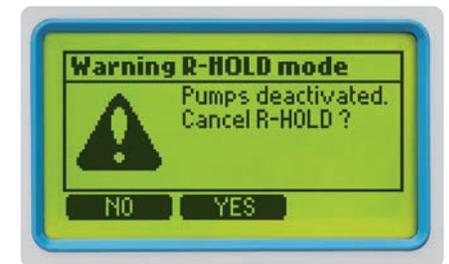
## Settings

Configure your settings for cloud connectivity.



## Hanna Cloud Options

Choose from Static or DHCP connection.



## R-HOLD (Remote Hold)

The reagent pumps can be turned off using the Remote Hold feature from Hanna Cloud. They can be reactivated at the controller or through Hanna Cloud.

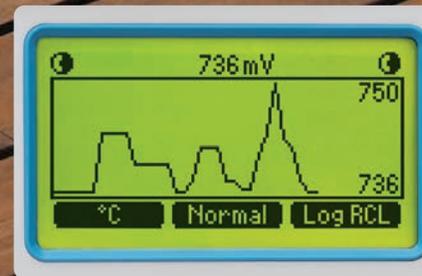


### Peristaltic Chemical Feed Pumps

BL122 and BL123 are equipped with two peristaltic dosing pumps with replaceable chemical resistant tubing that are proportionally controlled with adjustable flow rates. One of the pumps is used to dose acid or base while the other is used to dose chlorine. The effectiveness of the available chlorine, as determined by ORP, is inversely related to the water's pH value.

### Multicolored LED Indicators

BL122 and BL123 offers multiple LED indicators for status, servicing, and pump operation. The STATUS LED changes color based on operational state; a green LED means the water is within the desired parameter ranges, a yellow LED means that the controller needs attention, and a red LED identifies a problem in the system such as high and low pH, ORP and/or temperature readings. The SERVICE LED indicates attention is required by a service technician.



### Three Display Modes

The versatile display of the BL122 and BL123 allows for three display modes. The LCD can display all three parameters at one time, a 3-second cycle of single parameters, or a real-time plot screen with options for parameter selection, zooming, and log recall.

## Automatic Proportional Pump Control

BL122 and BL123 feature proportionally controlled dosing pumps. Based on the sensitivity of the process to chemical addition, these controllers allow the user to adjust a proportional band. This setting determines the amount of time that the pumps are dosing as a percentage of the deviation from the set point. For example, a large body of water will use a small proportional band; having a small band (e.g., 0.1 pH) will ensure the pumps are dosing more often when the reading is close to the set point. For smaller bodies of water such as hot tubs or spas, it is more useful to set a larger proportional band (e.g., 1.0 pH); when the reading is close to the set point, the amount of time that the dosing pump is on is minimal to avoid large swings of pH or ORP. This valuable feature allows for very fine control in maintaining the desired set point.

## Adjustable Flow Rate

The dosing pump flow rate is adjustable from 0.5 to 3.5L/h. Larger bodies of water require more chemical to be dosed than small bodies since it takes more chemical to see a change in the reading. The adjustable flow rate, like the proportional band, allows for better control in maintaining a desired set point.

## ORP (Chlorine) Dosing Consent

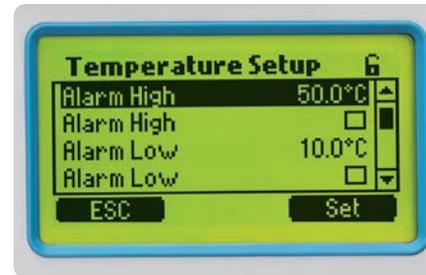
Both pH and ORP meters are commonly used with swimming pools. With chlorine disinfection there is an inverse relationship between pH and ORP. As the pH level increases, the ORP level decreases. These meters utilize a dosing consent feature that will not dose chlorine until the pH value is first corrected since it is possible to have a low ORP value even though there is sufficient chlorine. The dosing consent feature prevents waste of chemicals and avoids having a higher chlorine concentration level than desired.

