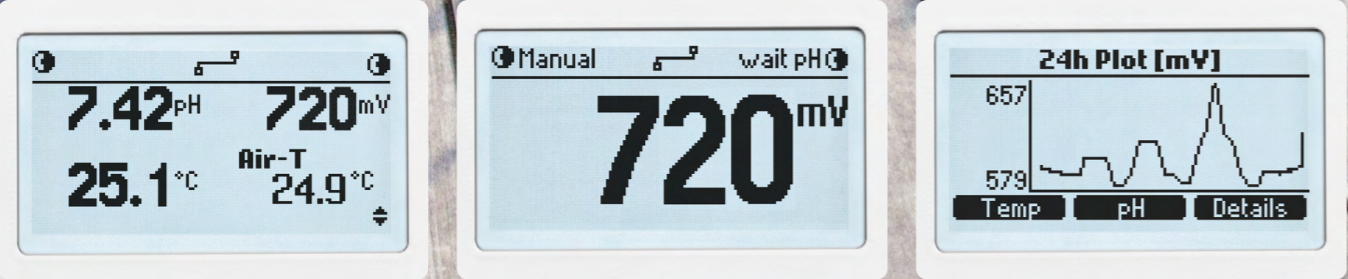


*Pool
Line*



BL-13x Series
Swimming Pool Controllers
Automatic control of pH and Chlorine



Three display modes

The versatile display of these controllers (BL-131 and BL-132 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.

BL-13x Series Swimming Pool Controllers

Automatic control of pH and Chlorine

The Hanna Instruments® BL-13x 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 efficiency of sanitisers, such as chlorine, depends on a controlled pH value. The ORP value is the most consistent indicator of the sanitising effectiveness of the pool or spa. Typically, 650-750 mV at 7.2 pH indicates proper water treatment.

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

For BL-131, 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 HI-1036-18XX 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 HI-1036-18XX 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.

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 BL-13x 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, minimise data management by choosing from a wide selection of logging intervals
- Multicoloured 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

Multiple configurations

BL-13x 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 BL-13x 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 BL-13x 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 colourimeter.



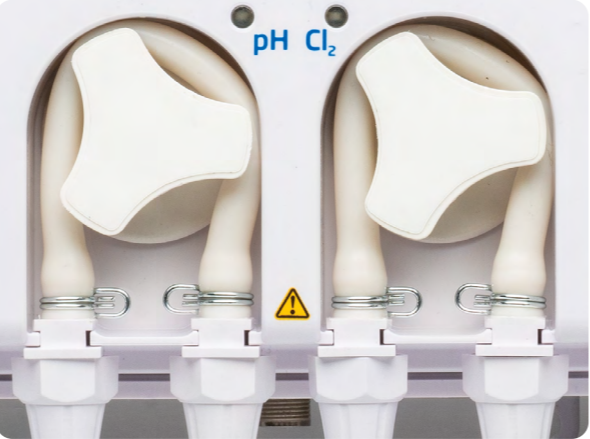
BL-13x swimming pool controllers comparison table

	pH measurement	ORP measurement	Acid dosing pump	Chlorine dosing pump	Analog outputs	Hanna Cloud connectivity
BL-131	•	•	•	•	•	
BL-132	•	•	•	•		•



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

Additional features



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.

Automatic proportional pump control

BL-131 and BL-132 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.

Multicoloured LED indicators

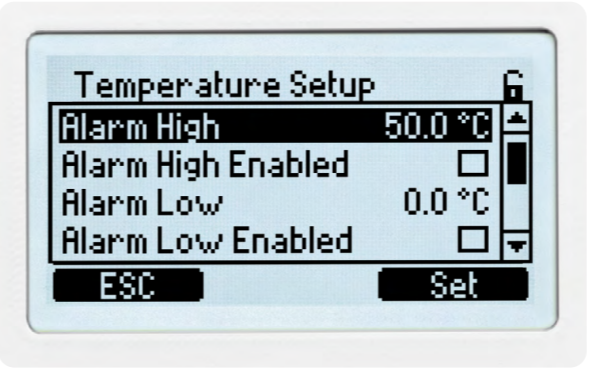
The controllers offer multiple LED indicators for status, servicing, and pump operation. The STATUS LED changes colour based on operational state; a green LED means the water is within the desired parameter ranges, a yellow LED means that the controller needs attention, and a red LED identifies a problem 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.

