



INDUSTRIAL CONTROL SOLUTIONS



THE INDUSTRIAL WORLD IS INCREASING DEMAND FOR INFORMATION.

Connection of information is paramount to understanding the health and operation of systems. The entire suite of Chromalox Temperature and Power Controls can address any information connectivity challenge experienced by the industry today. From our simple 1/16 DIN process controls to our new advanced intelligent power controls, we have the controller solutions to suit your application.

SYSTEM RELIABILITY AND EFFICIENCY STARTS WITH C2i™ TECHNOLOGY

Chromalox C2i™ Technology offers a comprehensive intelligent network of advanced control technologies that delivers system-wide process integrity through highly engineered innovative temperature sensing, process heating and temperature management solutions.

EXPERTISE ACROSS THE THERMAL LOOP

Chromalox delivers the complete Thermal Loop from component and process heaters to process and power controls. Chromalox C2i™ Technology integrates our intelligent temperature and power controllers with our century of innovative heating technology to bring the full package to our valued customers.

REAL-TIME SYSTEM HEALTH MONITORING

With Chromalox Temperature and Power Controls, we bring diagnostics and monitoring to the forefront. Real time current, voltage, and power feedback along with comprehensive alarming allows you to understand the health of your system at all times. Leverage this information to improve system efficiency, reliability, and sustainability through predictive maintenance schedules that will ensure your process stays up and running when you need it most.

PROCESS CONTROLLERS

All process controllers on the market today accomplish the same underlying goal of adjusting power output to meet a process demand through temperature feedback from an input sensor. While that is the fundamental responsibility of the process controller, much more capability can be delivered to enhance the overall functionality of your operation. Chromalox Process Controllers go above and beyond to arm you with superior tuning capabilities, alarm diagnostics, digital communication protocols, valve motor drive outputs, and much more.

PLC INTEGRATION

Chromalox Process Controllers feature digital communication and analog retransmit options to integrate your temperature control with your existing PLC or SCADA systems. No need to look at complex PLC programs to handle temperature management. Let Chromalox process controllers do the work for you.

THE POWER OF SIMPLICITY

Having an easy to use controller doesn't mean you have to sacrifice capability. Quick and easy set up is available with Chromalox 6020/8020 controllers while still maintaining the must have features for industrial heating. Whether you want to use Chromalox PC software for fast programming and management of recipes, or a program locally at the controller with intuitive screens, the 20 Series Controllers have the ability to accommodate both.

ADVANCED SYSTEM CONTROL

When more control and capability is needed, Chromalox 80 Series controllers provide the industry leading features to optimize your system efficiency. Through the Ramp/Soak profiler you can set demand intervals based on duration, time of day, day of the week, or direct feedback from system response. If more complex cascade or ratio control is required, consider the 4082 controller with dual outputs to elegantly manage multiple zones.

	6020/8020	4040/6040/8040	1020	6060	4081/4082
INPUTS	1 Universal, Linear	1 Universal, Linear, Digital	1 Universal, Linear, Digital	1 Universal, Linear, Digital	1-2 Universal, Linear, Digital
OUTPUTS	3 (Relay, SSR)	3 or 5 w/ VMD (Relay, SSR, TRIAC, Analog)	3 (Relay, SSR, TRIAC, Analog)	6 (Relay, SSR, TRIAC, Analog)	9 (Relay, SSR, TRIAC, Analog)
DIAGNOSTICS	Sensor Break	VM Position*, Sensor & Heater Break	Sensor Break	Sensor, Loop & Heater Break	VM Position*, Sensor, Loop & Heater Break
COMMUNICATIONS	Modbus RTU/RS-485	Modbus RTU/RS-485, 4-20mA Retransmit	Modbus RTU/RS-485, 4-20mA Retransmit	Modbus RTU/RS-485, 4-20mA Retransmit	Modbus RTU/RS-485, Modbus TCP/IP, 4-20mA Retransmit
CONFIGURATION SOFTWARE	ChromaTemp	ChromaWare	ChromaTemp	ChromaloxPro	ChromaloxPro

*Valve Motor Position

MULTI-LOOP CONTROLLERS

Multi-loop controllers offer the opportunity to consolidate control of independent loops into a smaller package, reducing material and installation costs as a result of less mounting, wiring, and labor. Chromalox offers a number of multi-loop controller options, including multiple DIN front display options, modular DIN rail systems, and integrated intelligent controllers.