## Acid and Chlorine Tank Level Inputs

The BL122 and BL123 allow for a connection to an optional level controller. This input is used to disable the dosing pumps when there is no chemical left in the reservoir tank.

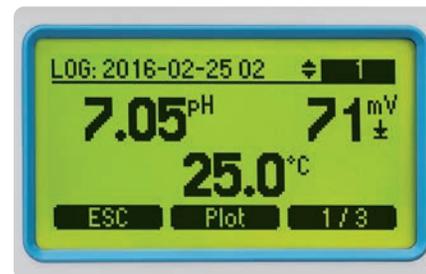
## Hold Input

It is possible to connect a flow switch mounted in-line or a mechanical relay that is connected to the recirculation pump power source to the hold input of these controllers. With no flow or when no power is applied to the recirculation pump, the hold circuit will disable the dosing pumps. This will prevent any dosing of chemical when there is no movement of water in the system.



## Programmable Alarm System

These controllers allow users to enable or disable the low and high level of alarms for all parameters: pH, ORP, and temperature. When an alarm is activated, all dosing will stop. The alarm system also offers overdosing protection in that if the value is not corrected within a specified time interval then the meter will go into alarm status.



## Automatic Logging

The readings for each parameter are automatically logged every 10 seconds. A new log is started each time the instrument is calibrated or at the start of a new day. Logged data includes pH, ORP, and temperature values, last calibration data, setup configuration, and any event data.



## GLP

Good Laboratory Practice (GLP) refers to a quality control function used to ensure uniformity of probe calibrations and measurements. GLP stores pH/ORP calibration information including date and time for pH/ORP sensors



## BL123 Analog Outputs

The BL123 controller offers three 4-20 mA outputs. Each output can be disabled or connected to an external recording device. Each of the three measured parameters (pH, ORP, and temperature) can be assigned to an analog output where the current signal will be proportional to the measured value. For more flexibility and better resolution, the analog output can be scaled; users can define any two points within a parameter range to correspond to the analog output span. For example, the controller assigns 0 pH to 4 mA and 14 pH to 20 mA as a default. The user can adjust the pH range to assign pH 6 to 4 mA and pH 8 to 20 mA. This adjustment allows better resolution in the range of interest.



## USB Connectivity

For review and storage the users can easily transfer data to a PC using a flash drive and the USB port.



## Ethernet Port for Hanna Cloud Connectivity



## Password Protected

BL122 and BL123 controllers feature a password protection solution that offers restricted access to calibration, setup, and review of logged data. The password can be set and enabled/disabled during general setup of the instrument.



An all-in-one solution for automatic control of pH and chlorine levels in swimming pool, hot tub, and spa water.

## Multiple Configurations

BL122 and BL123 swimming pool controllers are available in one of two configurations. The basic version is the in-line model which allows for direct installation of the probe and chemical injection fittings into existing piping.

A panel mounted version of these controllers with a bypass flow cell is also available. The bypass flow cell allows for calibration and maintenance of the probe without having to shut down the recirculation pump.



Flow Cell for BL122-20 and BL123-20



## HI1036-1802 Multiparameter Digital pH, ORP, Temperature Probe

The HI1036-1802 is a digital combined probe that measures pH, ORP, and temperature. This probe also incorporates a potential matching pin. The matching pin is considered the "earth ground" connection and is used to prevent ground loop effects from causing erratic readings and damage to the system.

The pH glass has been chosen to produce stable quick equilibration even in low conductivity waters. Additionally, the pH sensor is designed to produce a zero mV value near pH 4 (not pH 7 like typical pH sensors) that will stop the process control when the sensor is broken. A broken pH electrode that produces a mV value near pH 4 would produce an alarm state and disable any pump activated.

The ORP sensing surface is a large smooth surfaced platinum band that encircles the circumference of the temperature probe. It is referenced to Ag/AgCl reference electrode (3.5M KCl).