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 utilise 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.

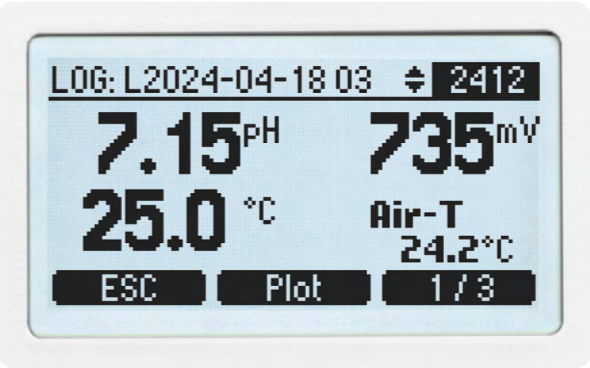
Acid and chlorine tank level inputs

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.



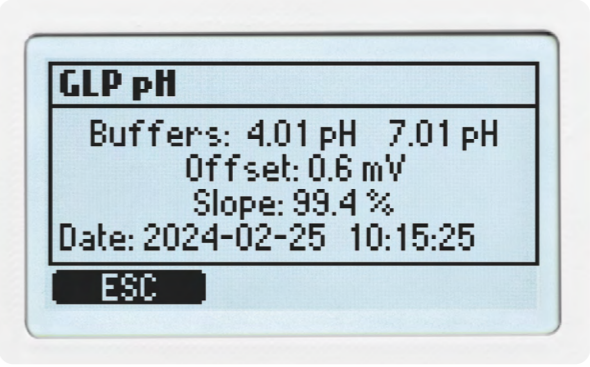
Programmable alarm system

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.



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.

Ethernet port for Hanna Cloud connectivity (BL-132 only)

USB connectivity

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

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.

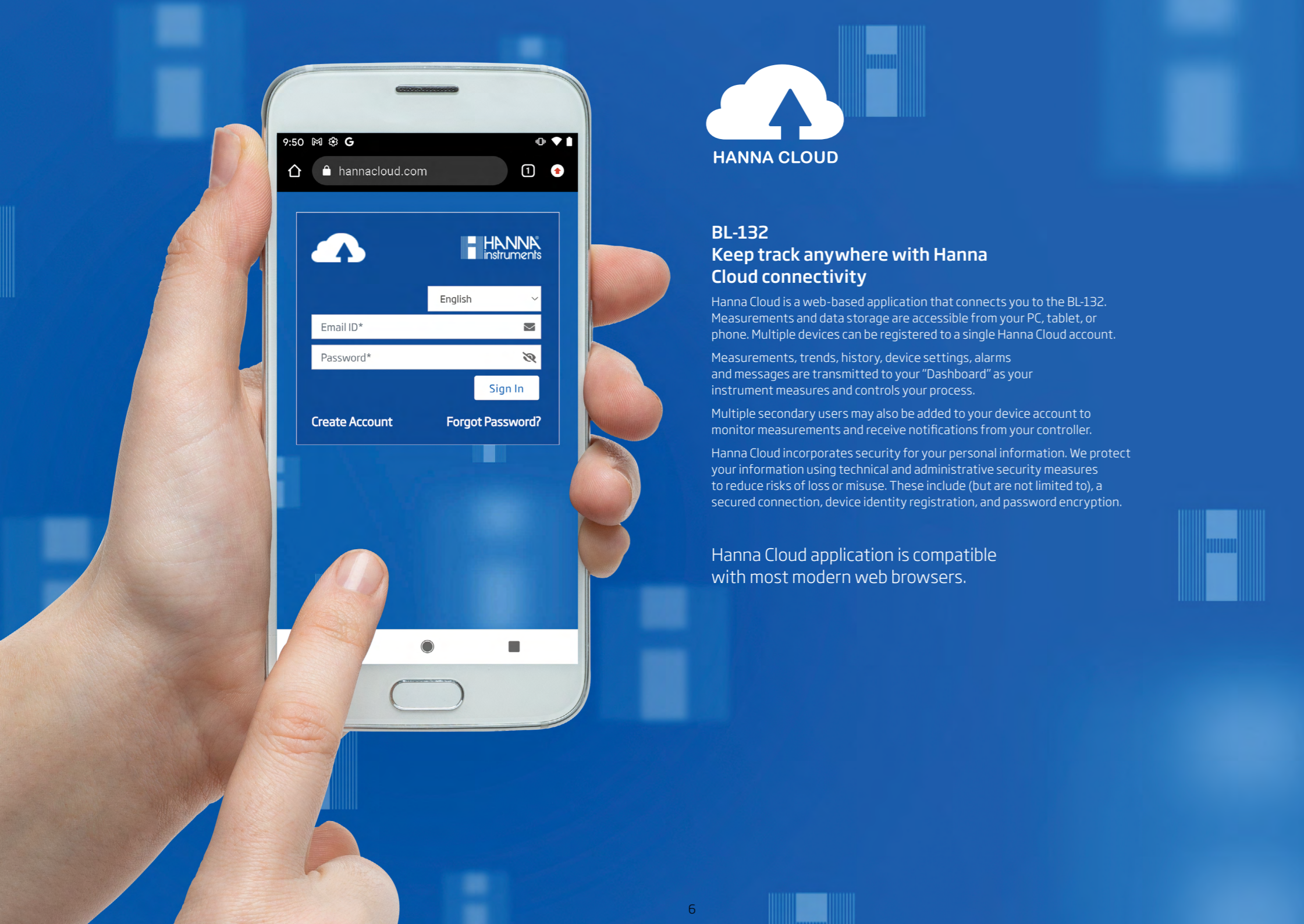
Analog outputs (BL-131 only)

