PC
PROGRAMMABLE CONTROLLERS

Chemtrol PC
Integrated Water Treatment with Remote Control

CHEMICAL AUTOMATION
WATER BALANCE
FILTER BACKWASH
HEATER CONTROL
REMOTE OPERATION
PHONE MONITORING

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Leading in Chemical Automation Since 1976
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ALL MENUS IN ENGLISH
TOUS LES MENUS EN FRANÇAIS
TODOS LOS MENUS EN ESPAÑOL
**Water Treatment as a Whole**

Water treatment for swimming pools, spas and industrial applications requires the combination of a number of physical and chemical processes, including pumping, filtration, chemical treatment, heating and water replacement. Because the processing equipment is made by different manufacturers and controlled individually, installation and operation of the system is complicated and inefficient.

The CHEMTROL™ PC controller incorporates all the monitoring, control and communication functions into a single integrated command center designed around a powerful microprocessor. The integrated Main Screen display enables the operator to supervise all the process functions at a glance and to quickly respond to any changing condition.

The CHEMTROL™ PC controller operates like a computer with full-screen displays and direct access to all menus and submenus. The front panel keypad is used to move up and down each menu and enter or exit the submenus. All operating functions can be easily modified from the keypad, including sensor calibration, control setpoints, alarm levels and the programs for superchlorination, sequential backwashing, chemical saving and energy saving.

With the communications options, all facilities can be monitored by remote computer and telephone. The remote operation option offers true duplex, real-time control of all operating functions from a remote PC computer. The voice telephone option includes status reports, operational controls and automatic alert calls with voice message to up to six different phone numbers. This allows real-time supervision by management and remote troubleshooting by any CHEMTROL™ Qualified Dealer or from the factory.

**Chemical Automation**

By constantly monitoring the pH of the water and the activity of the sanitizer, Chemical Automation makes it possible to maintain clean and safe water at all times with a significant reduction in the cost of chemicals, maintenance and repairs. It is now recognized as a must for all commercial and public pools and spas, as well as for quality residential installations.

ORP is used to monitor the Oxidation-Reduction Potential in the water produced by a true oxidizer, like ozone, or an oxidizing sanitizer, like chlorine or bromine. The ORP MENU includes selection of the control mode (Off, Manual, Auto or Timer), sensor calibration (1, 2 or 3 points), setpoint level, high and low alarms, shocking and chemical saver programs. It also displays the run time for the current feed event and cumulative run time. Shock treatment can be initiated manually or under programmable weekly or multi-weekly schedules.

The SANITIZER MENU is used to control the chlorine or bromine level in terms of sanitizer concentration (parts per million or milligrams/liter), obtained by conversion from ORP and pH values using a proprietary algorithm or from an amperometric sensor. The sanitizer concentration readings can be calibrated to account for the effect of cyanuric acid stabilization. Superchlorination can be initiated manually or under programmable weekly or multi-weekly schedules.

The pH MENU is used in the same way to select the pH control parameters using either acid or base feed or both. It also includes an Acid Wash program for periodic injection of an acid rinse solution to clean the heads of the sensors.
Models and Options

Exclusive Features

- **Feed Control**: Manual, ON/OFF, Proportional, Timer
- **Calibration**: 1, 2 or 3 points
- **Langelier Index**: Scaling and corrosion alert
- **Shock Program**: Superchlorination and dechlorination
- **Savings**: Chemical and energy saver programs
- **Failure Analysis**: Dynamic Probe Testing with sensor failure warning for ORP and pH
- **Data Logging**: On-board memory for 1,000 tests
- **Data Printing**: On-site to serial printer
- **Languages**: English, French and Spanish menus
- **Units**: US and metric systems
- **Passwords**: Security protection with ten 5-digit codes with 3 different access levels
- **Clock**: 24-hour universal clock/calendar
- **Battery**: Holds settings if power shuts down
- **Warranty**: Five (5) years electronics warranty

