Pool
Line

Swimming Pool Controllers

for pH Disinfection and Control

The Hanna Instruments® BL13x swimming pool controllers are automatic systems, specially designed to measure and control pH and free-chlorine levels.

The chlorine level is measured based on the ORP or REDOX principle. An increase in the ORP value correlates with an increase in the free-chlorine level. pH and ORP testing are done together for efficient disinfection and control. The efficacy of sanitizers, such as chlorine, depends on a controlled pH value. The ORP value is the most consistent indicator of the sanitizing effectiveness of the pool or spa. Typically, 650-750 mV at 7.2 pH indicates proper water treatment.

The controllers offer remote access and visualizing of measured data via Cloud connectivity. All measurements and main events are sent to Hanna Cloud through the Ethernet connection.

For BL131, three analog outputs are available that allow connection 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.

Any of the controllers can be paired with the HI1036-18XX digital probe. The probe incorporates pH, ORP and temperature sensors along with a matching pin. It was specially designed to detect a broken electrode based on a shifted zero potential value, around 4 pH. The HI1036-18XX uses an Ag/AgCl reference with 3.5 M KCl. The ORP values are referenced to it. Measurement data stored on the probe is transferred to the controller via a digital connection; thus eliminating noise and static due to high impedance signals carried by the cable.

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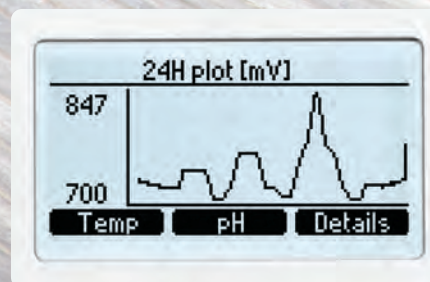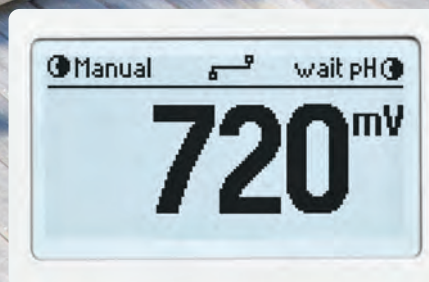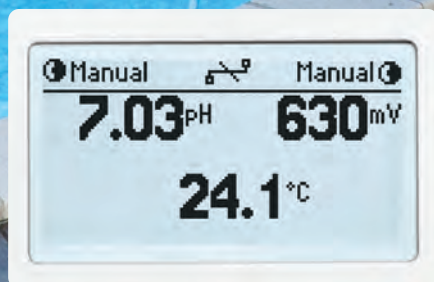
Three Display Modes

The versatile display of these controllers (BL131 and BL132 screens shown) 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.

Multiple Configurations

BL13x swimming pool controllers are available in two configurations:

- in-line, for direct probe installation and chemical injection fittings into existing piping
- flow cell, for calibration and probe maintenance without having to shut down the recirculation pump

For compliance monitoring, each of the BL13x family has a built-in datalogger. Measurement reading intervals can be set at 30s/1m/5m/15m/30m/1h, with a new log starting new each day or when the instrument is calibrated. Logged data include pH, ORP, and temperature values, last calibration data, setup configuration, and any event data.

The BL13x swimming pool controller is an automatic system, but it is advisable that users check the controller and verify pH and free-chlorine levels (in mg/L or ppm) in the pool using a portable colorimeter.

Main Features

- Two built-in peristaltic dosing pumps with Proportional control
- Manual control for pump priming
- Overfeed protection using overtime safety timer
- Resumes dosing on restart in case of power failure
- Level input to stop control without reagents
- Interlocked pH-ORP control (i.e. ORP control only runs when the pH set point has been reached)

- External dosing
  - The controller has 2 relays that can be used to control larger external dispensing pumps, allowing the BL13x to be used in larger pools.
- Air temperature sensor
  - Allows triggering an alarm if the air temperature is cold enough that there is a risk of water freezing in the pipes (e.g. hot tubs in winter with the circulation pump off)
- Bidirectional control
  - Use the Hanna Cloud to update settings on the controller
- User selectable logging interval
  - As pool settings normally do not change that quickly, minimize data management by choosing from a wide selection of logging intervals
- Multicolored LED indicators for dosing, meter status and service
- Real-time graph display
- Programmable alarms
- Password protection