The BL-131 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.



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.



HANNA CLOUD

BL-132 Keep track anywhere with Hanna Cloud connectivity

Hanna Cloud is a web-based application that connects you to the BL-132. Measurements and data storage are accessible from your PC, tablet, or phone. Multiple devices can be registered to a single Hanna Cloud account.

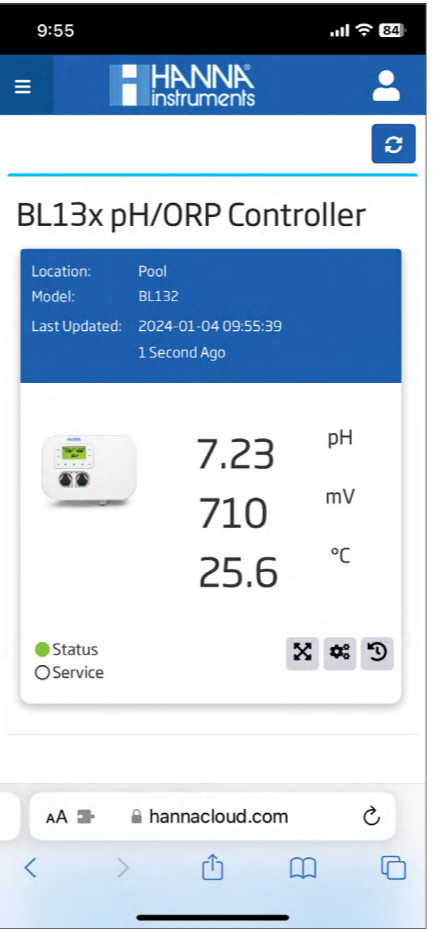
Measurements, trends, history, device settings, alarms and messages are transmitted to your "Dashboard" as your instrument measures and controls your process.

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.

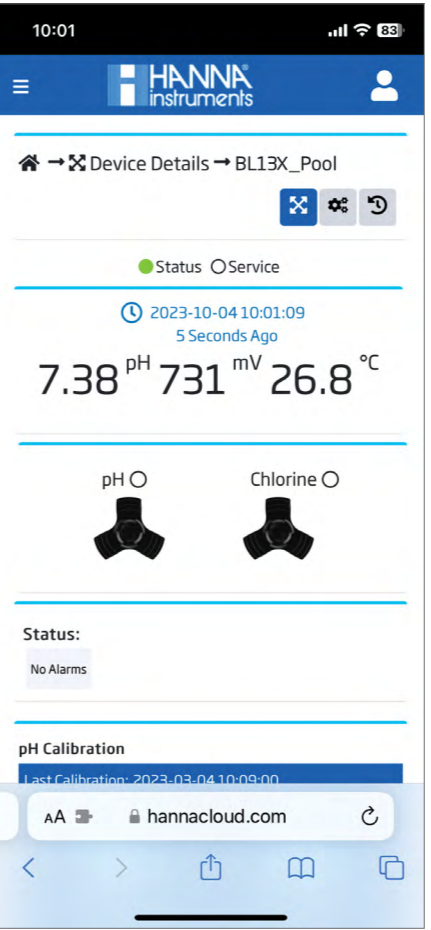
Hanna Cloud application is compatible with most modern web browsers.

