

Chemtrol™ PC

PROGRAMMABLE CONTROLLERS

*Integrated
Water Treatment
with Remote Control*



CHEMICAL AUTOMATION

WATER BALANCE

FILTER BACKWASH

HEATER CONTROL

REMOTE OPERATION

PHONE MONITORING



ALL
MENUS IN
ENGLISH



TOUS LES
MENUS EN
FRANÇAIS



TODOS LOS
MENUS EN
ESPAÑOL

SANTA BARBARA CONTROL SYSTEMS

5375 Overpass Road, Santa Barbara CA 93111

Leading in Chemical Automation Since 1976

800 - 621 - 2279

Phone 805-683-8833

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Internet www.sbcontrol.com

Water Treatment as a Whole

Reduced Scale. Actual Screen Size 4.¼ by 3½ in.

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.



ORP	AUTO	
Calibrate	mV	750
Setpoint	mV	700
Alarm Low	mV	650
Alarm High	mV	850
Time Limit	min	30
Run Time	10	125
Last Shock	08/01/96	

SANITIZER	AUTO	
Calibrate	ppm	1.5
Setpoint	ppm	1.5
Alarm Low	ppm	0.3
Alarm High	ppm	3.0
Time Limit	min	30
Run Time	10	125
Last Shock	00/00/00	

pH	AUTO	
Calibrate	7.4	
Setpoint	7.5	
Alarm Low	7.0	
Alarm High	8.0	
Time Limit	min	15
Run Time	5	25
Acid Wash	Auto	

Chemical Automation

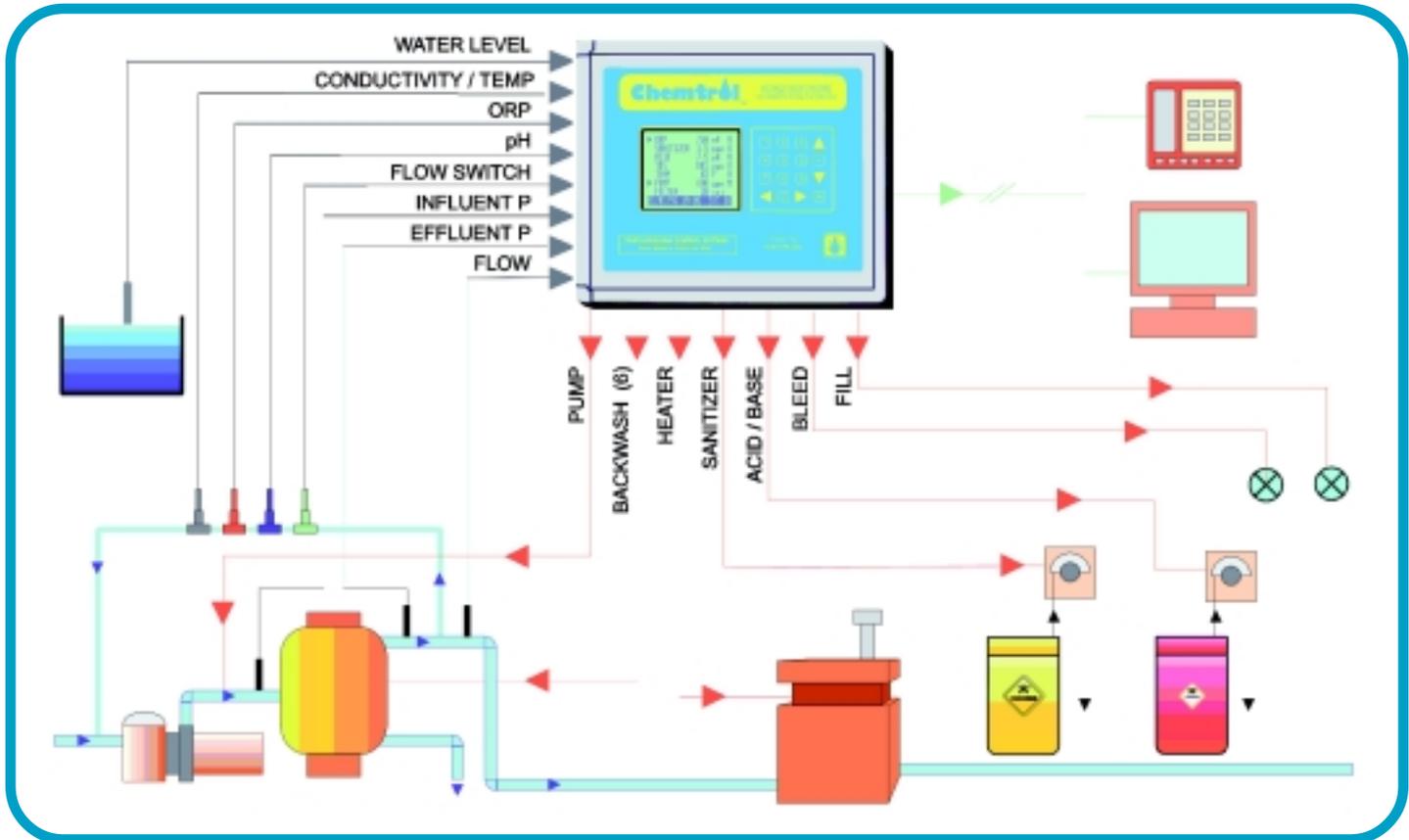
By constantly monitoring the pH of the water and the activity of the sanitizer, Chemical Automation makes it possible to maintain clean and safe water at all times with a significant reduction in the cost of chemicals, maintenance and repairs. It is now recognized as a must for all commercial and public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

