chlorine, pH, ORP temperature

PCA SERIES

analyzers

pca 310 • pca 320 • pca 330

High accuracy

Wall mounted

NEMA enclosure

Backlit display

User-friendly interface

POOLS & SPAS

ISO 9001
CERTIFIED

HANNA® instruments
With Great Products, Come Great Results™

Continuous chlorine monitoring is essential.

Swimming pools and spas are two of the largest consumers of chlorine.

The PCA series of analyzers check chlorine levels in pools and spas to ensure public safety, prevent waste and protect the environment by reducing overdosage.

chlorine, pH, ORP, temperature

PCA SERIES
analyzers

pca 310 • pca 320 • pca 330

Chlorine Monitoring

Chlorine is the most commonly used water disinfectant in applications that vary from treatment of drinking and waste water to pool and spa sanitization. The chlorine present in the water binds itself with bacteria, leaving only a part of the original quantity (free chlorine) to continue its disinfecting action. The monitoring and control of chlorine levels has an important bearing on public health in applications such as drinking water and return on investment and efficiency for heating systems and industry. Too much chlorine will generate unpleasant odor and taste, or can even be harmful, while too little can prove ineffective. HANNA Instruments® completes its range of Chlorine Meters, by offering the PCA series Chlorine Analyzers & Controllers. These microprocessor-based process instruments can continuously monitor a sample stream for Free Chlorine or Total Chlorine content in the 0 to 5 mg/L range with a 0.01 resolution. The principle of operation is based on an adaptation of the EPA recommended DPD 330.5 method.

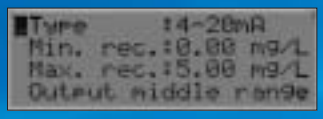
Indicator and buffer reagent bottles are placed directly into the instrument case. Using a sampling period of 10 minutes, reagents need not be replenished for months. The reagent bottles are also visible through the transparent window. The operator can select the set point which will activate chlorine dosing when the measurement is below the set point. The alarm can be also set above or below the set point. The set point controls a relay which can perform proportional dosage with a user-selectable delta from 0.1 to 5.0 mg/L. HANNA instruments® has designed our new chlorine analyzers PCA 320 & PCA 330 respectively with pH/temperature and pH/ORP/temperature control. These two new models also allow pH regulation through acid or alkaline dosage with both ON/OFF and proportional modes. All measured parameters can be sent through SMS to a cellular phone using the optional GSM module. The external enclosure of the instruments meet the NEMA 4X standards: molded fiberglass polyester giving outstanding chemical and temperature resistance. External mounting feet provide easy installation and the front door gasket protects the unit from water, humidity and dust.

Method of Analysis

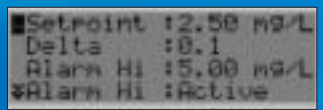
With the DPD Colorimetric method, N, N-Diethyl-p-phenylene-Diamine indicator and a buffer are mixed with the sample. Free available chlorine oxidizes the DPD indicator reagent at a pH between 6.3 and 6.6 to form a magenta colored compound. The intensity of the resulting color is proportional to the concentration of chlorine in the sample. The purpose of the buffer solution is to maintain the proper pH. In total chlorine measurement (free available chlorine plus combined chloramines), potassium iodide is added. The chloramines in the sample cause the iodide ions to become iodine which reacts with free chlorine to oxidize the DPD indicator. A pH of 5.1 is required for this reaction. Thus total chlorine measurements require a different buffer solution containing potassium iodide. Once the chemical reaction is completed, the optical signal at 555 nm is compared to the signal measured through the sample before the reagents were added. From these measurements chlorine concentration is calculated and shown on the display.

- ***pH regulation with both ON/OFF and proportional controls***
- ***Separate alarms can be set for pH and chlorine controls***
- ***Parameters can be sent through SMS***
- ***Large graphical display with backlight***
- ***User-friendly interface***
- ***Can store up to 3500 data, that can be displayed or downloaded to a PC***

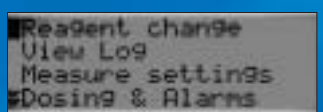
Large graphical display with backlight



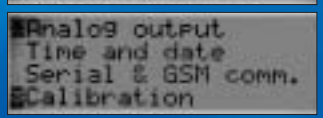
Recorder output selectable at 0-10 mV, 0-10 mV, 0-1 V, 4-20 mA or 0-20 mA



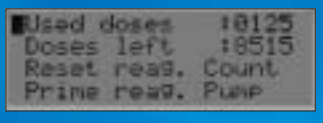
Adjustable setpoint and proportional dosing. High and low alarms



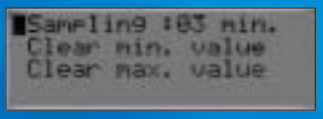
User-friendly interface simplifies setup and maintenance.



