



HI520-0540 shown

HI510 • HI520

Single and Dual-Channel Universal Process Controllers

- IP65 rated enclosure
- Wide variety of compatible probes
- Universal mounting options
- Modbus compliant
- ON/OFF, proportional or PID channel control
- Automatic datalogging of process control information and events
- USB-C port for data transfer
- Large backlit LCD
- Tactile rubberized keypad
- Multi-color LED status indicators
- Configurable high and low alarms
- Safety Features
 - All electrical connections enclosed in an IP65 rated enclosure
 - Galvanically isolated inputs and outputs
 - EMC (electromagnetic compliant) hardware and software design

The HI510 and HI520 Universal Process Controllers are advanced process controllers that can be configured for applications requiring monitoring and/or control of industrial, commercial and municipal processes when used with supported pH, ORP, Conductivity, and Dissolved Oxygen liquid measurement sensors. The HI510 is a single-channel model while the HI520 is dual-channel.

These versatile multiparameter platforms offers wall, pipe, and panel-mounting options as well as a large backlit dot matrix LCD. The HI520 can also display two channels simultaneously. The IP65 rated rugged enclosure and low profile vulcanized rubber keypad makes these controllers ideal for harsh environments.

These controllers automatically detect supported digital probes and recognizes the parameter that it measures.

Designed to adapt to unique process control requirements, HI520 operates a control-loop system whereby users have the option to run channel control independently or configure to be triggered sequentially upon reaching the other channel's set point(s) (1, 2, or both).

The HI520 also 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.

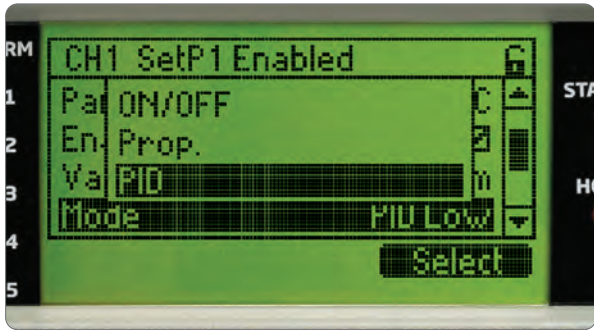
An intuitive interface for control setup, relay activation, alarm signaling (hold status) and the help and diagnostic features, guide users to identify problems and suggest possible action(s) to be taken. On the front panel, Blue LEDs indicate when relays are energized, and multi-color LEDs indicate status such as Alarm and HOLD.

Configuring control parameters can be done locally or remotely using the Modbus protocol and a compatible Modbus server.

Shared-function management between controller and probes

Smart probes store information including serial number, type, probe temperature and measurement limits, calibration data (including slope and offset), manufactured date, expiration date (optical DO caps), and calibration due reminder. When paired up with the controller, the system allows for shared management of settings between controller and probes, where the controller manages only settings related to the intended application, as defined by the requirements of the industrial process, and the probes manage measurement settings and warnings, including temperature compensation and calibration.

Features Displayed on Screen (HI520 display shown)

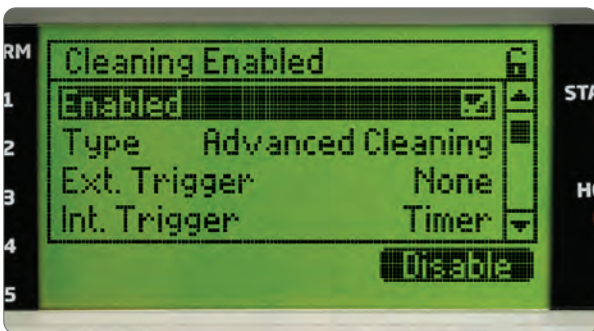


Control Modes

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.

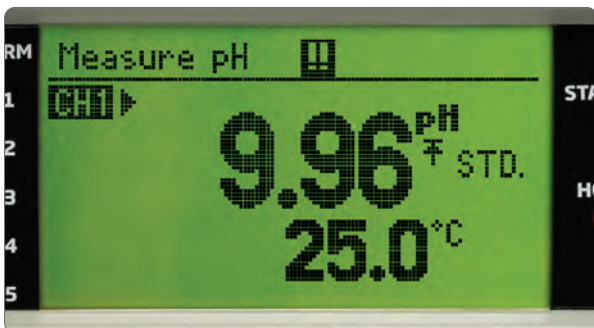
For On/Off control, the hysteresis band is adjustable, while in Proportional and PID modes, deviation, control period, and other tuning parameters can be set to optimize control around a set point.