NETWORK

Chromalox multi-loop controllers with C2i Technology consolidate heating zones into a single intelligent network that allows for more efficient process monitoring and greater visibility to ensure system optimization. Receive instant feedback from any loop through the on-board digital communications or activate integrated diagnostics to send heater and process variation warnings.

	3340/3380	1040*	C4X*
INPUTS	T/C/RTD/Analog	Universal, Linear, Digital	Universal, Linear, Digital
NUMBER OF LOOPS	4/8	1-32	4"
DIAGNOSTICS	Heater Break	Heater Break, Sensor Break	Heater and Sensor Break, V, I, P Feedback
COMMUNICATIONS	Modbus RTU/RS-485 / Modbus RS-232	Modbus RTU/RS-485, Profibus, DeviceNet, or Modbus TCP/IP	Modbus RTU/RS-485 (Default) With Expansion Port For 1 Of 8 Protocols
CONFIGURATION SOFTWARE	SpecView	1040 Workshop	C-PWR

* NOTE: Can be ganged with additional C4/C4X or 1040 units to achieve hundreds of loops.

OVERTEMP CONTROLLERS

All electric heating systems run the risk of overtemperature caused by issues such as failed components, stuck valves, incorrect process variable settings, corrosion, fouling, and more.

PREVENTATIVE FAILURE

While having your process run efficiently is top of mind, ensuring long term system health is vital to avoid unexpected downtime and costly system repairs. Chromalox Overtemperature Controllers do more than just protect the electric heater when an incident happens; they also alert you to emerging future issues within the process. Constant monitoring of valve, power component, and sensor parameters can prevent a runaway heating element condition before it starts.

	LIMIT	4050/6050	1030
INPUTS	J, K, E T/C or RTD	Universal, Linear, Digital	Universal, Linear, Digital
OUTPUTS	Relay	Relay, SSR, TRIAC, Analog	Relay, SSR, TRIAC, Analog
DIAGNOSTICS	None	High/Low Limit Alarms, Process Alarms	High/Low Limit Alarms, Process Alarms
COMMUNICATIONS	None	Modbus RTU/RS- 485, 4-20mA Retransmit	Modbus RTU/RS -485, 4-20mA Retransmit
CONFIGURATION SOFTWARE	None	ChromaWare	ChromaTemp

POWER CONTROLLERS

Get the most out of your system with C2i™ Technology. With better firing accuracy, process awareness, increased safety, and reduction in installation and operating costs, Chromalox Power Controls are an essential part of your industrial heating system.

HIGH PRECISION FIRING

Chromalox SSR and CS series power controllers bring value and performance together through high precision power modulation and stable power output in a compact package. The rapid switching of the power controllers ensures accuracy of your process to extend component life and ensure optimized product output in a variety of industrial heating applications. Available in single and three phase models, the SSR and CS series Power Controllers offer value and simplicity in a compact solution.

MAXPAC REVITALIZED

Maxpac power controller combines high amperage capabilities with on board diagnostics in a rugged package. User adjustable firing methodology, shorted SCR detection, over-current trip, on-board power distribution and newly integrated Modbus RTU Digital Communications means even more is packed into the revamped Maxpac Series. Download the MaxView Configuration Software to get an even closer look at the operation and efficiency of our Maxpac Power Controller with adjustable cycle times, alarm thresholds and more.

	SSR SERIES	CS1	CS3	MINIMAX	MAXPAC
INPUTS	4.5-32VDC, 24 -265VAC / 24- 190VDC	6-32VDC, 20-260VAC/DC	5-32VDC, 20-260VAC	4-20mA, 0-5VDC, 1-5VDC, 0-10VDC	4-20mA, 0-5VDC, 1-5VDC, 0-10VDC
SCCR RATING	5KA	100KA	100KA	100KA	100KA
AMPERAGE	25-75A	25-120A	25-55A	30-75A	100-1200A
PHASE	1 Phase, 3 Phase 2-LEG, 3 Phase 3-LEG	1 Phase	3 Phase 3-Leg	1 Phase, 3 Phase 2-LEG, 3 Phase 3-LEG	1 Phase, 3 Phase 2-LEG, 3 Phase 3-LEG
DIAGNOSTICS	None	SCR Overtemp Alarm, Line/Load Interrupt	SCR Overtemp Alarm, Line/Load Interrupt	Shorted SCR, SCR Overtemp, MOV Protection, dV/dT Protection	Shorted SCR, SCR Overtemp, MOV Protection, dV/dT Protection
CONFIGURATION SOFTWARE	None	None	None	MaxView	MaxView