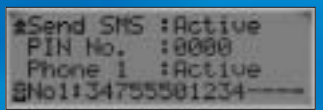
Analog output for proportional chlorine or acid/alkali dosing pump control.



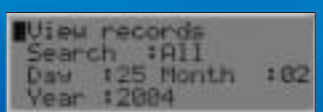
Minimum required maintenance, thanks to the pre-mixed reagents that can last for weeks



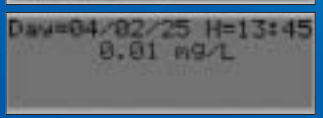
Sampling interval selectable from 3 to 90 minutes for chlorine and from 3 to 120 minutes for pH



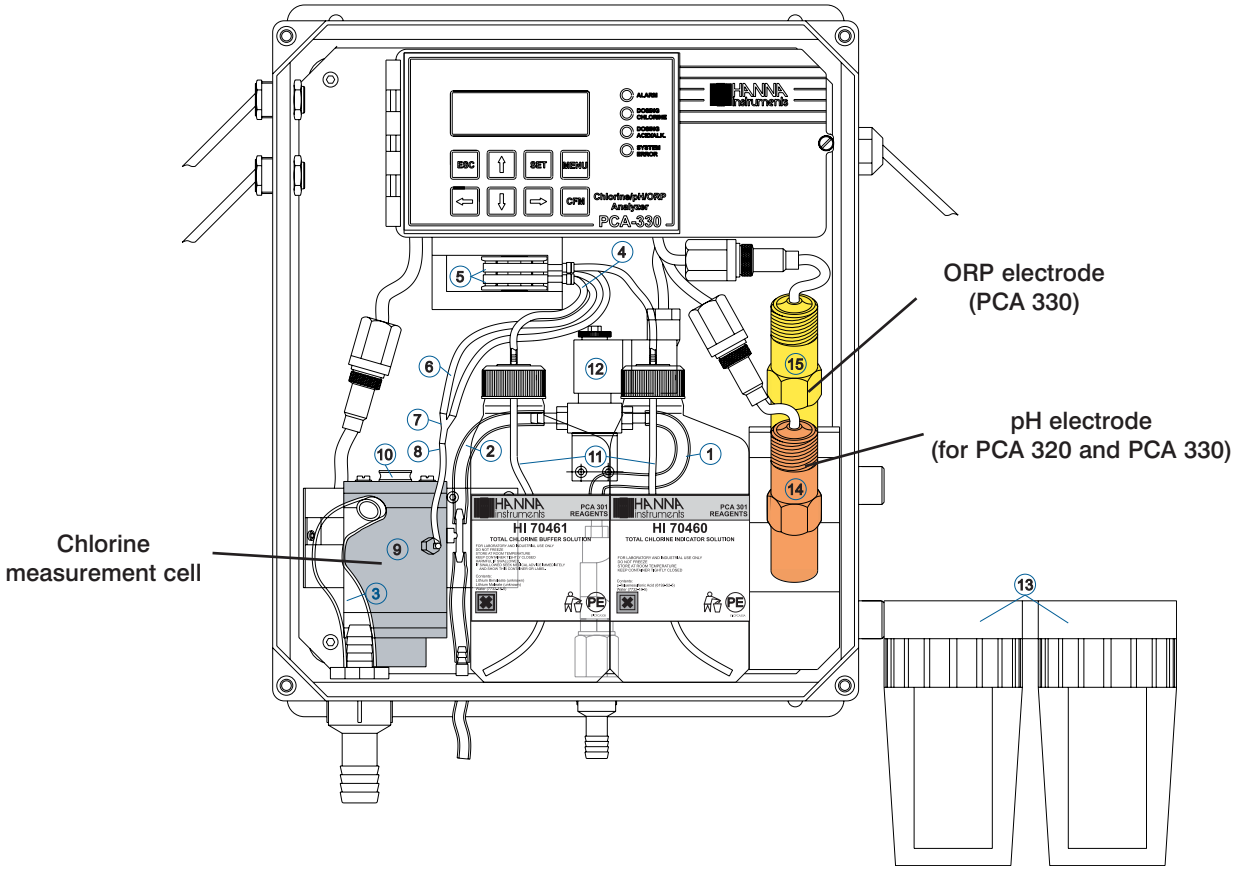
SMS message sending through the external optional HI 504900 GSM module



Up to 3500 data series can be stored and then downloaded to a PC...



