

PCA300 Family

# Chlorine, pH, ORP and Temperature Analyzers

- Backlit LCD display
- Nema 4X protection
- DPD chlorine measurement method
- Colorimeter diagnostics
- Reagent reminder
- Amplified pH/temperature probe
- Data logging of up to 3500 measurements
- GLP data for review of calibration information
- Digital RS485 output
- Two analog outputs for recording or dosing devices (PCA340)
- Two dosing relays
- SPDT alarm relay
- SPDT system error relay
- Warning messages



The PCA family are process analyzers for the continuous measurement of chlorine, pH (PCA320, PCA330, PCA340) and temperature. These analyzers feature built-in data logging, RS485 digital output, dosing relays, and alarm relays packaged in a wall mount Nema 4x enclosure. The PCA340 also features two analog outputs.

This family uses DPD Colorimetric method in which N, N-Diethyl-p-phenylenediamine indicator and a buffer are mixed together with the sample. The resulting chemical reaction causes a magenta color to form in the presence of chlorine. The color intensity is proportional to the concentration. The color intensity is measured photometrically (light source at a specific wavelength and a photodetector) and converted to chlorine concentration, in mg/L, which is displayed on the front panel. The sampling interval for

chlorine measurement is adjustable from 3 to 90 minutes. These analyzers have a dosing relay for the addition of chlorine by a dosing pump or chlorine generator when a reading is below the programmable set point. The technology used by this family for chlorine measurement is the same as that found in portable and benchtop colorimeters providing for consistent results when performing process verification with one of those types of meters.

The PCA320, PCA330 and PCA340 also utilize the HI1005 amplified pH electrode with a built-in pt100 temperature sensor and matching pin to measure both pH and temperature. The built-in amplifier and matching pin provide for exceptional performance against any electrical noise generated by pumps and motors. These analyzers have a programmable dosing relay for the adjustment of pH. The

dosing relay can be activated by either on/off or proportional control.

The PCA340 features two selectable 0-20 or 4-20 mA signal output that are scalable for the transmission of readings to external recording devices. The analog outputs can also be set for dosing and used with dosing pumps that accept a 4-20 mA analog input. The analog outputs can be used for any of the three measured parameters.

Through the system setup menu, users have the ability to enable or disable the low and high level of alarms for all parameters. The PCA family also offers overdosing protection that generates an alarm if something within the system is not working properly. The system will stop processes until the user corrects the error.



### Backlit LCD Display

The PCA family has a backlit display that is easy to read from a distance and allows for up to three parameters to be displayed at a time.



### Nema 4X Protection

These analyzers are enclosed in waterproof casing for superior protection against the elements. The front door of the case has a window for the measurement display while also shielding the DPD reagents from UV light to prevent premature degradation.

### DPD Chlorine Measurement Method

The DPD colorimetric method is one of the most common and reliable methods to measure chlorine. The PCA family can use either free or total chlorine reagents and allow for 16,000 measurements to be performed.

### Reagent Reminder

The PCA family has a reagent reminder feature to alert the user when the reagents are running low. When the reagents are changed the counter is reset and the meter automatically tracks the number of readings performed.

### Colorimeter Diagnostics

Advanced diagnostics allow for easy troubleshooting of the colorimeter. In the setup menu it is possible to select an option that allows the user to determine the difference between a dark read (LED off) and a blank read (LED on). These analyzers also automatically perform this check in order to determine when to alert the user that the sample cell needs to be cleaned.

### Amplified pH/Temperature Probe (PCA320, PCA330, PCA340)

An integrated pt100 temperature sensor allows for automatic temperature compensation of pH measurements and allows for monitoring temperature as well. The built in amplifier and matching pin provides for exceptional performance where other probes fail when placed in line with pumps and motors.

### Data Logging

The analyzers can store up to 3500 readings (at least 7 days worth of records when set to a 3 minutes sampling interval) that can be reviewed or downloaded to a Windows compatible PC using the HI92500 software and the RS485 serial port. Logged records contain the date time and reading of all parameters measured along with any alarm status.

### GLP Data

The GLP data allows for the user to review the data and time for the last Chlorine and pH calibration.

### Digital RS485 Output

These analyzers have a RS485 digital output that allows for connection to a Windows compatible PC running the HI92500 software. The software allows for remote monitoring, review of logged data, events and errors, and executing setup options.

### Two Analog Outputs (PCA340)

The PCA340 features two selectable 0-20 or 4-20 mA signal output that are scalable for the transmission of readings to external recording devices. The analog outputs can also be set for dosing and used with dosing pumps that accept a 4-20 mA analog input. The analog outputs can be used for any of the three measured parameters.

