

HI981412

pH Dosing System



GroLine

INSTRUCTION MANUAL

Dear
Customer,

Thank you for choosing a Hanna Instruments® product.

Please read this instruction manual carefully before using this instrument.

This manual will provide you with the necessary information for correct use of this instrument, as well as a precise idea of its versatility.

If you need additional technical information, do not hesitate to e-mail us at

tech@hannainst.com or view our worldwide contact list at www.hannainst.com.

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1. PRELIMINARY EXAMINATION

Remove the instrument and accessories from the packaging and examine it carefully. For further assistance, please contact your local Hanna Instruments® office or email us at tech@hannainst.com. Each HI981412 is available in multiple configurations: controller and probe - HI981412-00, kit for in-line mounting - HI981412-10, kit for flow cell mounting - HI981412-20.

Each instrument is supplied with:

HI981412-00, without mounting kit

- HI10063 pH / temperature probe
- 4.01 pH buffer solution, 20 mL (3 pcs.)
- 7.01 pH buffer solution, 20 mL (3 pcs.)
- Power connection cable
- Instrument & electrode quality certificates
- Instruction manual

HI981412-10, with in-line mounting kit

- HI10063 pH / temperature probe
- Controller aspiration filter
- Controller injector, ½" NPT thread
- Saddle for Ø 50 mm pipe (2 pcs.)
- 4.01 pH buffer solution, 20 mL (3 pcs.)
- 7.01 pH buffer solution, 20 mL (3 pcs.)
- Power connection cable
- Instrument & electrode quality certificates
- Instruction manual
- Aspiration and injection tubing, PVC (flexible)
Length: 10 m
Outer diameter: 6.0 mm
Inner diameter: 4.0 mm

HI981412-20, with flow cell mounting kit

- HI10063 pH / temperature probe
- Flow cell for HI981412
- Mounting panel assembly for HI981412
- Controller aspiration filter
- Controller injector, ½" NPT thread
- Saddle for Ø 50 mm pipe (3 pcs.)
- 4.01 pH buffer solution, 20 mL (3 pcs.)
- 7.01 pH buffer solution, 20 mL (3 pcs.)
- Power connection cable
- Instrument & electrode quality certificates
- Instruction manual
- Rapid coupling ½" to 12.0 mm (2 pcs.)
- Flow cell valve (2 pcs.)
- Aspiration and injection tubing, PVC (flexible)
Length: 10 m
Outer diameter: 6.0 mm
Inner diameter: 4.0 mm
- Flow cell tubing, PE (rigid)
Length: 10 m
Outer diameter: 12.0 mm
Inner diameter: 10.0 mm

Note: Save all packing material until you are sure that the instrument works correctly. Any damaged or defective item must be returned in its original packing material with the supplied accessories.

2. SAFETY MEASURES



- Always disconnect the pH pump controller from power when making electrical connections.



- Do not run other cables with the power cabling.
- Do not touch the metallic part. Hot surface.

3. ABBREVIATIONS & CONVERSION CHARTS

FDA	Food and Drug Administration	PE	Polyethylene
NPT	American National Standard Taper Pipe Thread	PVC	Polyvinyl Chloride
LED	Light Emitting Diode	REDOX	Reduction & Oxidation
		SPDT	Single Pole Double Throw

METRIC vs INCHES

Metric (mm)	Inches - Decimal	Inches - Fractional
4.0 mm	0.16"	$\frac{5}{32}$ "
6.0 mm	0.24"	$\frac{15}{64}$ "
10.0 mm	0.39"	$\frac{25}{64}$ "
12.0 mm	0.47"	$\frac{15}{32}$ "
20.0 mm	0.79"	$\frac{25}{32}$ "
25.4 mm	1.00"	1"
50.0 mm	1.97"	1 $\frac{31}{32}$ "
63.0 mm	2.48"	2 $\frac{31}{64}$ "
75.0 mm	2.95"	2 $\frac{61}{64}$ "

METRIC vs FEET & INCHES

Metric (m)	Feet (') Inches (")	Feet (')	Inches (")
2 m	6' 7"	6.56'	78.74"
5 m	16' 4"	16.40'	196.85"
10 m	32' 9"	32.80'	393.70"