INTELLIGENT POWER CONTROLLERS

Beyond the fine tuning of firing methodology, Chromalox Intelligent Power Controllers feature a full diagnostic and communication suite to provide complete control to your heating system. Voltage, current, and power monitoring provides real-time visibility as to how your system is performing and alerts you of imminent failures in advance of trouble. Early insight means that parts and service can be planned more effectively during shutdowns and routine maintenance schedules.

ALARMS AND DIAGNOSTICS

Chromalox controllers offer a number of alarm and diagnostic solutions that take the the guesswork out of system health, effectively reducing unnecessary troubleshooting and downtime. Sensor and loop break alarms pinpoint trouble within a system while heater break alarm gives you the foresight into impending failures.

INTUITION INSIDE

Chromalox Intelligent Power Controllers with C2i™ Technology give you all the tools needed to stay ahead. Understanding how your system is functioning not only let's you control process efficiency, but keeps you ahead of failures with insight to drive predictive maintenance. Stay connected and stay ahead with Chromalox intelligent power controllers.

ALL-IN-ONE CONTROL PACKAGE

Chromalox C4/C4-IR and CFW Series combine PID and power control with industry leading diagnostics and monitoring with C2i™ Technology. By consolidating process and power control with built in diagnostics, you are reducing measurable costs through less component wiring, smaller packages, and shorter installation time. With onboard digital communications via multiple protocol options, system performance and health is always in focus with power monitoring, advanced SCR over-temperature profiling, short circuit detection, and more. Get the most out of your system with Chromalox Intelligent Power Controllers.

	CTF	CTF-XTRA	C4*	C4-IR*	CFW
INPUTS	0-5VDC, 0-10VDC, 0-20mA, 4-20mA	0-5VDC, 0-10VDC, 0-20mA, 4-20mA	0 to 20mA, 4 to 20mA, 0 to 60mV, 12 to 60mV, 0 to 1V, 0.2 to 1V	0 to 20mA, 4 to 20mA, 0 to 60mV, 12 to 60mV, 0 to 1V, 0.2 to 1V	0 to 20mA, 4 to 20mA, 0 to 60mV, 12 to 60mV, 0 to 1V, 0.2 to 1V
AMPERAGES	25-250A	25-60A	15-40A	15-40A	25-600A
FIRING METHOD	Zero Cross & Phase Angle	Zero Cross	Zero Cross & Phase Angle	Zero Cross & Phase Angle	Zero Cross & Phase Angle
SPECIAL FEATURES	Soft Start and Current Limit	Internal Electronic Resettable Fuse with Soft Start	Multi-Loop (4 Loops) With Integrated PID	Multi-Loop (4 Loops) With Integrated PID	Modular 1P, 2P or 3P Designs With Integrated PID
DIAGNOSTICS	V, I, P Feedback, Current Alarm, Heater Break, Shorted SCR, Full/Partial Load Interrupt	V, I, P Feedback, Current Alarm, Heater Break, Shorted SCR, Full/Partial Load Interrupt	V, I, P Feedback, Current Alarm, Heater Break, Shorted SCR, Full/Partial Load Interrupt	V, I, P Feedback, Current Alarm, Heater Break, Shorted SCR, Full/Partial Load Interrupt	V, I, P Feedback, Current Alarm, Heater Break, Shorted SCR, Full/Partial Load Interrupt
COMMUNICATIONS	Modbus RTU/RS-485	Modbus RTU/RS-485	Modbus RTU/RS-485 (Default) With Extra slot For 1 of 8 Protocols	Modbus RTU/RS-485 (Default) With Extra slot For 1 of 8 Protocols	Modbus RTU/RS-485 (Default) With Extra slot For 1 of 8 Protocols
CONFIGURATION SOFTWARE	C-PWR	C-PWR	C-PWR	C-PWR	C-PWR

* NOTE: Can be ganged with additional C4/C4-IR units to achieve hundreds of loops.