- **CHEMTROL™ PC 3000**
  - ORP readout with oxidizer feed control
  - PPM readout with sanitizer feed control
  - pH readout with acid and base feed controls
  - Temperature readout with heater control
  - Bypass line with in-line filter, flow meter, safety flow switch, two control valves and sampling valve
  - Sensor cleaning with acid wash control
  - Remote alarm (hot or dry contacts)
  - RS-232 serial communication port

- **CONDUCTIVITY (OPTION TDS)**
  - Conductivity or TDS readout with dump valve control
  - Programmed feed for three (3) chemical additives

- **WATER LEVEL (OPTION LEV)**
  - Electronic sensor with fill valve control

- **REMOTE CONTROL (OPTION REM)**
  - Data/Voice/Communication Modem
  - CHEMCOM™ computer software for **Windows™**

- **TELEPHONE (OPTION TEL)**
  - Telephone status report, control and alarm callouts

- **CHEMTROL™ PC 6000**
  - All above features and options included plus:
    - **PUMP AND FILTER CONTROL**
      - Flow Sensor with saddle clamp mount
      - Seven-day main pump program
      - Two (2) pressure transducers (influent and effluent)
      - Six (6) relays for sequential filter backwashing
Saturation and Water Balance

Proper control of saturation and water balance is required to maintain water quality and to avoid the development of **scaling or corrosive conditions**.

The Conductivity sensor monitors the concentration of dissolved solids by measuring the conductivity of the water. The data can be displayed either in conductivity units (microsiemens/cm) or in parts per million of **Total Dissolved Solids (TDS)**, using an operator-selectable conversion factor.

The **CONDUCTIVITY MENU** is used to set automatic dumping (bleeding) of water when the dissolved solid concentrations becomes too high, selecting either a Conductivity or a TDS control setpoint to activate the dump valve. Backfilling of water is done simultaneously with a level control activated valve.

The **Langelier Index** calculates the saturation condition from the pH and Temperature sensor inputs and from manual data entry for Alkalinity and Calcium Hardness. The water saturation condition is constantly displayed on the Main Screen as either "OK", "Scaling" or "Corrosive" using standard Langelier Index limits. If a scaling or corrosive condition develops, it is immediately indicated with a flashing display on the Main Screen. "What if" analyses can be run at any time by manually entering different values for alkalinity, calcium hardness, pH and temperature.

Up to three different types of **chemical additives** - such as inhibitor and biocides for cooling towers - can be programmed separately for automatic addition as a function of time, bleed activation, pH control activation or cumulative flow rate.

Temperature / Heater Control

Temperature Sensor readings are displayed either in degrees Farenheit or Celsius and used to control the heater.

The **TEMPERATURE MENU** is used to set the heater control to Manual or Automatic using a programmable seven-day schedule with separate daily ON and OFF times. The energy saver program is used to lower the water temperature during hours when the facility is not in use, thereby realizing substantial savings on heating costs.

Pump and Filter Control

Filtration control includes manual or programmable operation of the **main recirculation pump** and backwashing cycle using data input from the flow sensor and from the influent and effluent pressure sensors.

With the **PUMP MENU**, the main recirculation pump can be set to Manual for continuous 24-hour operation or to Automatic with a seven-day schedule. Protection of the heater is assured with the adjustable **fireman delay** to allow for cooldown of the heater before water recirculation is stopped.

The **FILTER MENU** is used to program the backwash schedule based on time cycle or on pressure differential. Multiple filters are backwashed in sequence with adjustable backwash and advance time for each filter.
CHEMCOM™ Software
The CHEMTROL™ PC controller uses the proprietary CHEMCOM™ communications software, a Windows™ program for operation on any IBM PC-compatible computer equipped with a modem.

The user-friendly, menu-driven program includes remote operation, automatic scanning of multiple facilities, text and graphics data display and file management.

Remote Operation
In Remote Duplex Operation, the computer displays an exact duplicate of the controller screen with full access to all the menus and submenus. All operations on the computer are immediately executed by the on-site controller - and vice versa. Test data logged in the controller memory can be downloaded for printing and saved to a computer file.

Remote Operation is ideal for real-time supervision by management or maintenance personnel and for technical support from the factory or any CHEMTROL™ Qualified Dealer.

