

AZTEC® Residual Analyzer Series CL500



CAPITAL CONTROLS

Capital Controls' AZTEC® CL500 Residual Analyzer is the latest addition to the family of amperometric residual analyzers that have proven to be the world leaders in continuous, accurate residual analysis. This instrument combines innovative microprocessor-based electronics and reliable amperometric technology to provide continuous analysis of free or total chlorine or other oxidants in drinking water, wastewater, cooling water, and other process water applications.

The AZTEC® CL500 Residual Analyzer features a large dot-matrix graphical display with automatic ranging capabilities from 0-20 mg/l. The analyzer includes on-screen instruction and self diagnostics. Display resolution is up to 0.001 mg/l with an optional graphical viewing mode.

Six adjustable alarm relays and dual 4-20 mAdc output signals are standard. All user controls are provided through four membrane buttons on the display face. The analyzer incorporates a constant, direct-drive electrode cleaning system which eliminates signal drift and the need for frequent recalibration.

The analyzer sample is gravity fed, eliminating the need for a sample pump. Reagents are added with a user-programmable solenoid valve to optimize the sample pH and reduce buffer consumption. Sample temperature variations are compensated with a thermistor.

The CL500 Residual Analyzers are constructed of corrosion resistant materials and are modular in design for serviceability and ease of maintenance. Each unit is pre-piped and pre-wired, requiring only field connection to service points. All components and controls are accessible from the front of the unit to permit ease of observation of solution level and sample flow.



- ◆ **Continuous on-line operation**
- ◆ **Microprocessor-based**
- ◆ **Dot matrix graphical display**
- ◆ **Auto ranging to 20 mg/l**
- ◆ **Data logging and trending**
- ◆ **Optimized reagent feed**
- ◆ **On-screen instruction**
- ◆ **Six programmable alarm relays**
- ◆ **Direct measurement of free or total chlorine**
- ◆ **Universal power recognition**

Applications

- ◆ **Wastewater:** Feed-forward dechlorination control; Effluent monitoring
- ◆ **Industrial wastewater:** Effluent control
- ◆ **Drinking water disinfection:** Drinking waters require continuous monitoring of chlorine residual as specified by the U.S. Safe Drinking Water Act; Influent and finished water monitoring and control
- ◆ **Food and beverage:** Zero verification after carbon filtration
- ◆ **Pharmaceuticals:** Zero verification after carbon filtration; Simplification of validation procedures
- ◆ **Swimming pool disinfection:** Accurate control of chlorine residual
- ◆ **Cooling water biofouling:** Cost effective control of slime and algae in piping and heat exchangers throughout the system
- ◆ **Industrial process water:** Verification and control of chlorine or other oxidants used in production processes

Design Features

- ◆ **Data logging and trending:** Statistics for up to 28 days; previous 7 days; or previous 24 hours are logged and can be viewed in graphical format
- ◆ **Automatic ranging from 0-20 mg/l:** The analyzer provides automatic ranging capabilities from 0-20 mg/l without any hardware or software modifications
- ◆ **Optimized reagent feed:** A user-programmable solenoid valve provides for adjustable reagent addition to maintain the optimal sample pH and minimum reagent consumption
- ◆ **Six programmable alarm relays:** Each relay is independently configurable to be high, low, latch (out of range), attention, or fail
- ◆ **Universal power recognition:** The analyzer will operate on 100-250 Vac, 47-63 Hz
- ◆ **Dual output signals:** Dual 4-20 mAdc or 0-20 mAdc output signals are provided for residual level monitoring and control; each output signal is isolated into 1000 ohms maximum impedance
- ◆ **Removable electrode assembly:** The extra large gold and copper electrodes provide maximum signal strength; the electrode assembly is removable for serviceability and ease of maintenance
- ◆ **Accurate:** The 2% accuracy of the unit is ideal for monitoring and control of water, wastewater and industrial process water
- ◆ **Automatic cleaning:** A continuous direct-drive cleaning system maintains a constant level of electrode cleanliness
- ◆ **Mounting:** Easy mounting is accomplished through the mounting panel where all components are attached
- ◆ **NEMA 4X:** The electronics enclosure is NEMA 4X for protection

Principle of Operation

A sample of liquid is delivered to the sample inlet chamber at an approximate rate of 350 ml/minute. The excess overflows to drain.

The sample then passes to a mixing chamber where pH 4 buffering solution is added via the user-programmable solenoid valve and mixed with the sample. The buffered sample then passes through an annular space between two electrodes in the sensing cell. As it passes, a small dc current is generated in direct linear proportion to the amount of residual present in the sample. The residual value is displayed on the dot-matrix display in a 4½-digit or graphical format. Residual units of ppb, mg/l, ppm or mg/l are user-selectable.

The surfaces of both electrodes are kept clean by the continuous action of PVC spheres agitated by a motor-driven rotating striker. This constant cleaning eliminates signal drift and recalibration, and provides an accurate residual measurement. A 100-ohm RTD compensates for temperature variations.

The liquid reagent is stored in a single bottle and is added to the sample with a user-programmable solenoid valve. The buffer feed rate can be increased or decreased as required to maintain the sample pH at 4.3-5.0 pH. The reagent bottle provides approximately 2 weeks of use before refilling is required, depending on the sample water quality.