4. SPECIFICATIONS

4.1. HI981412 pH DOSING SYSTEM

pH	Range *	0.00 to 14.00 pH
	Resolution	0.01 pH
	Accuracy	±0.10 pH @ 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	±0.5 °C (±0.9 °F) @ 25 °C (77 °F)
Calibration	• User calibration: automatic, one or two-point with buffer solution (4.01, 7.01, 10.01 pH) • Process calibration: single point, adjustable (±0.50 pH around measured pH)	
Temperature compensation	Automatic	
High or Low mode Operation pump control	• On/Off control using adjustable set point (4.00 - 10.00 pH) with adjustable hysteresis (0.10 to 1.00 pH) • Proportional control using adjustable set point (4.00 - 10.00 pH) with adjustable proportional band (0.10 to 2.00 pH) • Startup delay timer at power-on (0 to 600 sec.) • Pump flow control 0.5 to 3.5 Liter/hour (0.13 to 0.92 Gallon/hour) and maximum output pressure 1 atm (14 psi) • Manual control for pump priming (defined in setup)	
pH alarms	• High & Low with enable or disable option • Triggered after 5 sec. if the controller records consecutive readings over or under threshold values • Level with enable or disable option • Overtime protection (1 to 180 min. or Off)	
Controller alarm system	• Intuitive alarm system, using red, yellow and green color coded backlight • User-selectable, alarm setup options	
Alarm relay output	• SPDT 2.5A / 230 Vac • Activated by pH-selectable alarm conditions	
Probe input	• Quick connect DIN connector • Galvanic isolation	

* The range may be limited by the probe's limits.

Level sensor input (Digital input)	• External switches can be attached to stop the pump and activate the alarm (low reagent level) when the switch is open and level alarm is configured in Setup • Galvanic isolation
Power supply	100 - 240 Vac, 50/60 Hz
Power consumption	15 VA
Environment	0-50 °C (32-122 °F), max. 95% RH non-condensing
Dimensions	90 x 142 x 80 mm (3.5 x 5.6 x 1.8")
Weight	908 g (36 oz)
Casing	Wall mounted, built-in pump, IP65 rated

4.2. HI10063 pH & TEMPERATURE PROBE

Range	0 to 12 pH
Reference	Double junction
Junction	Cloth
Temperature sensor	Yes
Temperature range	−5 to 70 °C (23 to 158 °F)
AmpHel®	Yes
Matching pin	Yes
Body	PVDF (white)
Top thread	¾" NPT
In-line mounting thread	½" NPT
Cable length	2 m
Connector	Quick connect DIN connector
Maximum pressure @ 25 °C (77 °F)	3 bar (43.5 psi)

5. DESCRIPTION

5.1. GENERAL DESCRIPTION & INTENDED USE

HI981412 pH Dosing System is part of Hanna Instruments® Groline family and features a pH controller with peristaltic dosing pump and a process sensor.

Maintaining the correct pH of plant soil or hydroponic nutrient solution is an ongoing task. Macro and micro nutrients as well as calcium and magnesium bloom boosters require the correct pH for absorption into the plants root system.

The HI981412 Groline pH Dosing System, easily assimilates into a nutrient/fertilizer system for soil and hydroponics. It precisely monitors the pH using the HI10063 waterproof pH/temperature probe; and simultaneously controls the addition of acid or base (Up and Down reagents) using On/Off or proportional control to fine tune and maintain the optimum pH. Growers can define the ideal set point for pH. The HI981412 is a small dosing controller and can be easily setup for a stand-alone nutrient reservoir or be part of a modular control scheme with the HI981413 Groline Nutrient Dosing controller. To obtain a representative sample pH, the probe should be located at a spot that experiences good circulation. The probe can be used in a "sample pot" or reservoir or installed in a flow cell or recirculation line; perfect for drain-to waste or recirculating systems.

Main Features

- Easy to read LCD display with intuitive, color-coded backlight
- Automatic Temperature Compensation: all readings are compensated for variations in temperature. Temperature is displayed in °C or °F along with pH reading. The pH probe contains an integral temperature sensor to simplify installation.
- High and low alarms: warn the user when the nutrient solution is out of desired range by blinking the LCD backlight red, disabling the pump, and deactivating the alarm relay
- Built-in peristaltic pump with On/Off or Proportional control
- Manual control for pump priming
- Overfeed protection using the overtime safety timer
- Resumes dosing on restart in case of power failure
- IP65 rated enclosure designed to withstand harsh environments
- Level input to stop control when nutrient levels are low
- Wall-mounted design
- User selectable languages
- Extremely easy to calibrate and use (prepackaged calibration standards)

The HI981412 Groline pH Dosing System is engineered to be an inexpensive solution for the horticulturist to have real-time monitoring and control of nutrient solutions, to obtain and maintain the ideal pH for optimum results at all times.