4081 & 4082

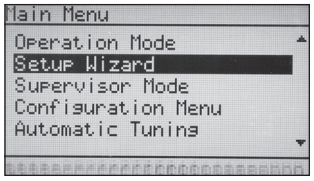
Advanced Temperature & Process Controller 1 & 2 Loop

- 1/4 DIN Format
- Up to 9 Outputs
- Up to 7 Programmable Event Outputs: Absolute, Deviation, Rate of Change, Sensor Break, Recorder Memory, Power
- Reinforced Safety Isolation from Outputs and Inputs
- Several Inputs
  - 2 Analog
  - Remote Setpoint
  - 9 Digital
- Profiling Option
  - 64 Programs Using 255 Segments
  - Ramp, Dwell, Hold, Loop, Join, End & Repeat
- Data-Logging Option (Data, Alarms & Events)
- Real Time Clock
- USB Port To Access Files
- Large Graphical / Text LCD Display
  - Trend View
  - Color Change LED Backlight On Alarm
  - Configurable User-Menu Structure
- Simplified Programming Wizard
- Cascade Control
- Ratio Control
- Valve Motor Control
- 2nd Universal Input also For Monitoring
- Modbus RS485 & Modbus TCP Ethernet
- ChromaloxPro™ Configuration Software
- Multiple Language Option
- UL, cUL, CE and RoHS2

Description

The Chromalox 4081 (Single Loop) and 4082 (Dual Loop) are affordable temperature and process controllers with advanced functionality including profiling and data-logging options. They both incorporate a graphic/text LCD display and are designed to improve user efficiency with many features integrated to reduce startup time, simplify operation and minimize downtime.

Improved Process Visibility

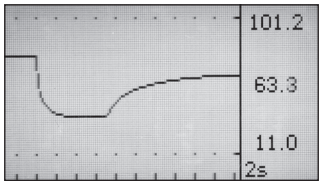


One of the key factors in maintaining and improving operation of a system is to have high visibility of the process. The LCD screen displays clear real-text messages, removing ambiguity that can be caused by mnemonic codes on LED displays used in many products. The 4082 has two independent loop displays.

Simplified Operation

Operators can improve efficiency and reduce the possibility of errors by creating an optimized menu structure for screen navigation. The configuration tool is used to provide operators with the specific parameters needed in the order desired. Security is assured with password protection on supervisor and configuration parameter access levels.

A Complete & Compact Control Solution



Advanced process and temperature control, such as cascade, valve and ratio control, extensive profiling capability, high visibility alarms and data-logging functions are all packaged within a single 1/4 DIN product. The integrated control, dual loop capability and monitoring functions translate into fewer system control components. This reduces wiring, shrinks the panel footprint and compresses installation time, resulting in a lower system cost.

Minimize Setup Time

Time is money. Constantly referring to instruction manuals increases startup time and can lead to confusion. A number of tools are available with the 4081/4082 to simplify the configuration process: An easy setup wizard; on-screen help; ChromaloxPro™ software for on or offline programming; and secure local configuration with a memory stick via the optional front access USB port.

4081 & 4082 Advanced Temp. & Process Controller *(cont'd.)*

Features

Advanced Process Control
- Easy setup wizard for quick configuration
- Universal input for T/C, RTDs & Linear DC signals
- Up to 9 output options including Triac & Linear DC
- Up to 9 Digital inputs
- Configurable menus
- Pre-tune and self-tune function
- RS485 Modbus or Ethernet option
- USB port for local files access
- Master-slave config for multi-zone apps

Profiling Functionality
- 255 segments used within 64 programs
- Ramp, dwell, hold, loop or jump to other profile
- User-defined text profile names
- Delayed or day/time profile start
- Detailed overview of profile status
- Up to 7 event outputs
- Bar graph profile and segment trend progress

Integrated Data-Logging Option
- Historic data for analysis or reporting
- Trend view and alarm indication
- Export data files via front USB or comms
- Log PV's, SP's or alarms (including min, max & ave)
- Run/Stop or FIFO (first in-first out) recording
- Logging time intervals from 1s to 30m

Real text display with graphics
- Easy to read green/red LCD display
- Screen color can be set to change on alarm
- Multi-language option
- Custom splash-screen on startup
- Graphical trend view
- LED indication of heat, cool, auto-tuning and alarms

ChromaloxPro Configuration Suite

Save time with the ChromaloxPro software configuration tools.