The ORP and pH sensors and reference electrode use a differential measurement technique which is known to stay in service and provide accurate measurements under adverse conditions that may cause conventional pH probes to produce erroneous measurements. The HI1036-1802 probe with its differential amplifiers greatly reduces inaccuracies caused by ground loops which may exist between process and instrument grounds. With the differential technique, a ground loop current will flow through the low impedance path of the matching pin thus providing immunity to the measurement signals. Additionally the probe converts these measurements to a digital signal to eliminate noise and static due to high impedance signals carried by cable.

The HI1036-1802 with the BL122 and BL123 pool controller helps to promote the health and safety of pool and spa water.

Specifications		BL122/BL123
pH	Range*	0.00 to 14.00 pH
	Resolution	0.01 pH
	Accuracy (@25°C/77°F)	±0.05 pH
	Calibration	pH buffer calibration: Automatic, two points (4.01, 7.01, 10.01 pH) pH process calibration: Single point, adjustable
	pH Regulator	proportional feed using adjustable set point and adjustable proportional band delay to start at power-on and overdosing protection using overfeed safety timer
mV	Range	±2000 mV
	Resolution	1 mV
	Accuracy (@25°C/77°F)	±5 mV
	ORP (mV) Calibration	single point, adjustable
	ORP Regulator	proportional feed using adjustable set point and adjustable proportional band delay to start at power-on and overdosing protection pH regulator interlocked overfeed safety timer
Temperature	Range*	-5.0 to 105.0 °C (23.0 to 221.0 °F)
	Resolution	0.1 °C (0.1 °F)
	Accuracy (@25°C/77°F)	±1 °C (±1.8 °F)
Additional Specifications	Hanna Cloud Feature	BL122 and BL123 devices are connected to Hanna Cloud using a secured connection. <ul style="list-style-type: none"> <li>ethernet (RJ45) 10/100 Mbps connection</li> <li>device Identity Registry</li> <li>policy-based authorization of security keys</li> </ul> The instrument will send status information to the cloud with a defined period of time. <ul style="list-style-type: none"> <li>alarm settings</li> <li>dosing settings</li> <li>general settings</li> <li>system: manufacturer, meter info (model, FW version, OS version, SN), probe Info (type, FW version, SN)</li> </ul> The instrument will send setup information to the cloud at startup and whenever the setup is changed on the instrument. <ul style="list-style-type: none"> <li>readings: pH, ORP, temperature</li> <li>events: alarms/warnings/errors</li> <li>peripheral status: LEDs</li> <li>last dosed acid and chlorine volumes</li> <li>GLP info</li> </ul> The BL122 and BL123 "Remote Hold" mode: <ul style="list-style-type: none"> <li>it is an emergency mode that can be triggered remotely by user via web application</li> <li>in this mode the pumps are deactivated</li> <li>it can be cancelled manually from BL122/BL123 menus or remotely via web application</li> </ul>
	Log Feature	automatic Log 60 days logging with 10 s period (or 100 logs) measurements (pH, ORP, temperature) events: alarms, errors, power-failed recall table/graphic modes export on USB key log files in CSV format
Temperature Compensation	automatic	-5.0 to 105.0 °C (23.0 to 221.0 °F) for pH

\*range limited by probe.