Hanna Cloud web features



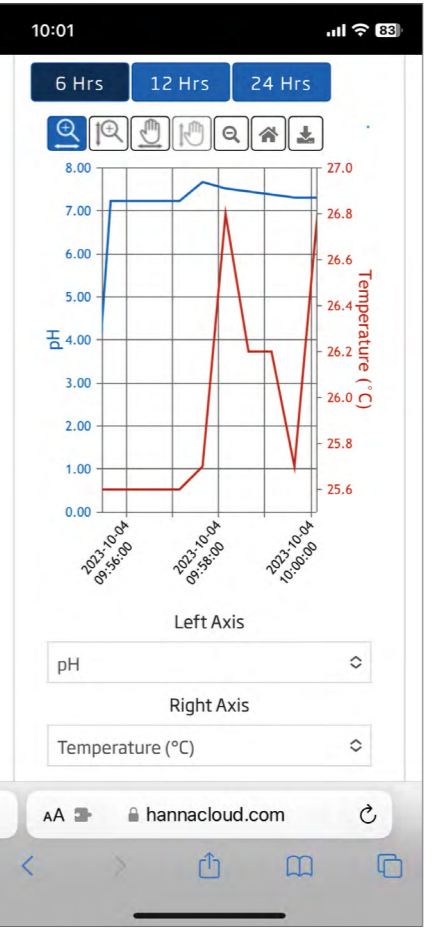
Dashboard

The dashboard provides an overview of the current status.



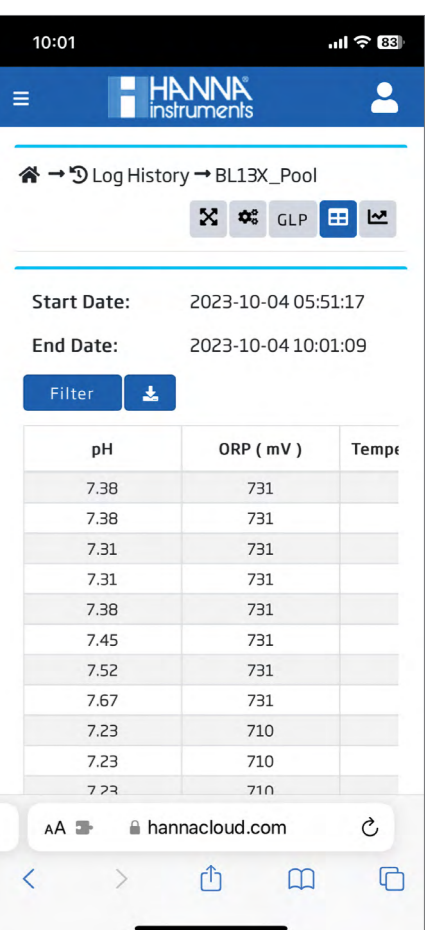
Measurement

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



Graphing

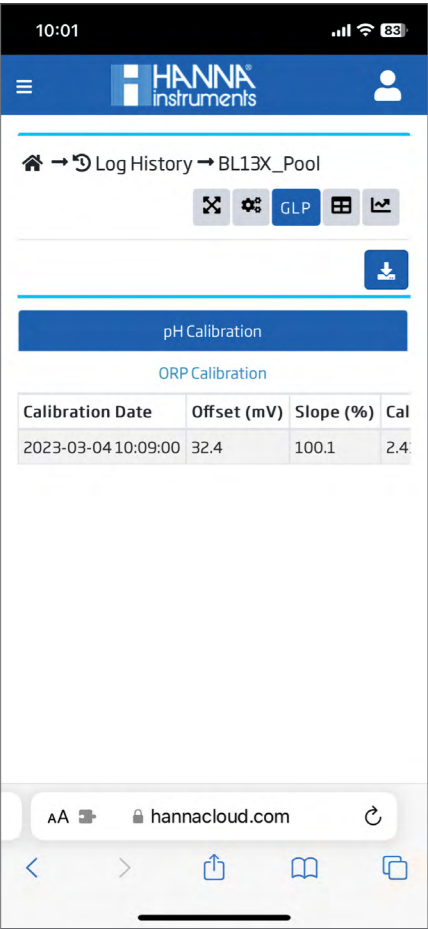
Use a graph to view trends over the last 12 hours or change the time period.