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



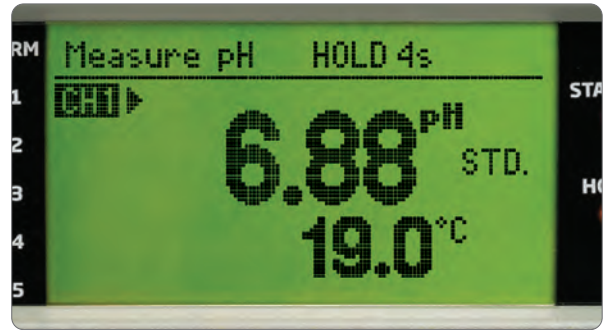
Auto-Cleaning Cycle

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.

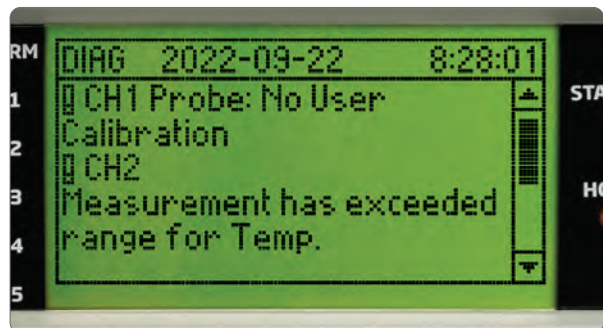
The Hold function can also be triggered manually, using an external digital input or by entering in Manual mode. This is useful for disabling control when performing maintenance.



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

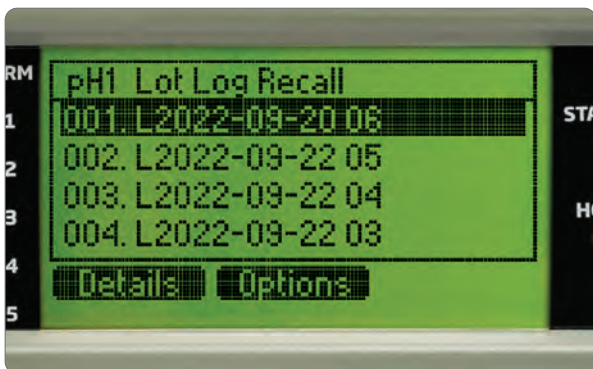
- Up to 4 analog outputs and 5 relays used for control and for sending a signal to data loggers, PLC, SCADA and other remote monitoring systems
- 0-20 mA or 4-20 mA
- Scalable in selecting values for the range
- Can be used for control of pumps and valves
- On alarm state can output a 22 mA signal to 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 automatically logs the process control information in an interval log, and various event alarms and errors in an event log

- Logged data can be retrieved and events visualized on the screen, in Log Recall menu
- Interval logs store up to 8600 records per lot, maximum lot number is 100 lots
- Logging interval can be set in the General settings menu

- Logged data includes: measurement variables and temperature measurements, last calibration data, setup configuration, start/end date and time, previous values, event data and event code
- Event log can store up to 100 records of events, alarms, errors-related data
 - Log files can be uploaded to a USB flash drive via USB-C port



Password protection

The controllers feature password protected calibration and setup.