Pump Control	pump speed control (0.5 L/h to 3.5 L/h) manual control of each pump
Alarm System	intuitive alert system based on LEDs alarm filtering options alarm relay control based on user setup filters
Password Protection	setup, calibration and log recall features are password protected
Storage Interface	USB
GLP	pH/ORP
Alarm Relay Output (1)	SPDT 5A/230 VAC activated by pH/ORP/Temperature selectable alarm conditions
Analog Outputs (3) (BL123 only)	4 to 20 mA, sourcing, configurable output impedance ≤ 500 Ohm accuracy < 0.5 % FS galvanically isolated up to 50 V relative to earth
Digital Inputs (3)	<ul style="list-style-type: none"> <li>galvanic isolated, powered contact type</li> <li>low level in acid/base tank (contact open)</li> <li>low level in chlorine tank (contact open)</li> <li>hold input (contact open)</li> </ul>
Probe Input (1)	<ul style="list-style-type: none"> <li>DIN waterproof connector</li> <li>galvanic isolated</li> <li>RS485 interface</li> <li>HI1036-18XX (02, 05, 10, 15, 20 m of cable) pH/ORP/temperature/matching pin combined digital probe</li> </ul>
Ethernet Input	ethernet (RJ45) 10/100 Mbps connection
Power Supply	100–240 VAC
Power Consumption	10 VA
Environment	0 to 50°C (32-122°F); max 95% RH non-condensing
Dimensions	245 x 188 x 55 mm (73 mm with pumps); 9.6 x 7.4 x 2.2" (2.9" with pumps)
Weight	1700 g (60 oz.)
Ordering Information	<p>In-Line Configuration: <b>BL122-10</b> and <b>BL123-10</b> (analog outputs) pH/ORP/temperature pool controller is supplied with HI1036-1802 pH/ORP/temperature digital probe with matching pin, saddle for electrode 50 mm (1), fittings for electrode Injector (2), saddle for injectors 50 mm (2), peristaltic pump tubing (2), aspiration (5 m) and injection (5 m) tubing, aspiration filter (2), pH 7.01 buffer sachets, 20 ml (3), pH 4.01 buffer sachets, 20 ml (3), 470 mV ORP test solution sachet, 20 ml (3), power cable, user manual, and quality certificates for meter and probe.</p> <p>User Panel Flow Cell Configuration: <b>BL122-20</b> and <b>BL123-20</b> (analog outputs) pH/ORP/Temperature pool controller is supplied with HI1036-1802 pH/ORP/temperature digital probe with matching pin, two valves for flow-cell connections with fittings and tubing 10 m, saddle for valves 50 mm (2), saddle for electrode 50 mm (1), fittings for electrode Injector (2), saddle for injectors 50 mm (2), peristaltic pump tubing (2), aspiration (5 m) and injection (5 m) tubing, aspiration filter (2), pH 7.01 buffer sachets, 20 ml (3), pH 4.01 buffer sachets, 20 ml (3), 470 mV ORP test solution sachet, 20 ml (3), power cable, user manual, and quality certificates for meter and probe.</p>



**BL120-450**  
Flow-cell kit for 50 mm pipe diameter



**BL120-463**  
Flow-cell kit for 63 mm pipe diameter



**BL120-475**  
Flow-cell kit for 75 mm pipe diameter



**BL120-401**  
Flow-cell valve



**BL120-400**  
Flow-cell probe adapter kit



**BL120-200**  
Pool Controller aspiration filter



**BL120-500**  
Probe fitting kit

**BL120-203** Aspiration Filter Weight



**BL120-150**  
Fittings Kit for 50 mm pipe diameter.



**BL120-163**  
Fittings Kit for 63 mm pipe diameter



**BL120-175**  
Fittings Kit for 75 mm pipe diameter



**BL120-903**  
Cable gland protective kit (6 pcs.)



**BL120-402**  
Flow-cell tubing (10 m)



**BL120-202**  
Flexible PVC tubing for aspiration (5 m) and rigid PE tubing for injection (5 m)



**BL120-300**  
Pool Controller peristaltic pump tubing kit (2 pcs.)



**BL120-201**  
Pool Controller injector, 1/2" thread



**BL120-263**  
Injector saddle for 63 mm pipe diameter, 1/2" thread



**BL120-250**  
Injector saddle for 50 mm pipe diameter, 1/2" thread



**BL120-275**  
Injector saddle for 75 mm pipe diameter, 1/2" thread



**BL120-550**  
Probe saddle for 50 mm pipe diameter, 1 1/4" thread



**BL120-563**  
Probe saddle for 63 mm pipe diameter, 1 1/4" thread



**BL120-575**  
Probe saddle for 75 mm pipe diameter, 1 1/4" thread