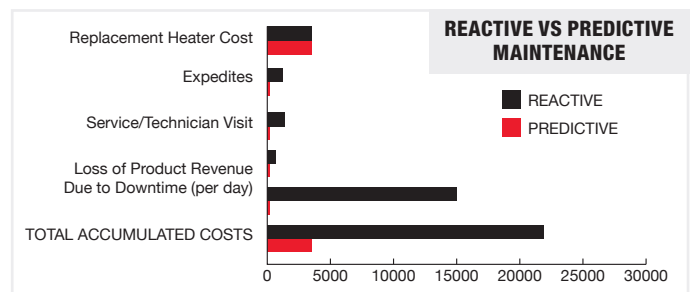
THE REAL COST OF DOWNTIME

The largest impact on lost production time and associated costs for manufacturers is downtime, which occurs when equipment fails prematurely or unexpectedly.

Manufacturers can take two approaches to equipment up-keep—reactive maintenance or predictive maintenance. Unfortunately, the industry often operates reactively because they don't have the tools and process awareness to operate proactively. As a result, plants accept significant risk and cost from unplanned failures. Downtime contributes to loss of product revenue, higher service visit costs, product expedites, employee wage impacts and more. On the other hand, predictive maintenance schedule over the long term proves to be significantly more cost effective than a reactive emergency response.

We have the tools for you. Chromalox Intelligent Power Controllers give you real time data monitoring and alarming to ensure the health of your system. Any impending failures are known well in advance so they can be addressed without urgency or as part of a planned shutdown.

MAINTENANCE	REACTIVE	PREDICTIVE
REPLACEMENT HEATER COST	\$3,500	\$3,500
EXPEDITES	\$1,225	\$-
SERVICE/TECHNICIAN VISIT	\$1,400	\$-
PERSONELL WAGES	\$660	\$-
LOSS OF PRODUCT REVENUE DUE TO DOWNTIME (PER DAY)	\$15,000	\$-
TOTAL ACCUMULATED COSTS	\$21,785.00	\$3,500.00



IIoT GATEWAY

With so much data being exchanged between a plant Distributed Control System and individual controllers or programmable units, it may be easy to miss critical information from a single component. Chromalox' new IIoT Gateway solution enables you to track, log, and react to data through the cloud at any time from anywhere in the world.

REAL-TIME INTELLIGENCE

Seeing live data and system performance on a plant level is vital, but why limit the scope locally? With the Chromalox ProtoAir IIoT Gateway, sync any IIoT enabled controller to the cloud to have a centralized platform to view data from all online devices globally. Set up customized dashboards to get quick views of vital information, or assign parameter alarms on any device to receive SMS or email alerts to know instantly when you have an issue at any device. Having real time awareness and intelligence of your system can mitigate costly failures or prevent them altogether. With Chromalox's full line up of solutions you get synergy between superior heater quality, industry leading controls, and a fully integrated IIoT platform.



ASSET MAP



View all of your IIoT Gateways at once and see their real time status of either Online, Offline, or Alarm.

CUSTOMIZE DASHBOARD



Set up your dashboard to view critical data and chart trends across devices.

CHROMALOX'S INTELLIGENT CONTROL NETWORK DELIVERS PROCESS RELIABILITY AND EFFICIENCIES FOR YOUR SITE



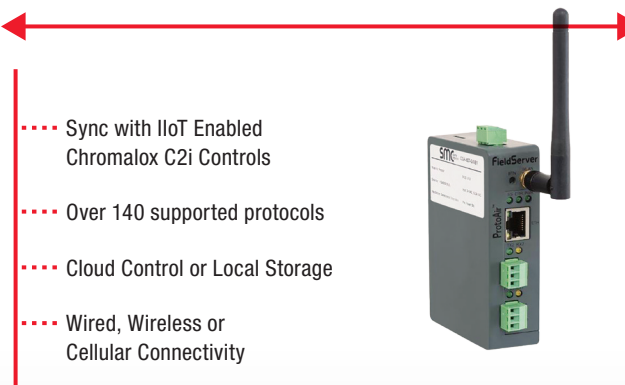
- ▶ Remote Diagnosis and Troubleshooting
- ▶ Cloud Dashboards with Real-Time View of Data Points and Trends
- ▶ Asset Mapping shows Global View of all Devices Statuses
- ▶ Email and SMS Alerts for Instant Notification of Events