... or shown on the display



PCA Series of Analyzers Parts and Accessories

HI 70473 PCA tubing kit, pressure regulator to drain (2 pcs). Each kit includes: transparent Tygon tubes 86L x 3.2ID mm (3.4 x 0.1") (Length x Internal Diameter) (1, 2) and 105 x 9.5 mm 4.1 x 0.4") (3)

HI 70474 PCA peristaltic pump tubing kit (6 pcs). Each kit includes: non-transparent C-flex tubes 55L x 0.8ID mm (2.1 x 0.03") (5)

HI 70475 PCA peristaltic pump tubing kit (2 pcs). Each kit includes: non-transparent C-flex tubes 55L x 0.8ID mm (2.1 x 0.03") (5)

HI 70476 PCA reagent bottle tubing kit (6 pcs). Each kit includes: non-transparent C-flex tubes 155L x 0.8ID mm (6.1 x 0.03") (11)

HI 70477 PCA tubing set for measuring cell (2 pcs). Each set includes: non-transparent C-flex tube 50L x 0.8ID mm (2.0 x 0.03") (8) and Y strainer (7)

HI 70478 PCA tubing kit, bottle to pump (6 pcs). Each kit includes: non-transparent C-flex tube 150L x 0.8ID mm (5.9 x 0.03") (4)

HI 70479 PCA tubing kit, pump to Y strainer (6 pcs). Each kit includes: non-transparent C-flex tube 150L x 0.8ID mm (5.9 x 0.03") (6)

HI 70480 PCA free chlorine reagent kit (for fresh water). The kit includes buffer solution, indicator and DPD powder.

HI 70481 PCA total chlorine reagent kit (for fresh water). The kit includes buffer solution, indicator and DPD powder reagent.

HI 70482 PCA filters. The kit includes 0.5 µm and 50 µm filters (13)

HI 70483 PCA complete tubing kit. The kit includes: non-transparent C-flex tubes (4, 6) 150L x 0.8ID (5.9 x 0.03") (4 pcs), non-transparent C-flex tubes (5) 55L x 0.8ID (2.1 x 0.03") (2 pcs), non-transparent C-flex tubes (8) 50L x 0.8ID (2.0 x 0.03") and Y strainer (7)

HI 70484 PCA complete tubing kit (3 pcs). Each kit includes: non-transparent C-flex tubes (4, 6) 150L x 0.8ID (5.9 x 0.03") (4 pcs), non-transparent C-flex tubes (5) 55L x 0.8ID (2.1 x 0.03") (2 pcs), non-transparent C-flex tubes (8) 50L x 0.8ID (2.0 x 0.03"), Y strainer (7)

HI 70485 PCA stirrer motor

HI 70486 PCA stirring bar (2 pcs)

HI 70487/N Measuring cell (9)

HI 70488 Electrovalve, 24VAC/60Hz (12)

HI 70489 Electrovalve, 24VAC/50Hz (12)

HI 70494 PCA calibration port cap (10)

HI 704731 Complete set of tubes from pressure regulator to drain (PCA 310)

HI 70492 Electrode holder (PCA 330)

HI 704732 Complete set of tubes from electrode holder to drain (PCA 320/PCA 330)

HI 70493 Closing cap for electrode holder

HI 1005 Amplified pH electrode with Matching Pin and Pt100 (14) (PCA 320/330 only)

HI 2008 Amplified ORP electrode with Matching Pin (15) (PCA 330 only)