Logging

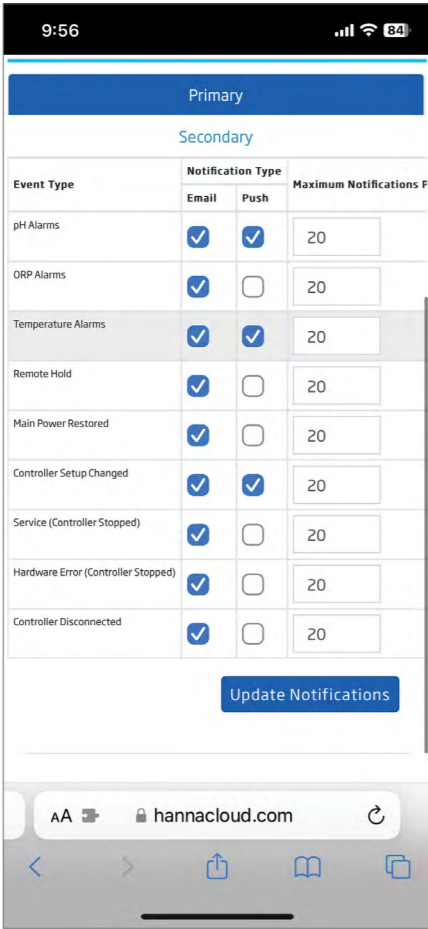
Log history can be transferred as a PDF or .CSV.

Hanna Cloud web features continued



GLP

GLP data is readily available.



Notifications

Select which notifications you would like to receive.

Specifications	BL-131 • BL-132	
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	±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	±1.0 °C / ±1.8 °F (@25 °C / 77 °F)
Air Temperature	Range	-30.0 to 80.0 °C (-22.0 to 176.0 °F)*
	Resolution	0.1 °C / 0.1 °F
	Accuracy	± 0.5°C
Calibration	pH buffer	• automatic • two points (4.01 pH, 7.01 pH, 10.01 pH)
	pH process	• adjustable, single point
	ORP (mV)	• adjustable, single point
Temperature compensation	• Automatic temperature compensation for pH • Range -5.0 to 105.0 °C (23.0 to 221.0 °F)	
pH controller	• Delay to start at power-on • Proportional feed using adjustable set point and adjustable proportional band • Overdose protection using the overfeed timer	
ORP controller	• Delay to start at power-on • Proportional feed using adjustable set point and adjustable proportional band • Overdose protection using the overfeed timer • pH regulator interlocked	
Alarms	• High and Low with enable / disable option for all parameters • Alarm is triggered after a user-specified time	
Internal pump control	• 0.5 to 3.5 L/h (0.13 to 0.92 gal/h) pump flow control • 1 atm (14 psi) maximum output pressure • Manual control for each pump • Magnetic faceplate triggers Hold status when removed (covers internal moving pumps) • Replaceable peristaltic pumps	
External dosing pump	• Relay outputs for external dosing pumps	
Pool startup mode	Simplified pool startup procedure • Ensures 12 hour dosing to reach a target setpoint • Enabled or disabled manually from the controller menu • Disabled automatically when setpoint is reached or 12 hour timeout has expired	
Freeze protection mode	• Air Temperature measurement triggers relay to activate the recirculation pump to prevent water freezing in the pipes	
Log feature	• Automatic logging of pH / ORP /air & solution temperature measurements • Configurable logging interval: 30 seconds 1; 5; 15; 30; 60 minutes • 300 days logging, depending on selected logging interval (capacity of 100 lots) • Recall data displayed as a plot 7 days or 6 hours zoom options overview of (History/Details) measure range registered values i.e. minimum, maximum, average • Logged event type: setup / alarms / errors / warnings / calibration / power outage (capacity of 100 records, oldest record being overwritten) • Export to USB flash drive (USB-C port) of log files in CSV format	

* The range (pH & temperature) may be limited by the probe's limits.