CUSTOMER CONTROL SYSTEMS



IIOT PROTOCOL GATEWAY



SYSTEM INTEGRATION



ANALOG
RETRANSIT

- Sensor and Loop Break Alarm to Detect Loss of Control
- Valve Motor Drive Position
- Overtemperature Monitoring & Protection



**INTELLIGENT
ALARMING**

SAFETY

- Resettable Electronic Fusing & Soft Start
- Power, Voltage, & Current Monitoring
- Local Data Logging with Graphical Display



DIAGNOSTICS

PROCESS INTEGRITY

- Line/Load Interrupt Detection
- Advanced SCR Overtemperature Detection
- Heater Break Alarm with High, Low, Short Current Settings



**CONDITION
MONITORING**

PREDICTIVE MAINTENANCE

PRODUCT SPOTLIGHT

20 SERIES PROCESS CONTROLLER

Chromalox 20 series controllers are a low cost and simple solution for many applications. Simple to use, PID control, compact size and large LED are just some benefits of the 20 Series controller. Where straightforward operation is needed and at a competitive price, the 20 Series process controller is ideal.

Spotlight Features

- ▶ 2 or 3 Outputs (SSR Drive/Relay)
- ▶ Modbus RTU/RS485
- ▶ Extremely Quick Setup
- ▶ Configuration Software
- ▶ PID or ON/OFF Control



1/8 DIN

1/16 DIN

1020/1030 TEMPERATURE AND OVERTEMPERATURE CONTROLLER

New to the Chromalox control line is the 1020 and 1030 DIN rail mount process and overtemperature controllers. Fully loaded with a lot of the same features as our 40 and 50 series controllers, the 1020 and 1030 give a more cost competitive option without sacrificing capabilities.

Spotlight Features

- ▶ Compact DIN Rail Mount
- ▶ Bright Text / Icon OLED Matrix Display
- ▶ 2 or 3 Outputs - SSR Drive, Relay or Analog / DC Linear
- ▶ Sensor Break Function, High/Low, Deviation, or Band Alarms
- ▶ PID or ON/OFF Control
- ▶ Intuitive PC Configuration Software



40/50 SERIES TEMPERATURE AND OVERTEMPERATURE CONTROLLERS

For versatility and reliability, the Chromalox 40 and 50 Series Temperature and Overtemperature Controllers bring the industries must have features to the table at a reasonable price. Loaded with up to 3 or 5 w/ VMD outputs, analog I/O capabilities, Modbus Communications and numerous alarms included sensor & heater break, Hi/Low, Deviation and more, the 40/50 Series Controllers are well suited to address most industrial heating applications.

Spotlight Features

- ▶ 3 of 5 (w/ VMD) Outputs - SSR Drive, Relay or Analog / DC Linear
- ▶ Bright Text / Icon OLED Matrix Display
- ▶ 4-20mA Analog I/O and Modbus Communications
- ▶ PID or ON/OFF Control
- ▶ Sensor Break Function, High/Low, Deviation, or Band Alarms
- ▶ Intuitive PC Configuration Software



80 SERIES ADVANCED PID PROCESS CONTROLLERS

Chromalox 80 Series controllers are the flagship PID Controllers when more command is needed in your process. Outfitted with up to 9 outputs including Analog I/O, multiple digital inputs, 64 program profiles, data logging, Modbus RS-485 and TCP/IP Communications and countless event logic alarms. Available in both single and dual channel models, the 4082 is ideal for cascade ratio control to open up even more possibilities for your application.

Spotlight Features

- ▶ Single (4081) or Dual (4082) Channel Models
- ▶ Profiler and Data Logger
- ▶ 9 Outputs - Relay, SSR Drive, Analog, TRIAC
- ▶ Modbus RS-485 & TCP/IP Options
- ▶ 2 Analog Inputs, 9 Digital Inputs and Remote Input



CTF SCR POWER CONTROLLER

The CTF controller is capable of loads to 250A, multiple firing modes including Zero Cross and Phase Angle methodology, and a host of alarm and monitoring capabilities makes the CTF a great option where more control and feedback is valued.