Main Benefits

- All-in-one solution for automatic control of pH and chlorine levels
- ORP (chlorine) dosing consent ensures pH value is correct before dosing

BL13x
Keep Track Anywhere with Hanna Cloud Connectivity

Hanna Cloud is a web-based application that connects you to the BL131 and BL132. Measurements and data storage are accessible from your PC, tablet, or phone. Multiple devices can be registered to a single Hanna Cloud account.

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 notifications from your controller.

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

Hanna Cloud application is compatible with most modern web browsers.

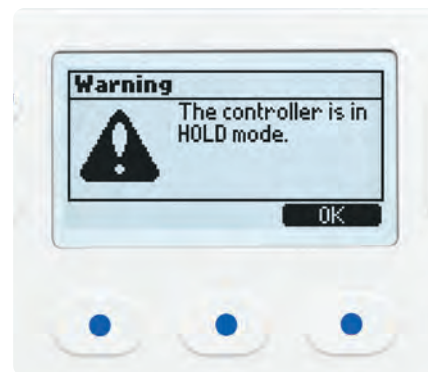## Hanna Cloud Controller Features
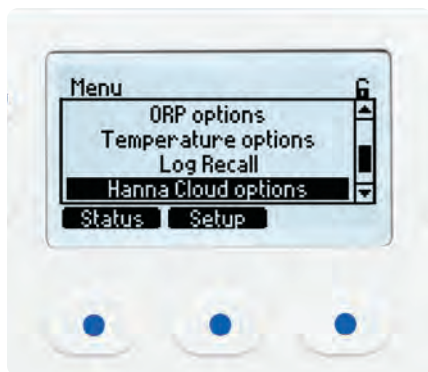
Settings
Configure your settings for cloud connectivity.
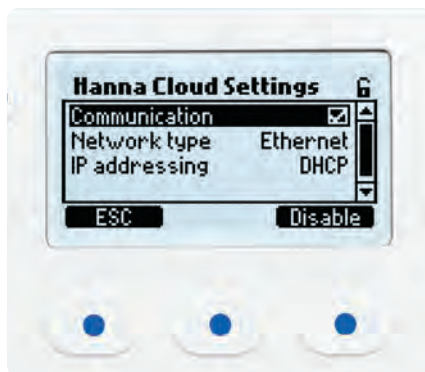
Hanna Cloud Options
Choose from Static or DHCP connection.

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.
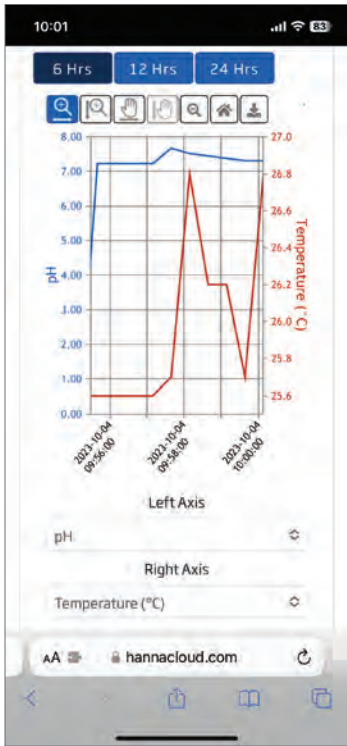
Hanna Cloud Web Features

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.

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

GLP
GLP data is readily available.

Dashboard
The dashboard provides an overview of the current status.

Multicolored LED Indicators

The controllers offer 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.

Automatic Proportional Pump Control

BL131 and BL132 feature proportionally controlled dosing pumps. The user can set the proportional band based on the sensitivity of the process. 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.

Peristaltic Chemical Feed Pumps

These controllers 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.

