



HI520-0540 shown

HI510 • HI520

## Single and Dual-Channel Universal Process Controllers

- Waterproof IP65 (NEMA 4X) enclosure
- Large backlit LCD
- Multi-color LED status indicators
- Audible alarm
- Tactile rubberized keypad
- Universal mounting
- Universal Hanna digital probe

HI510 and HI520 are advanced process controllers that can be configured for applications requiring monitoring and/or control of four main water-analysis parameters: pH, ORP, Conductivity, and Dissolved Oxygen.

These controllers feature a digital probe input(s) that automatically detects and updates the controller with the parameter that it measures.

HI520 is Hanna's first dual-input process controller that accepts virtually any combination of compatible probes. Designed to adapt to unique process control requirements, users have the option to enable or disable each channel independently.

Additionally, HI520 introduces enhanced industrial control by operating a control-loop system whereby users have the option to run channel control either independently or configure to be triggered sequentially upon

reaching the other channel's set point(s) (1, 2, or both). The device operates a logical channel with built-in mathematical functions. This function is intended for when the controller works as an analyzer for monitoring high/low parameter levels between two identical inputs with identical measuring configurations.

These Universal Process Controllers offer wall, pipe, and panel mounting options and feature a large backlit dot matrix display for easy viewing and provide an intuitive interface for setup options.

The controllers utilize multi-color LEDs for easy viewing of the instrument's status including relay activation, in alarm mode, or in hold status. All programming operations are done through the low profile vulcanized rubber keypad or with an RS485 connection to a Modbus-compliant supervisory computer.

## Features Displayed on Screen (HI520 display shown)



### Control Modes

The control mode can be configured to be On/Off, Proportional, or PID. The mode can be set high or low. High control mode is required if the process value is too high and needs to be decreased. Low control mode is required if the process value is too low and needs to be increased.

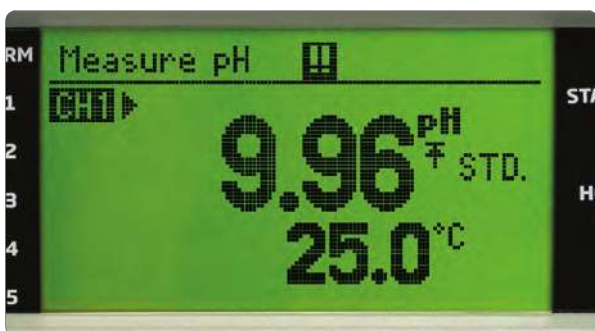
For On/Off control, the hysteresis band is adjustable, while in Proportional and PID modes, deviation, control period, and other tuning parameters can be set to optimize control around a set point.

For HI520, each channel can run control independently or sequentially.



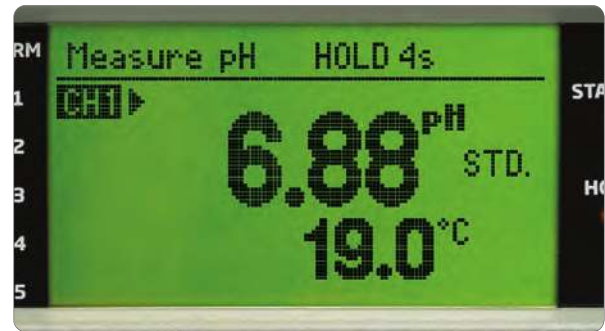
### Auto-Cleaning Cycle

Difficult applications often require an almost continuous maintenance of the probe. Processes with high-suspended solids, fats, oils, pigments, and microorganisms will coat the pH sensing glass, ORP sensors, and the reference junction. The cleaning function allows programming of one or more wash cycles and uses the relays to activate valves, pumps or compressed air based on the type of washing that is required to maintain probes for reliable results.



### LCD Information

Local visual indicators of measurement details as well as errors are displayed. The ? DIAG key provides details of the issue.



### Hold Function

During calibration, cleaning, and configuration the controller automatically goes into Hold mode. During Hold mode all control loops related are disabled. The analog outputs may be configured to go to a fixed value or remain at the last value.