### Two Dosing Relays

The dosing relays of these analyzers can be connected to a pH and/or chlorine dosing pumps. The chlorine relays are proportionally controlled while the pH relay can be set for on/off or proportional control. The proportional control offers very fine control of dosing to prevent any overshoot and wastage of chemicals.

### Alarm Relay

One SPDT alarm relay is provided that can be activated by adjustable upper and lower chlorine, pH and temperature limits.



### Error Relay

One SPDT error relay is provided and is activated when an error is present including a problem with the colorimeter such as when the reagent counter has reached zero, or when a reading is outside the range for a measured parameter.

### Warning Messages

Error messages are displayed when the reagents are expired or low and if the colorimeter cell needs to be cleaned.

Specifications		PCA310	PCA320	PCA330	PCA340	
Free and Total Chlorine	Range	0.00 to 5.00 mg/L (ppm)	0.00 to 5.00 mg/L (ppm)	0.00 to 5.00 mg/L (ppm)	0.00 to 5.00 mg/L (ppm)	
	Resolution	0.01 mg/L (ppm)	0.01 mg/L (ppm)	0.01 mg/L (ppm)	0.01 mg/L (ppm)	
	Accuracy	± 8% or ±0.05 mg/L whichever is greater	± 8% or ±0.05 mg/L whichever is greater	± 8% or ±0.05 mg/L whichever is greater	± 8% or ±0.05 mg/L whichever is greater	
pH	Range	–	0.00 to 14.00 pH	0.00 to 14.00 pH	0.00 to 14.00 pH	
	Resolution	–	0.01 pH	0.01 pH	0.01 pH	
	Accuracy	–	±0.05 pH	±0.05 pH	±0.05 pH	
ORP	Range	–	–	0 to 2000 mV	–	
	Resolution	–	–	1 mV	–	
	Accuracy	–	–	±1 mV	–	
Temperature	Range	–	5.0 to 75.0 °C (41 to 167 °F)	5.0 to 75.0 °C (41 to 167 °F)	5.0 to 75.0 °C (41 to 167 °F)	
	Resolution	–	0.1 °C	0.1 °C	0.1 °C	
	Accuracy	–	±0.5°C	±0.5°C	±0.5°C	
Additional Specifications	Chlorine Calibration	one-point process calibration				
	Chlorine Sampling Rate	adjustable from 3 to 90 minutes				
	Chlorine Dosage	proportional				
	Chlorine Delta	selectable from 0.1 to 5 mg/L (ppm)				
	pH Calibration	automatic one or two points; one point process calibration				
	pH Sampling Rate	adjustable from 3 to 120 seconds				
	pH Dosage	ON/OFF or proportional, relay or 4-20mA output				
	pH Delta	selectable from 0.1 to 2 pH (hysteresis adjustable from 0.05 to 2 pH)				
	Analog Output	–  (2) 4-20mA, 0-20mA for recorder or dosing				
	Recorder Output	4-20mA, 0-20mA  –				
	PC Connectivity	RS485 port, galvanically isolated				
	Baud Rate	1200, 2400, 4800, 9600 bps				
	Data Logging	up to 3500 data points				
	Alarm Relay	SPDT contact with 5A, 230V resistive load				
	Dosing Relay	SPDT contact with 5A, 230V resistive load				
	System Error	SPDT contact with 5A, 230V resistive load				
	Inlet Pressure	0.07 to 4 bar with no external pressure regulator (for pressure exceeding four 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/Outlet Connection	12mm (1/2”) male NPT fitting				
	Drain Connection	10mm (3/8”) barb				
	Power Supply	115 VAC ±10% or 230 VAC ±10%; 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	Each PCA300 series model is supplied with reagent bottles (2), reagent caps (2), 1 DPD compound powder, tubing and instructions.;				
		<b>PCA310-1</b> Free & total chlorine analyzer/control (115V); <b>PCA310-2</b> Free & total chlorine analyzer/control (230V);	<b>PCA320-1</b> Free & total chlorine analyzer/control, pH control, temperature (115V); <b>PCA320-2</b> Free & total chlorine analyzer/control, pH control, temperature (230V) ;	<b>PCA330-1</b> Free & total chlorine analyzer/control, pH control, ORP monitoring, temperature (115V); <b>PCA330-2</b> Free & total chlorine analyzer/control, pH control, ORP monitoring, temperature (230V)	<b>PCA340-1</b> Free & total chlorine analyzer/control, pH control, temperature with dual analog outputs (115V); <b>PCA340-2</b> Free & total chlorine analyzer/control, pH control, temperature with dual analog outputs (230V)	

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