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 controllers 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 controllers 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.
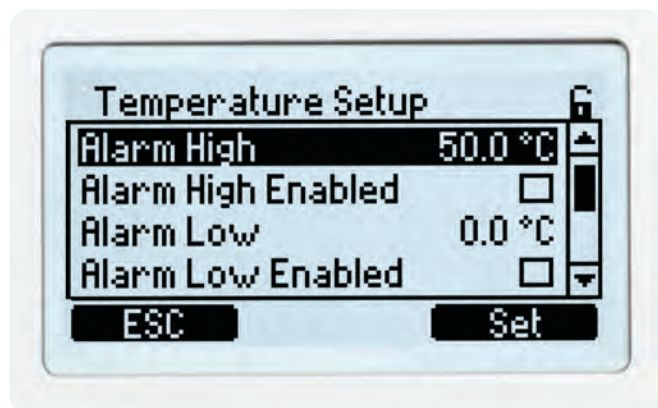
Programmable Alarm System

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.
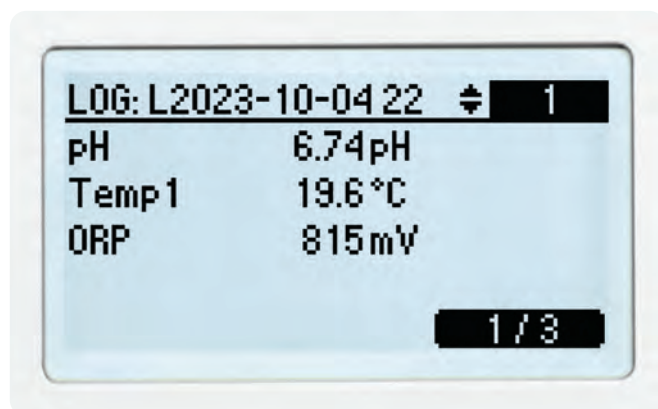
Automatic Logging

Measurement readings can be set at 30s/1m/5m/15m/30m/1h intervals. 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.

Ethernet Port for Hanna Cloud Connectivity

USB Connectivity

Easily transfer data to a PC using a flash drive and the USB port.
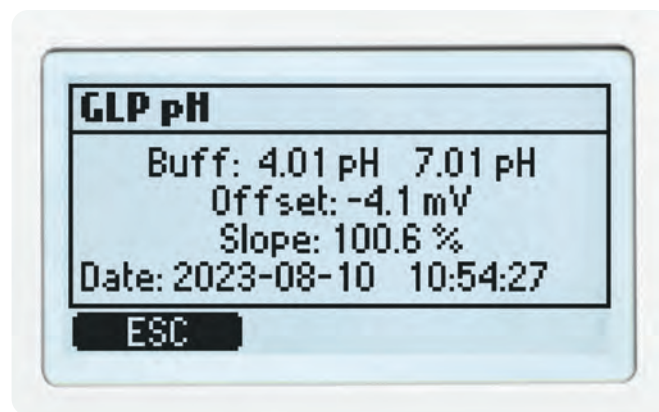
GLP

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.

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.

Analog Outputs (BL131 only)

The BL131 controller offer 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.

Password Protected

These controllers feature password protection 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.

Rear

Front with cover removed

Specifications		BL131 • BL132
pH	Range	0.00 to 14.00 pH*
	Resolution	0.01 pH
	Accuracy	±0.05 pH (@25 °C / 77 °F)
mV	Range	±2000 mV
	Resolution	1 mV
	Accuracy (@25°C/77°F)	±5 mV (@25 °C / 77 °F)
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)	±1.0 °C /±1.8 °F (@25 °C / 77 °F)
Calibration	• pH buffer calibration: automatic, two points (4.01, 7.01, 10.01 pH) • pH process calibration: adjustable, single point • ORP (mV) calibration: adjustable, single point	
Temperature Compensation	• Automatic –5.0 to 105.0 °C (23.0 to 221.0 °F) for pH	
pH Controller	• Proportional feed using adjustable set point and adjustable proportional band • Delay to start at power-on • Overdosing protection using overfeed safety timer	
ORP Controller	• Proportional feed using adjustable set point and adjustable proportional band • Delay to start at power-on • Overdosing protection using overfeed safety timer • pH regulator interlocked	
Alarms	• High and Low with enable / disable option for all parameters • Alarm is triggered after five consecutive readings over / under threshold	
Log Feature	• Automatic log • 120 days logging with 30s/1m/5m/15m/30m/1h intervals (or 100 logs) • pH / ORP / temperature measurements • Events: alarms / errors / power outage • Recall table / graphic modes • Export on USB key • Log files in CSV format	