Graphics Display
Test data logged in the controller memory can be downloaded either on-site or remotely by computer. The data can then be displayed as a text file usable by any word processor, or graphically with a choice of variables, scales, and colors. Both text and graphic displays can be copied and included in reports, etc.

Automatic Scanning
The CHEMCOM™ program features automatic scanning of single or multiple remote facilities, using a variety of scanning schedules.

The test data is displayed on the computer screen and stored simultaneously on data files for retrieval and analysis at any time. Out-of-range conditions are alerted on the computer screen with a flashing display and optional audio alarm.

Telephone Access
The CHEMTROL™ PC controller can be accessed with a touch-tone phone to obtain instant voice status reports. Operational settings can also be modified, subject to password identification.

Telephone Alert
Up to six emergency phone numbers can be specified for automatic dialing and report of alarm conditions. The controller dials repeatedly until a phone is answered.
**CHEMTROL™ PC 3000**

The CHEMTROL™ PC 3000 controller shown on the right operates the outdoor pool at the Great Escape in Lake George, New York.

The ORP and pH sensors are mounted in the standard sensor cell with see-through cover. The combined Temperature/Conductivity sensor is mounted directly on the bypass line.

The fully instrumented bypass line takes water after the main filter. Shown from left to right are the intake shutoff valve, in-line flowmeter, paddlewheel safety flow switch, water sampling tap and return ball valve for adjustment of the water flow.

Also shown are the main power shutoff switch and the power lines for the chlorine and acid feed pumps.

**CHEMTROL™ PC 6000**

The CHEMTROL™ PC6000 on the right is the integrated command center for the 150,000-gallon outdoor pool at Dos Pueblos High School in Goleta, California. It controls water chemistry, heating, filtration and water level.

The pH, ORP, temperature and conductivity sensors are located inside the optional cell cabinet with the clear window cover. Below the panel is the bypass line with the paddle-wheel flow switch, the in-line flowmeter and the sampling tap for water testing. The digital flowmeter is mounted on the main recirculation line below the panel.

The bottom photo shows the bank of three horizontal sand filters and the cabinet containing the hydraulic valves used for automatic backwashing of the filters. The controller can be programmed to initiate backwashing under weekly time schedules and/or for set values of differential pressure.
**CHEMTROL™ PC References**

**Municipal**
- Metropolitan District, Boston, MA
- City of Cocoa Beach, FL
- City of Dallas, TX
- City of Louisville, KY
- Kootenai Tribe, ID
- City of Arlington, TX
- San Diego Parks Department, CA
- Los Angeles Parks Department, CA
- Sacramento Parks & Rec, CA

**Hotels**
- Westin Galleria Hotel, Dallas, TX
- The Phoenician Resort, Scottsdale, AZ
- Flamingo Hilton, Laughlin, NV
- Bellagio, Las Vegas, NV
- Caesar’s Palace, Las Vegas, NV
- The Mirage, Las Vegas, NV
- MGM Grand, Las Vegas, NV
- New York, New York, Las Vegas, NV

**Military**
- Fort Bragg Military Base, NC
- Fort Hood Military Base, TX
- 29-Palms Marine Corps Base, CA
- Camp Pendleton Marine Corps Base, CA

**Leisure**
- Riverside Yacht Club, Greenwich, CT
- Michigan Athletic Club, Lansing, MI
- San Diego Chargers, CA
- Sports Clubs, Las Vegas, NV
- 24-hour Fitness Center, Bakersfield, CA
- Pro Sports Club, Bellevue, WA

**Education**
- Convent of the Sacred Heart, Greenwich, CT
- Fairfield University, CT
- Georgetown University, Washington, DC
- Cleveland State University, OH
- University of Texas, Austin, TX
- Denver Public School District, CO
- Stanford University, Palo Alto, CA

**Canada**
- Château Frontenac, Québec, PQ
- CEGEP Beauchamp-Appalache, St-George, PQ
- City of Toronto, ON
- London Centre YMCA, London, ON
- Iroquois Park, Whitby, ON
- City of Fernie, BC.