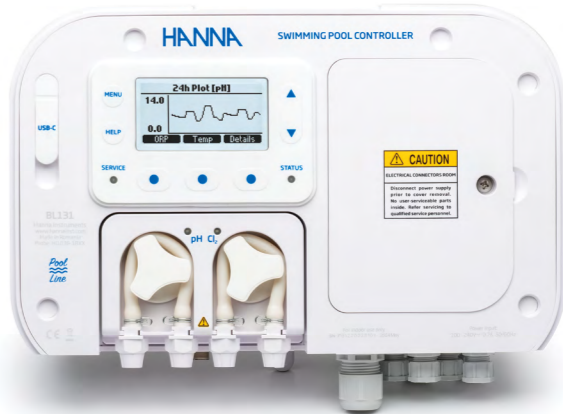
BL-132 Cloud connectivity	The BL-132 connects to Hanna Cloud via secured connection. Features: • Device identity registry • Policy-based authorisation of security keys The BL-132 sends status information to Hanna Cloud with a defined period. • Readings • pH / ORP / Temperature • Events Alarms / Warnings / Errors • Peripherals status • LEDs • Last dosed acid and chlorine volumes • GLP info Setup information is sent or configured on the Hanna Cloud. Configured data • Alarm settings • Dosing settings • General settings • Remote Hold mode Read data • System information: • Meter – model, FW version, OS version, serial number • Probe – type, FW version, serial number “Remote Hold” mode (configured remotely) • emergency mode, remotely triggered via web application • pumps deactivation mode • canceled manually from the controller menu	
BL-132 Ethernet input	RJ-45 Ethernet connector (10/100 Mbps connection)	
Additional specifications	Meter password protection	• Password protected setup, calibration, and log recall
	USB-C port	• Data export to USB flash drive • Software update
	GLP	pH and ORP
	Alarm system	• Intuitive alert t system based on LED colour coded alarm system • Alarm filtering options • Alarm relay control based on user setup filters
	Relays	• Alarm relay (SPDT) – activated by selectable pH / ORP / Temperature alarm conditions • Auxiliary Acid / Base pump relay (SPST) • Auxiliary Chlorine pump relay (SPST) • Recirculation pump relay (SPDT) • All relays are fuse protected with 2A time delay 5x20mm cartridge fuses. To be replaced only with time delay glass/ceramic 5x20mm cartridge fuse of same rating. • All relays are rated for 250VAC / 30VDC 2A resistive load. Note: For inductive loads, an appropriate external snubber circuit must be connected to prevent relay contact damage.
Analog outputs (BL-131)	• 3 × galvanically isolated, user configurable 4-20mA outputs • Current sensing resistor ≤ 500 Ω • Accuracy < 0.5 % FS	
Three digital inputs	• 3× galvanically isolated, powered contact, digital input • Low level acid / base tank (contact open) • Low level chlorine tank (contact open) • Hold mode (contact open)	
Probe input	• Galvanic isolated • RS485 interface • HI1036-1802 multiparameter digital probe is equipped with: pH / ORP / Temperature sensors and a matching pin IP65 connector	
Power	• 100 - 240 Vac; 50/60 Hz; 0.7A	
Environment	• 0-50 °C (32-122 °F) • Maximum 95 % RH non-condensing	
Dimensions	• 245×188×55 mm (73 mm with pumps) • 9.6×7.4×2.2” (2.9” with pumps)	
Weight	1700 g (60 oz)	
Casing	Wall mounted, internal pumps, IP65 rated	

Ordering information

in-line configuration for direct probe installation into existing piping
BL-131-10 and **BL-132-10** is supplied with HI-1036-1802 combined electrode (pH / ORP / Temperature), BL-130-900 Air temperature probe, electrode fittings, electrode saddle, Ø 50 mm pipe (1 pc.), injector saddle, Ø 50 mm pipe (2 pcs.), injector (2 pcs.), peristaltic pump tubing (2 pcs.), silicon oil (dropper bottle), PVC aspiration and injection tubing, 10 m, aspiration filter (2 pcs.), 4.01 pH buffer solution, sachet (3 pcs.), 7.01 pH buffer solution, sachet (3 pcs.), 470 mV ORP test solution, sachet (3 pcs.), power cable, quick reference guide with QR code for manual download, quality certificates (instrument, probes, accessories).