A Fully Integrated Command Center



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
	Download to remote computer
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.

CONDUCTIVITY	AUTO
Calibrate	uS 1500
Setpoint	uS 2500
Alarm Low	uS 100
Alarm High	uS 5000
Time Limit	min 30
Chemical Additions	
Scale Selection	

SATURATION	
Alkalinity (ppm)	150
Hardness (ppm)	300
pH	7.5
Temperature	80
Limits	
Langelier Index	0.23
Condition	OK

HEATER	AUTO
Calibrate	F 80
Setpoint	F 80
Alarm Low	F 70
Alarm High	F 90
Time Limit	min 30
Run Time	15 60
Energy Saver	Auto

Temperature / Heater Control

Temperature Sensor readings are displayed either in degrees Fahrenheit 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	AUTO
P influent	psi 25
P effluent	psi 20
Flow rate	gpm 800
Flow Total	Kga 0
Heater Delay	min 20
Water Level	AUTO

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.

FILTER	AUTO
Backwash Date	08/10/96
Start Time	15:30
Filter Time (min)	10
Advance (min)	1
Number of Filters	6
Limit Timer (min)	100
Pump Override	No

Communications

CHEMCOMTM Software

The CHEMTROLTM PC controller uses the proprietary CHEMCOMTM communications software, a *WindowsTM* 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 CHEMTROLTM 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 CHEMCOMTM program features automatic scanning of single or multiple remote facilities, using a variety of scanning schedules.

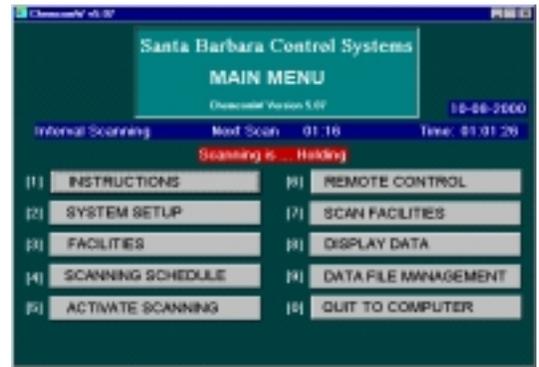
The test data is displayed on the computer screen and stored simultaneously on data files for retrieval and analysis at any time. Out-of-range conditions are alerted on the computer screen with a flashing display and optional audio alarm.

Telephone Access

The CHEMTROLTM 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

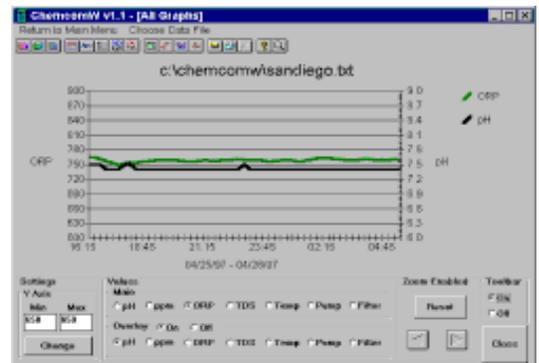
Up to six emergency phone numbers can be specified for automatic dialing and report of alarm conditions. The controller dials repeatedly until a phone is answered.