**YMCAs**
- Southbridge YMCA, MA
- Wilton YMCA, CT
- Greensboro YMCA, NC
- St Joseph YWCA, MO
- Greater Kansas City YMCAs, KS

**Others**
- Atlantis II, Paradise Island, Bahamas
- Beijing Aquarium, China
- Lan Kwai House, Hong Kong, China
- National Sports Complex, Malaysia
- Columbus AquaParque, Santo Domingo
- Al-Salaman Hospital, Jeddah, Saudi Arabia
- National Bank, Kiev, Ukraine

**What CHEMTROL™ Customers Write**

We had 33 CHEMTROL™ PC3000 controllers installed on our pools and spas almost two years ago and are very pleased with their reliability and performance. The factory support given to my engineering staff throughout the year has been invaluable. The units are accurate and easy to operate which is extremely important to us, especially on the pool used for our white tigers.

Dave Colman  
MIRAGE HOTEL AND CASINO

Thank you for your assistance in getting our existing controller replaced by a CHEMTROL™ unit. We are requesting this exchange due to the problems our maintenance department is having with the previous unit. We find that the CHEMTROL™ is much more user friendly.

Laird Wendt  
DENVER PUBLIC SCHOOLS  
Denver, Colorado

Thank you for your assistance with the replacement of the city's controllers with your CHEMTROL™ controllers. The problems we have experienced with the costly failure of the previous controllers resulted in numerous service calls with little satisfaction from the supplier. We have had CHEMTROL™ operating now for four years with no mechanical failures and minimal maintenance required on the units.

Mike Dwinnell  
Recreation Services  
CITY OF TORONTO, Canada

Let me express appreciation and high satisfaction with your controllers. It has been over a year since we installed the CHEMTROL™ on our Gunite 3,000 Gallon whirlpool. Since then, it has been a benefit to everyone. The pool has never flunked the bacteriological or chemical test. As far as the maintenance is concerned, there have not been any problems with your system. The sensors and electronic system worked just perfectly.

Gavin Bannat, Manager  
FOUR SEASONS RACQUET CLUB  
East Hanover, New Jersey
Santa Barbara Control Systems (SBCS) is a California Corporation founded in 1976. The 8,000-square foot corporate headquarters are conveniently located near the Santa Barbara Airport and the US 101 Freeway.

From the beginning, SBCS has been a leader in chemical automation with numerous technical and scientific articles published by company President, Dr. J. Steininger, on the application of Oxidation-Reduction Potential (ORP) technology to water treatment. The company maintains a chemistry laboratory for ongoing water chemistry research.

In 1978, SBCS developed cyanuric acid-compatible controllers for pools and spas. In 1986, the company introduced the first ORP/pH controller specifically designed for swimming pools and spas. In 1990, the CHEMCOM™ monitoring system was installed for the Chicago Parks Department, the first remote monitoring system for swimming pools.

1996 saw the introduction of the CHEMTROL™ PC 6000 fully integrated controller for pools and spas with the CHEMCOM™ monitoring system for Windows™ - the first and to date only true duplex remote monitoring system. It gives full access and control to any CHEMTROL™ PC controller equipped with the remote operation option and thus allows direct on-line factory support to facility operators anywhere in the world. Today, remote operation CHEMTROL™ PC controllers are operating all over the U.S. and Canada, as well as in China, Malaysia and the Ukraine.

With over 20,000 CHEMTROL™ controllers installed worldwide, the company has always placed a strong emphasis on product reliability, ease of use and customer service including free training seminars and toll-free technical support. All controllers are covered by a unique 5-year electronics warranty and are supported by the large network of CHEMTROL™ Qualified Dealers in the U.S. and other countries. This is why engineers and architects all over the world specify CHEMTROL™ controllers for their most demanding applications.

For more details and for up-to-date information on automation, visit our CHEMTROL™ Web Site at http://www.sbcontrol.com.

The 100+ pages of the site provide detailed information in English, French and Spanish. All controller specifications can be downloaded directly into your computer and incorporated into your proposal and bid specifications.

You can also e-mail us at chemtrol@sbcontrol.com.