Spotlight Features

- ▶ 25 A to 250A
- ▶ 480 Vac, 600 Vac & 690 Vac
- ▶ User Configurable Firing Modes: Zero Cross (Fixed Cycle, Burst Firing (DOT) & Half Single Cycle or Phase angle
- ▶ Current Alarms - SCR Short Circuit, Full or Partial Interrupt & Load
- ▶ Soft Start, Current limit, V, I, P feedback



C4/C4-IR ADVANCED MULTILoop SCR POWER CONTROLLER

The most versatile of the Chromalox SCR Power Controls is the C4 and C4-IR products. When looking for a compact solution, the C4/C4-IR is at the forefront, consolidating four PID controllers, 4 SSR's, 4 independent control loops with integral fusing into a small package. Mix and match the 4 independent loops to control multiple 3 phase 2-Leg circuits, or a 3 phase 3-Leg circuit with extra single phase circuit. Outfitted with current, voltage, and power monitoring, multiple communication protocols, and intuitive C-PWR configuration software suite makes the C4 a one stop shop for your system needs.

Spotlight Features

- ▶ 4 Main Outputs Internally Wired To SSR's
- ▶ Integrated PID Control On Each Loop
- ▶ Current Transformers On Each Loop
- ▶ Load Connection In Single Phase, Dual Phase, and Three Phase
- ▶ Built In Fusing
- ▶ Standard Modbus RTU Communication
- ▶ 8 Optional Fieldbus Communications Including Modbus RTU, Modbus/TCP, Profibus, Profinet, Ethernet IP, DeviceNet, EtherCat, and CANopen Available



CFW ADVANCED MODULAR SCR POWER CONTROLLER

The Chromalox CFW Series Advanced Modular SCR Power Controller is capable of Loads to 600A, modular in design to suit single phase, three phase 2-Leg and three phase 3-Leg designs, and integrated PID control is just scratching the surface of this controllers capabilities. Fully loaded with diagnostic, monitoring and communication capability, the CFW keeps you in tune and the health and performance of your system.

Spotlight Features

- ▶ 40A—600A Models Available
- ▶ 480Vac, 600Vac, and 690Vac Options
- ▶ Zero Cross (Fixed Cycle, Burst Fire, Half Single Cycle) and Phase Angle Firing Capability
- ▶ V, V², I, I², P Feedback Monitoring
- ▶ Optional Built In PID Control



CHROMALOX WORLDWIDE LOCATIONS



● Sales Offices
■ Manufacturing Facilities

Chromalox Headquarters

**103 Gamma Drive
 Pittsburgh, PA 15238
 USA**

**Phone: (412) 967-3800
 Fax: (412) 967-5148
 Toll-Free: 1-800-443-2640**

**email: sales@chromalox.com
www.chromalox.com**

Brazil

Tel: +55 11 4615-9198

email: fabio.yamasaki@chromalox.com
www.chromalox.com

Canada

Tel: 877-238-4754
 Fax: 888-292-9607

email: sales@chromalox.com
www.chromalox.com

China

Tel: +86 (0) 21-5866-8802
 Fax: +86 (0) 21-5866-8803

email: shanghai.office@chromalox.com
www.chromalox.cn

France

Tel: +33 (0) 3 23 74 39 39
 Fax: +33 (0) 3 23 74 39 00

email: ventes@chromalox.fr
www.chromalox.fr

Germany

Tel: +49 (0) 231-58 44 990-0
 Fax: +49 (0) 231-58 44 990-9

email: Kontakt@chromalox.com
www.chromalox.de

Middle East

Tel: +971 4 8879776
 Fax: +971 4 8879793

email: middle-eastsales@chromalox.com
www.chromalox.com

India

Tel: +91-11-25623134
 Fax: +91-11-25623480

email: indiasales@chromalox.com
www.chromalox.in

Singapore

Tel: +65 (0) 6339 1228
 Fax: +65 (0) 6339 2648

email: singaporesales@chromalox.com
www.chromalox.com

Thailand

Tel: +66 (0) 38 190916
 Fax: +66 (0) 38 190919

email: asiasales@chromalox.com
www.chromalox.com

United Kingdom

Tel: +44 (0) 20 8665 8900
 Fax: +44 (0) 20 8689 0571

email: uksales@chromalox.com
www.chromalox.co.uk