HI 70490 Free Cl_2 reagent pack

HI 70491 Total Cl_2 reagent pack

HI 7004M pH 4.01 buffer solution, 230 mL

HI 7004L pH 4.01 buffer solution, 500 mL

HI 7006M pH 6.86 buffer solution, 230 mL

HI 7006L pH 6.86 buffer solution, 500 mL

HI 7007M pH 7.01 buffer solution, 230 mL

HI 7007L pH 7.01 buffer solution, 500 mL

HI 7009M pH 9.18 buffer solution, 230 mL

HI 7009L pH 9.18 buffer solution, 500 mL

HI 7010M pH 10.01 buffer solution, 230 mL

HI 7010L pH 10.01 buffer solution, 500 mL

HI 7020M 200-275 mV buffer solution, 230 mL

HI 7020L 200-275 mV buffer solution, 500 mL

HI 7091M Pretreatment reducing solution, 230 mL

HI 7091L Pretreatment reducing solution, 460mL

HI 7092M Pretreatment oxidizing solution, 230 mL

HI 7092L Pretreatment oxidizing solution, 460mL

HI 70300M Storage solution, 230 mL

HI 70300L Storage solution, 460 mL

HI 7082 3.5M KCL electrolyte,, 4 x 50 mL

HI 7061M Electrode cleaning solution, 230 mL

HI 7061L Electrode cleaning solution, 460 mL

HI 504900 Hanna GSM module

HI 92500 Windows® compatible software

chlorine, pH, ORP temperature

PCA SERIES analyzers

pca 310 • pca 320 • pca 330

SPECIFICATIONS		PCA 310	PCA 320	PCA 330
Range	Free & Total Chlorine	0.00 to 5.00 mg/L	0.00 to 5.00 mg/L	0.00 to 5.00 mg/L
	pH	-	0.00 to 14.00 pH	0.00 to 14.00 pH
	Temperature	-	5.0 to 75.0°C/41 to 167°F	5.0 to 75.0°C/41 to 167°F
	ORP	-	-	0 to 2000 mV
Resolution	Free & Total Chlorine	0.01 mg/L	0.01 mg/L	0.01 mg/L
	pH	-	0.01 pH	0.01 pH
	Temperature	-	0.1°C/0.1°F	0.1°C/0.1°F
	ORP	-	-	1 mV
Accuracy	Free & Total Chlorine	±8% ±0.05 mg/L (whichever is greater)	±8% ±0.05 mg/L	±8% ± 0.05 mg/L
	pH	-	± 0.05 pH	± 0.05 pH
	Temperature	-	±0.5°C/±1°F	±0.5°C/±1°F
	ORP	-	-	±1 mV
Minimum Detectable Level	Free & Total Chlorine	0.05 mg/L		
Input Impedance		10^{12} Ohm		
Calibration	Free & Total Chlorine	1 point		
	pH	1 or 2 point		
Sampling Rate	Free & Total Chlorine	adjustable from 3 to 90 minutes		
	pH	adjustable from 3 to 120 seconds		
Dosage	Free & Total Chlorine	proportional with 4-20 mA output		
	pH	ON/OFF with relay or proportional with 4-20 mA output		
Delta	Free & Total Chlorine	selectable from 0.1 to 5 mg/L		
	pH	selectable from 0.1 to 2 pH (hysteresis adjustable from 0.05 to 2 pH)		
Recorder Output		0-10 mV, 0-100 mV, 0-1 V, 4-20 mA or 0-20 mA		
Serial Communication		RS485 port, galvanically isolated		
Baud Rate		1200, 2400, 4800, 9600 bps		
Data Logging		up to 3500 data series		
GSM Communication		2 programmable cellular phone numbers, alarm & information SMS using the HI 504900 module (optional)		
Alarm Relay		SPDT contact with 5A, 230 V resistive load		
Dosing Relay		SPDT contact with 5A, 230 V resistive load		
System Error		SPDT contact with 5A, 230 V resistive load		
Inlet Pressure		0.07 to 4 bar with no external pressure regulator (for pressure exceeding 4 bar an external pressure regulator is required)		
Sample Flow		100 to 300 mL/min		
Sample Temperature		5 to 40°C (41 to 104°F)		
Sample Inlet Connection		12 mm (1/2") tubing diameter		
Drain Connection		10 mm (3/8") bar fitting		
Power Supply		115 VAC or 230 VAC; 50/60 Hz; 20 VA		
Enclosure		NEMA-4X standard, molded fiberglass polyester with transparent Lexan window		
Dimensions / Weight		318 x 267 x 159 mm (12.5 x 10.5 x 6.25") / 5 kg (11 lb.) without reagents		

ORDERING INFORMATION:

PCA 310-1 Free & Total Chlorine Analyzer, 115 VAC power supply.
PCA 310-2 Free & Total Chlorine Analyzer, 230 VAC power supply.
PCA 320-1 Free & Total Chlorine, pH and Temperature Analyzer, 115 VAC power supply.
PCA 320-2 Free & Total Chlorine, pH and Temperature Analyzer, 230 VAC power supply.
PCA 330-1 Free & Total Chlorine, pH, ORP and Temperature Analyzer, 115 VAC power supply.
PCA 330-2 Free & Total Chlorine, pH, ORP and Temperature Analyzer, 230 VAC power supply.

Each PCA model is supplied complete with (2) reagent bottles, (2) reagent caps, 1 DPD compound powder, tubing and instructions.

Authorized Distributor

MBH Engineering Systems
61 Howard Ave, Lynnfield, MA 01940
www.mbhes.com or www.mbhengineeringsystems.com
email: mail@mbhes.com office: 781-334-2600

For more information or a distributor near you, call HANNA at:
phone:
800 426-6287
e-mail:
pools@hannainst.com

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