Residual Requirements

Residual	Reagent
Chlorine - Free	pH buffer
Chlorine - Total	pH buffer & potassium iodide
Iodine	pH buffer
Bromine	pH buffer and potassium iodide
Other Oxidants	consult factory

Technical Data

Series CL500

SAMPLE

Sample Flow: 350-450 ml/min. at 3-15 inches of water column pressure

Sample Temperature: 32°F-120°F (0°C-50°C)

Sample Supply: Continuous. Where sample interruption may be required, provision must be made to keep electrodes wet.

Sample Limitations: Samples containing particles 100 microns (0.004 inches) in diameter and larger, may require pre-filtration. Samples containing high concentrations of metal ions, oils, or certain corrosion inhibitors may effect analyzer operation. At low residual levels (less than 0.1 mg/l), variations in sample dissolved oxygen level may affect the residual reading. Consult factory for specific applications.

Accuracy: 2% of reading or ± 0.003 mg/l, whichever is greater (see sample limitations)

INSTRUMENT

Electronic Enclosure: NEMA 4X

Electrodes:

Measuring: Gold

Reference: Copper

Shipping Weight: 22 lbs (10 kgs)

Equipment Options:

Sample Pump

Self-flushing Y-Strainer

Optional Accessories:

16 week supply of pH buffer

1 lb. Potassium Iodide

Pressure reducing valve

Patented purging circuit

GENERAL

Quality Standards: ISO 9001 Certified

Compliance: CE, UL (optional)

Residual Measured: free chlorine; total chlorine; bromine; iodine and other oxidants (consult factory)

Instrument Range: Automatic ranging from 0-20 mg/l - For higher ranges, consult factory.

Display: Large, 3" x 4" dot-matrix graphical display.

Data Logging: Up to 28 days; previous 7 days; previous 24 hours

Resolution: Below 10 mg/l: 0.001 mg/l;
10-20 mg/l: 0.01 mg/l

Configurable Residual Units: mg/l; ppm; ppb or mg/l

Analyzer Location: As close as possible to sample point.

Speed of Response: Four (4) seconds from sample entry to display indication. 90% of full scale response within 1 1/2 to 2 minutes.

Ambient Temperature: 32° F-140°F (0°C-60°C)

Languages: American English, U.K. English (for other languages, consult factory)

Power Requirements: Automatic power recognition from 100-250 Vac, 47-63 Hz, single phase

Power Consumption: 50 Watts

Output Signal: Dual 4-20 mAdc or 0-20 mAdc, isolated into 1000 ohms maximum

Digital Output: RS232/485 communications capabilities

Relay Contacts: Six (6) independently configurable to be high, low, attention, or fail. The fail relay can be set by as hardware jumper to indicate power failure. There are also settings for hysteresis, delay and action. Alarm contacts rated 5 amps @240 Vac, resistive load.

Overall Dimensions: 18 1/2" (470 mm) L x 14 1/2" (368 mm) H x 7 9/16" (193 mm) D

Warranty and Capability

Capital Controls offers a one (1) year limited warranty on all residual analyzers.

Capital Controls is ISO 9001 certified to provide quality and precision materials. Disinfection technologies, water quality monitors and instrumentation for water and wastewater are areas of specialization. Over 35 years of industrial and municipal application experience in the water and wastewater industries is incorporated into the equipment design to provide high quality comprehensive solutions for the global market.

Brief Specification

The residual analyzer shall continuously analyze a water sample in an amperometric type of cell and produce a current proportional to the (free chlorine) (total chlorine) (bromine) (iodine) residual in the sample. The analyzer shall provide automatic ranging for 0-20 mg/l of (free chlorine) (total chlorine) (bromine) (iodine) in water, within 0.003 mg/l or 2% of the reading, whichever is larger. The microprocessor-based analyzer shall display the residual in mg/l, ppm, ppb, or mg/l.

The analyzer shall contain a removable cell assembly consisting of gold and copper electrodes that are continuously cleaned by the action of small captured spheres moving in a spatial action between the electrode surfaces.

The sample flow to the electrodes shall be regulated by gravity at a rate of 350-450 ml/minute and shall be automatically temperature compensated from 32°F to 120°F (0° to 50°C) with a 100-ohm RTD.

The sample pH shall be maintained at 4.3-5.0 pH with reagent addition via a user-programmable solenoid valve.

The analyzer shall be a microprocessor-based instrument with a 3" x 4", dot-matrix, graphical display housed in a NEMA 4X electronics enclosure. The analyzer shall provide data logging and trending for up to 28 days; previous 7 days; or previous 24 hours. Display resolution shall be 0.001 mg/l for below 10 mg/l residuals, and 0.01 mg/l for 10-20 mg/l.

The analyzer shall provide on-screen instruction and self diagnostics. All user controls shall be provided through four membrane buttons on the display face.

The analyzer shall include six (6) adjustable alarm relays that are independently configurable to be high, low, attention, or fail. The fail relay shall be selectable, by a hardware jumper, to indicate a power failure. The analyzer shall include settings for hysteresis, delay, and action. Alarm contacts shall be rated 5A @ 240 Vac, resistive load.

Design improvements may be made without notice.

Represented by:



CAPITAL CONTROLS

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