CHEMCOMTM Program



Remote Operation Screen

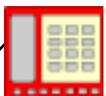


Graphic Display

Facility	Date	Time	pH	ORP	ppm	Cond	Temp	Filter	Pump
Continuous Scanning									
#1 WINSTON SCHOOL	06-05-1997	19:12:59	7.5	750	1.5	895	82	0	0
#2 YMCA	06-05-1997	19:13:29	7.4	725	1.0	675	80	15	650
#3 BEACH MOTEL	06-05-1997	19:13:59	7.5	740	1.2	750	81	13	550
#4 COUNTRY CLUB	06-05-1997	19:14:25	7.5	700	0.5	0	0	0	0
#1 WINSTON SCHOOL	06-05-1997	19:14:56	7.5	750	1.5	895	82	0	0
#2 YMCA	06-05-1997	19:15:30	7.4	725	1.0	675	80	15	650
#3 BEACH MOTEL	06-05-1997	19:15:58	7.5	740	1.2	750	81	13	550

Automatic Scanning Display

ORP 725 Automatic
SANITIZER 1.5 Off
pH 7.5 Automatic
CONDUCTIVITY 1450 Off
TEMPERATURE 82 Automatic
PUMP 800 Manual
FILTER 25 Off



Telephone Voice Report

Installations

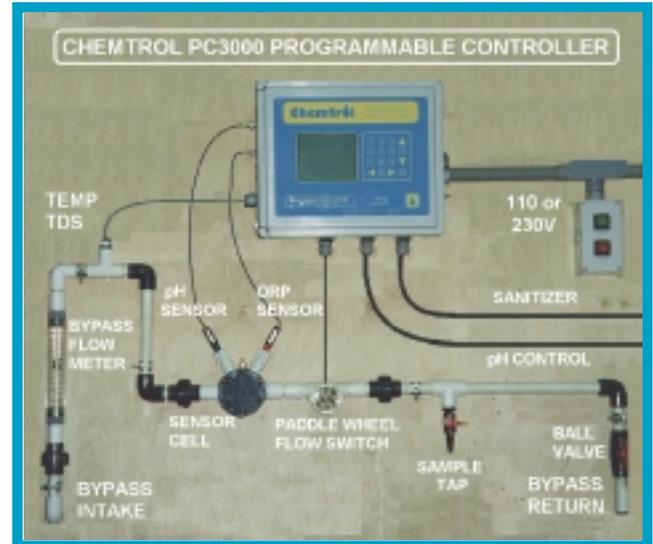
CHEMTROL™ PC 3000

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

<p>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</p>	<p>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</p>
<p>Military Fort Bragg Military Base, NC Fort Hood Military Base, TX 29-Palms Marine Corps Base, CA Camp Pendleton Marine Corps Base, CA</p>	<p>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</p>
<p>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</p>	<p>Canada Château Frontenac, Québec, PQ CEGEP Beauce-Appalache, St-George, PQ City of Toronto, ON London Centre YMCA, London ON, Iroquois Park, Whitby, ON City of Fernie, BC.</p>
<p>YMCAs Southbridge YMCA, MA Wilton YMCA, CT Greensboro YMCA, NC St Joseph YWCA, MO Greater Kansas City YMCAs, KS</p>	<p>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</p>

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

The Company

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 CHEMCOMTM monitoring system was installed for the Chicago Parks Department, the first remote monitoring system for swimming pools.

1996 saw the introduction of the CHEMTROLTM PC 6000 fully integrated controller for pools and spas with the CHEMCOMTM monitoring system for *Windows*TM - the first and to date only true duplex remote monitoring system. It gives full access and control to any CHEMTROLTM 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 CHEMTROLTM PC controllers are operating all over the U.S. and Canada, as well as in China, Malaysia and the Ukraine.

With over 20,000 CHEMTROLTM 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 CHEMTROLTM Qualified Dealers in the U.S. and other countries. This is why engineers and architects all over the world specify CHEMTROLTM controllers for their most demanding applications.

On the Internet

For more details and for up-to-date information on automation, visit our CHEMTROLTM 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.



Santa Barbara Control Systems
5375 Overpass Road, Santa Barbara CA 93111

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