IP65 Rated Enclosure

The HI510 and HI520 are suitable for indoor or outdoor environments. The rugged IP65 rated 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 IP65 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 ½", 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	<ul style="list-style-type: none"> RS-485 serial port for remote monitoring and control (Modbus) USB-C port to 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	<ul style="list-style-type: none"> Interval log, up to 100 files, maximum 8600 records on each stored file. When the maximum limit 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, 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	HI510-0320 universal process controller with digital probe inputs, 3 relays, 2 analog outputs, RS-485 / Modbus serial communication protocol, 100-240 Vac is supplied with power cable, 3 m (9.84') long; set of cable gland seals; instrument quality certificate; and quick reference guide with QR code for user manual download.	
	HI510-0540 universal process controller with digital probe inputs, 5 relays, 4 analog outputs, RS-485 / Modbus serial communication protocol, 100-240 Vac is supplied with power cable, 3 m (9.84') long; set of cable gland seals; instrument quality certificate; and quick reference guide with QR code for user manual download.	
	HI520-0320 dual-channel universal process controller with digital probe inputs, 3 relays, 2 analog outputs, RS-485 / Modbus serial communication protocol, 100-240 Vac is supplied with 3m power cable, cable gland set, instrument certificate, and quick reference guide with instructions for manual download.	
	HI520-0540 dual-channel universal process controller with digital probe inputs, 5 relays, 4 analog outputs, RS-485 / Modbus serial communication protocol, 100-240 Vac is supplied with 3m power cable, cable gland set, instrument certificate, and quick reference guide with instructions for manual download.	
Accessories	HI510-01 panel-mount kit	HI76510-10 patch cable, 10 m (32'9")
	HI510-02 wall-mount kit	HI76510-15 patch cable, 15 m (49'2")
	HI510-03 pipe-mount kit	HI76510-25 patch cable, 25 m (82')
	HI76510-05 patch cable, 5 m (16'5")	HI76510-50 patch cable, 50 m (164')

* For a water tight seal, tighten the four front casing screws to 13.3 lbf•in (1.5 N•m, max. 2.0 N•m), of torque.

HI605101

Rail Mount Kit

HI605101 rail mount kit is designed to mount a probe extension pipe to a handrail. The mount can accommodate a 1 ½" PVC (1.9" OD) or 50mm OD metric extension pipe in a locked or floating position and can swivel to the side for easy sensor cleaning. The kit includes an "S" hook to hold the extension pipe parallel to the handrail when not in use.

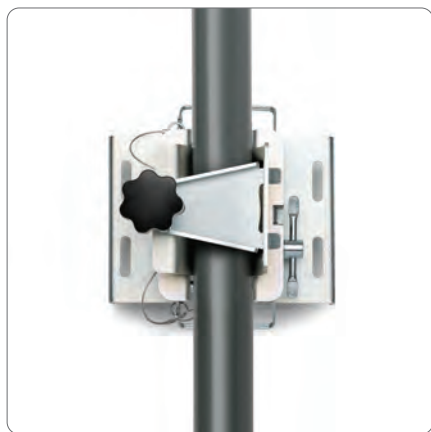
- Mount sensors in locked or floating position
- Side swivel for easy sensor cleaning
- Includes "S" hook to hold extension pipe parallel to handrail
- Ideal for applications with handrails around large basins or tanks



Front (extension pipe side)



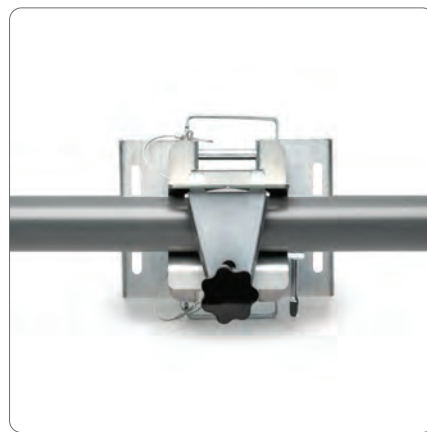
Rear (handrail side)



Locked position

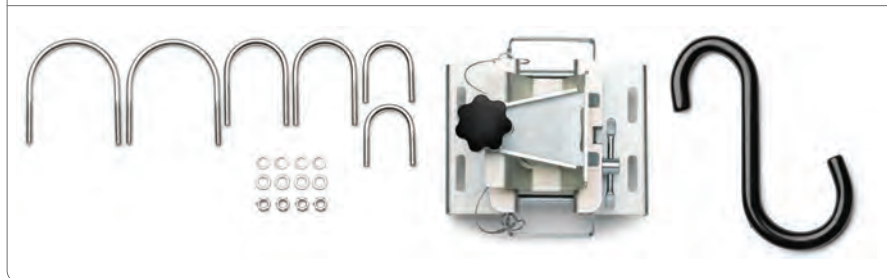


Floating position



Swivel position

HI605101 Rail Mount Kit



The rail mount kit can be mounted to a handrail using the included accessories. HI605101 rail mount kit includes a zinc coated mounting plate, associated hardware, U-bolts to accommodate a 1", 1 ½", or 2" pipe, and "S" hook.