Flow cell configuration for calibration and probe maintenance whilst maintaining the recirculation pump running
BL-131-20 and **BL-132-20** is supplied with HI-1036-1802 combined electrode (pH / ORP / Temperature), BL-130-900 air temperature probe, panel mounted flow cell, flow cell panel, valve for flow cell connection and fittings (2 pcs.) with 10 m tubing, valve saddle, Ø 50 mm pipe (2 pcs.), injector saddle, Ø 50 mm pipe (2 pcs.), injector (2 pcs.), peristaltic pump tubing (2 pcs.), silicon oil (dropper bottle), PVC aspiration and injection tubing, 10 m, aspiration filter (2 pcs.), cable gland gaskets, 4.01 pH buffer solution, sachet (3 pcs.), 7.01 pH buffer solution, sachet (3 pcs.), 470 mV ORP test solution, sachet (3 pcs.), power cable, quick reference guide with QR code for manual download, quality certificates (instrument, probes, accessories).

Additional details



Front with cover removed



Rear

HI-1036-18xx

Multiparameter Digital pH, ORP, Temperature Probe

The HI-1036-18xx 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 HI-1036-18xx 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 HI-1036-18xx with Hanna pool controllers helps to promote the health and safety of pool and spa water.

Specifications

HI-1036-18xx*		
Range	pH	0.00 to 12.00 pH
	ORP	±2000 mV
	Temperature	0.0 to 70.0 °C (32.0 to 158.0 °F)
Reference	Ag / AgCl reference electrode (3.5M KCl)	
Junction	Cloth	
Matching pin	Yes	
Body	PVDF	
Top thread	3/4" NPT	
Connector	DIN connector	
Maximum pressure @25 °C	3 bar (43.5 psi)	
Ordering Information	HI-1036-1802 probe with 2 m (6'7") long cable	
	HI-1036-1805 probe with 5 m (16'5") long cable	
	HI-1036-1810 probe with 10 m (32'9") long cable	
	HI-1036-1815 probe with 15 m (49'3") long cable	
	HI-1036-1820 probe with 20 m (65'7") long cable	

* XX = cable length options



Flow Cell for

- BL-131-20
- BL-132-20

Accessories



BL-120-450
Flow-cell kit for 50 mm pipe diameter



BL-120-463
Flow-cell kit for 63 mm pipe diameter



BL-120-475
Flow-cell kit for 75 mm pipe diameter



BL-120-150
Fittings Kit for 50 mm pipe diameter.



BL-120-163
Fittings Kit for 63 mm pipe diameter



BL-120-175
Fittings Kit for 75 mm pipe diameter



BL-123-70
Calibration and Maintenance Kit
1 x pH 7.01 buffer solution sachet (20 mL)
1 x pH 4.01 buffer solution sachet (20 mL)
1 x electrode cleaning solution sachet (20 mL)
1 x electrode storage solution sachet (20 mL)
1 x ORP test solution sachet (20 mL)

BL-123-70-30
30 x BL-123-70 Calibration and Maintenance Kit



BL-120-250
Injector saddle for 50 mm pipe diameter, 1/2" thread



BL-120-263
Injector saddle for 63 mm pipe diameter, 1/2" thread



BL-120-275
Injector saddle for 75 mm pipe diameter, 1/2" thread



BL-120-550
Probe saddle for 50 mm pipe diameter, 1 1/4" thread



BL-120-563
Probe saddle for 63 mm pipe diameter, 1 1/4" thread



BL-120-575
Probe saddle for 75 mm pipe diameter, 1 1/4" thread



BL-120-601
Plastic nipple 2 x 1/2" with O-rings



BL-130-900
Ambient Temperature Probe for BL-131, BL-132 with 1 m (3.3') cable



BL-120-200
Pool Controller aspiration filter



BL-120-201
Pool Controller injector, 1/2" thread



BL-120-903
Cable gland protective kit (6 pcs.)



BL-120-402
Flow-cell tubing (10 m)



BL-120-202
Aspiration and dispersion tubing (10 m)



BL-120-501
Protective saddle cap, 1 - 1/4" thread



BL-120-602
Metal nipple 12 x 1/2" (2 pcs.)



BL-120-500
Probe fitting kit



BL-120-410
Flow cell



BL-120-401
Flow-cell valve



BL-120-400
Flow-cell probe adapter kit



BL-120-603
Elbow for glass flow cell



BL-120-604
O-ring for glass flow cell



BL-130-300
Pool controller peristaltic pump tubing kit (2 pcs.)



BL-130-301
Pool controller peristaltic pump rotor



BL-130-411
Flow cell panel spare part