The Hold function can also be triggered manually, using an external digital input or by entering in Manual mode. This is useful for disabling control when performing maintenance.



### Configurable Alarm System

The alarm system is configurable for measured parameters. The alarm can also be activated by event triggers or abnormal operation. For example, if a dosing relay remains closed for an excessive period of time or if temperature exceeds an upper limit during an exothermic neutralization reaction. A blinking red LED signals an alarm state. All relays configured for control are inactivated until the alarm state is resolved.

On HI520 use channel configuration to setup and trigger an alarm.



### ? DIAG - Help and Diagnostic Key

The help and diagnostic key (? DIAG) provides information related to errors; or in setup mode, information about settings.



HI520 shown

### Digital Inputs

- Two digital inputs for remotely triggering, cleaning and hold functions

### Analog Outputs

- Up to 4 analog outputs and 5 relays used for control and for sending a signal to data loggers, PLC, SCADA and other remote monitoring systems
- 0-20 mA or 4-20 mA
- Scalable in selecting values for the range
- Can be used for control of pumps and valves
- On alarm state can output a 22 mA signal to the monitoring system

### Digital Communication

- The Modbus-compliant unit can be integrated within a Modbus-based network and connected to other industrial electronic devices. The following tasks may be accomplished remotely:
  - Monitoring, using the virtual LCD (limited to a single remote control in the entire network)
  - Setup
  - Loading the Setup configuration file to a controller
- RS485 Digital output for PC and other device connectivity

### Relays

- Up to 5 control and 1 alarm electromechanical relays
- Replaceable 5A fuses to protect all relays
- Extractable terminal blocks for easy wiring
- Relay options include single pole double throw (SPDT) and single pole single throw (SPST)
- Control relays can be programmed for On/Off, Proportional, or PID control as well as Cleaning and Hold functions
- Configurable alarm relay
- Relays terminal blocks and their wires paths are separated from the low voltage section for additional safety





## Automatic Data-logging

HI510 and HI520 have built-in data logging that stores data at selectable intervals along with relay control settings and calibration data.

- Data stored in up to 100 lots with each holding 8600 records
- Selectable log interval: from 10 seconds to 3 hours
- Logged Data includes:
  - Measured values and alarms for all supported parameters
  - Calibration information including solutions used. For pH, the offset and slope is recorded.



## Event Log

The Event Log file can hold a maximum of 100 events. It includes errors, alarms, warnings, calibration events, configuration changes, and cleaning events.



## Password protection

The controllers feature password protected calibration and setup.



### NEMA 4X Enclosure

The controllers are suitable for indoor or outdoor environments. The NEMA 4X enclosure ensures the electronics are protected against splashing and hose-directed water or windblown dirt, dust, rain or sleet. It also provides corrosion protection for use near salt water.



### Cable Glands

To maintain the NEMA 4X enclosure rating during use, the conduit openings and connection cables are sealed against the environment using the provided cable glands, seals, and plugs.



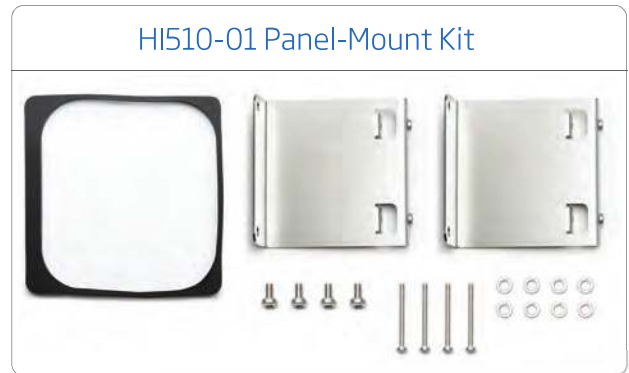
### Spring Loaded Screws

The front panel is hinged at the front of the enclosure for easy access to wiring locations. It features spring loaded screws that won't fall out when accessed.



### USB Type-C Port

Logged data can be transferred to a flash drive as a .csv file using the USB Type-C port. A rubberized plug helps protect the port against the ingress of water.



The controllers can be securely panel mounted through a ½ DIN opening using the HI510-01 Panel-Mount Kit. The kit includes a sealing gasket, dual zinc coated brackets, and associated hardware.