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controllers

Cloud connectivity	The BL131 & BL132 devices can connect to Hanna Cloud using a secured connection. • Ethernet (RJ45) 10/100 Mbps connection • Device identity registry • Policy-based authorization of security keys The instrument will send status information to Hanna Cloud with a defined period. • Readings: pH / ORP / Temperature • Events: Alarms / Warnings / Errors • Peripheral status: LEDs • Last dosed acid and chlorine volumes • GLP info The instrument will send setup information to Hanna Cloud at startup and whenever the setup is changed on the instrument. • Alarm settings • Dosing settings • General settings • System: Meter information (model, FW version, OS version, serial number), Probe information (type, FW version, serial number) The "Remote Hold" mode: • is an emergency mode that can be remotely triggered via web application • in this mode the pumps are deactivated • can be canceled manually from the controller menu
Ethernet input BL132 only	• Ethernet connector (RJ-45) 10/100 Mbps connection

Additional Specifications		
	Pump control	• Pump flow control 0.5 to 3.5 L/h (0.13 to 0.92 gal/h) and maximum output pressure 1 atm (14 psi) • Manual control for each pump
	Password protection	• The setup, calibration and log recall features are password protected
	Storage interface	• USB-C
	GLP	• pH / ORP
	Alarm system	• Intuitive alert system based on LED color coded alarm system • Alarm filtering options • Alarm relay control based on user setup filters
	Alarm relay output	SPDT 5A/230 Vac Activated by selectable pH / ORP / Temperature alarm conditions
	Analog outputs BL131 only	• Three configurable analog outputs, 4 to 20 mA, sourcing • Output impedance ≤ 500 Ω • Accuracy < 0.5 % FS} • Galvanic isolation, up to 50 V relative to earth
	Three digital inputs	• Galvanic isolation, powered contact type • One input for low level in acid / base tank (contact open) • One input for low level in chlorine tank (contact open) • One input for Hold mode (contact open)
	Single probe input	• Probe type: HI1036-18XX* pH / ORP / Temperature / Matching pin, combined digital probe • DIN waterproof connector • Galvanic isolation • RS485 interface
	Power Supply	100–240 VAC
	Power Consumption	15 VA
	Environment	• 0-50 °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.)
	Casing	Wall mounted, built-in pump, IP65 rated

Ordering Information	### In-Line Configuration **BL131-10** and **BL132-10** is supplied with HI1036-1802 Combined electrode (pH / ORP / Temperature), saddle for electrode, Ø 50 mm pipe (1 pc.), fittings for electrode, injector (2 pcs.), saddle for injectors, Ø 50 mm pipe (2 pcs.), peristaltic pump tubing (2 pcs.), PVC aspiration and injection tubing, 10 m, aspiration filter (2 pcs.), 7.01 pH buffer solution, sachet (3 pcs.), 4.01 pH buffer solution, sachet (3 pcs.), 470 mV ORP test solution, sachet (3 pcs.), power cable, probe quality certificate, instrument quality certificate, quick reference guide with QR code for manual download. ### User Panel Flow Cell Configuration **BL131-20** and **BL132-20** is supplied with HI1036-1802 Combined electrode (pH / ORP / Temperature), panel mounted flow cell, valve for flow cell connections with fittings and tubing, 10 m, injector (2 pcs.), saddle for valves, Ø 50 mm pipe (2 pcs.), saddle for injectors, Ø 50 mm pipe (2 pcs.), peristaltic pump tubing (2 pcs.), PVC aspiration and injection tubing, 10 m, aspiration filter (2 pcs.), 7.01 pH Buffer solution, sachet (3 pcs.), 4.01 pH Buffer solution, sachet (3 pcs.), 470 mV ORP test solution, sachet (3 pcs.), power cable, probe quality certificate, instrument quality certificate, quick reference guide with QR code for manual download.