The controllers can be surface mounted using the HI510-02 Wall-Mount Kit. The kit includes a zinc coated mounting plate and associated hardware. The plate may be oriented vertically or horizontally.



The controller can be mounted to a vertical or horizontal pipe using the HI510-03 Pipe-Mount Kit. The kit includes a zinc coated mounting plate, associated hardware, and U-bolts to accommodate a 1", 1 1/2", or 2" pipe.





HI510-0540



HI510-0320



HI520-0540



HI520-0320

Specifications	HI510	HI520
Digital Probes	See the following pages	
Channels	1	2
Display	Graphic LCD, 128 x 64 pixel B/W with backlight	
Digital Inputs	2 independent, galvanically isolated inputs (configurable for Hold & Cleaning functions) On state: 5 to 24 Vdc, low or high level active	
Analog Outputs	2 or 4 independent, galvanically isolated outputs 0 – 22 mA configurable as: 0 – 20 mA; 4 – 20 mA 22 mA as alarm signal, configurable option	
Analog Output Accuracy	±0.2% f.s.	
Digital Communication	RS485 serial port - Remote monitoring and control USB-C port - Retrieve log files and firmware upgrading	
Relays	Up to 5 relays (independently configurable for process variables, Hold & Cleaning functions) Electromechanical relay SPDT and SPST contact outputs 5A – 250 Vac; 5A – 30 Vdc (resistive load) Fuse protected: 5A, 250V slow blow fuse	
Alarm Relay for All Measurement Alarms	Electromechanical relay SPDT contact output 5A – 250 Vac; 5A – 30 Vdc (resistive load) Fuse protected: 5A, 250V slow blow fuse	
Data Logging	Interval log, up to 100 files, maximum 8600 records on each stored file. When the maximum limit of 100 stored files is reached, the most recent file will automatically erase the oldest one. Event log, maximum 100 records. When the maximum limit is reached, the last record overwrites the oldest one.	
Power Supply	100 – 240 Vac ±10%; 50/60 Hz; 15VA; fuse protected (2A, 250V slow blow fuse)	
Power Consumption	15VA	
Installation Category	II	
Environment	-20 to 50 °C (-4 to 122 °F); maximum 100% RH non-condensing	
Enclosure*	Single case ½ DIN, type 4X, IP65 ingress protection	
Weight	Approximately 1.6 kg (3.5 lb.)	
Dimensions	Width: 144.0 mm (5.7") Height: 144.0 mm (5.7") Depth: 151.3 mm (6.0")	
Ordering Information	<p><b>HI510-0540</b> universal process controller with 5 relays and 4 analog outputs is supplied with 3m power cable, cable gland set, instrument certificate, and quick reference guide with instructions for manual download.</p> <p><b>HI510-0320</b> universal process controller with 3 relays and 2 analog outputs is supplied with 3m power cable, cable gland set, instrument certificate, and quick reference guide with instructions for manual download.</p> <p><b>HI520-0540</b> universal process controller with 5 relays and 4 analog outputs is supplied with 3m power cable, cable gland set, instrument certificate, and quick reference guide with instructions for manual download.</p> <p><b>HI520-0320</b> universal process controller with 3 relays and 2 analog outputs is supplied with 3m power cable, cable gland set, instrument certificate, and quick reference guide with instructions for manual download.</p>	
Accessories	<p><b>HI510-01</b> panel-mount kit</p> <p><b>HI510-02</b> wall-mount kit</p> <p><b>HI510-03</b> pipe-mount kit</p> <p><b>HI76510-05</b> patch cable, 5 m (16'5")</p>	<p><b>HI76510-10</b> patch cable, 10 m (32'9")</p> <p><b>HI76510-15</b> patch cable, 15 m (49'2")</p> <p><b>HI76510-25</b> patch cable, 25 m (82')</p> <p><b>HI76510-50</b> patch cable, 50 m (164')</p>

\* For a water tight seal: Gland seals need to be used over cables and the four screws on the front casing need to be tightened to 13.3 lbf/in (1.5 N·m, maximum 2.0 N·m), of torque.