- Change parameter settings
- PID tuning
- Offline simulation tools – reduce risk
- Visibility of live process data
- Fine-tune settings for optimum performance
- Back-up all settings for quick reconfiguration

Customize 4081 & 4082 for your process
- Optimized menu structure – simplify operation
- Modify text labels to match system operation
- Create a company contact page

Specifications

FEATURES

Control Types	1 or 2 control loops, each with PID or VMD (3-point stepping PID control). Two internally linked cascade loops, each with PID or VMD (3-point stepping PID control). One ratio loop for combustion control
VMD Feedback	Second input can provide valve position feedback or flow indication
Tuning Types	Pre-tune, auto-pretune, self-tune or manual tuning, with up to 5 PID sets stored internally
Auto/Manual Control	Selectable with 'bumpless' transfer when switching between auto and manual control
Output Configuration	Up to 9 for control, alarms, profiler event outputs, 24VDC transmitter power supply & retransmission.
Alarms	Up to 7 alarms selectable as process high, process low, deviation & band, plus sensor break and loop alarms. Logical OR alarm outputs, % recorder memory used, control power high/low unused.
HMI	Display: 160 x 80 pixel, monochrome graphic LCD with a dual color (red/green) backlight; 4 button operation; 4 LEDs to Indicate heat, cool, auto-tuning and alarm
PC Configuration	ChromaloxPro configuration and commissioning software

INPUT

Thermocouple	J, K, R, S, T, B, C, D, E, L, N, PtRh 20%:40%
RTD	3 wire PT100, NI120
DC Linear	0 -20 mA, 4-20 mA, 0-50 mV, 10-50 mV, 0-5 V, 1-5 V, 0-10 V, 2-10 V (0-100 mV and 2K Ω pot also on aux-B input) scaling -1999 to 9999
Accuracy	±0.1% of input range ± 1 LSD, Thermocouple CJC, (Aux Input : ±0.25% of input range ± 1 LSD)
Sampling rate	Process input 10 per second, Aux input : 4 per second
Sensor break	Detected within 2 seconds, control goes to user preset power value.
Digital inputs	Functions: setpoint select, control output, enable/disable, auto/manual control, profiler run/hold/abort, data-logger start/stop Volt free contact or DC voltage: open contact / 2 to 24 VDC signal = Logic high, closed contact / -0.6 to 0.8 VDC signal = Logic low

OUTPUTS

Relay	Single relay: 2 A resistive SPDT at 120/240 VAC, >500,000 operations Dual & Quad relay: 2 A resistive SPST at 120/240 VDC, >200,000 operations (dual) or >500,000 operations (quad)
SSR Driver	Voltage >10V into 500Ω min

4081 & 4082 Advanced Temp. & Process Controller *(cont'd.)*

Specifications (continued)

Triac .....Operating voltage: 20 to 280 Vrms (47 to 63 Hz), Rating 0.01 to 1 A @ 25°C
Linear DC .....Ranges: 0-5 V, 0-10 V, 1-5 V, 2-10 V, 0-20 mA & 4-20 mA (selectable) ±0.25% of range (mA@250Ω, V@2kΩ)
Transmitter PSU.....Power rating 24 V nominal (19 to 28 VDC) into 910Ω min (option to use DC linear output as 0-10 V adjustable Tx PSU)
Communications.....RS232 via RJ11 cable, (configuration only) RS485 - Modbus RTU master or slave, Ethernet - Modbus TCP slave (10 base-T or 100 base-T), Ver 1.1/2.0 USB host for memory stick

PROFILER

Memory .....255 segments can be freely allocated in up to 64 programs
Segment types .....Ramp (rate or time), dwell (soak), hold (manual guaranteed soak or real-time profiling), loop (to previous segment), join another profile, end or repeat sequence
Control.....Run, hold, abort, profile select, jump to next segment, delayed profile start, real-time clock profile start.

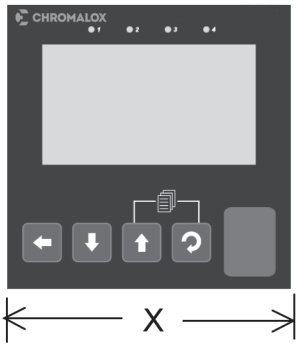
DATA-LOGGER

Data record options .....PV (Process variable), max and min PV between samples, actual SP (setpoint), output power, alarm & event status, power on/off
Record modes.....FIFO (circular buffer) or run-then-stop (fixed buffer)
Recording Interval .....1, 2, 5, 10, 15, 30 sec or 1, 2, 5, 10, 15, 30 min
Control.....Manual; serial comms; digital input; synchronized with profile; PV rate of change; log on alarm

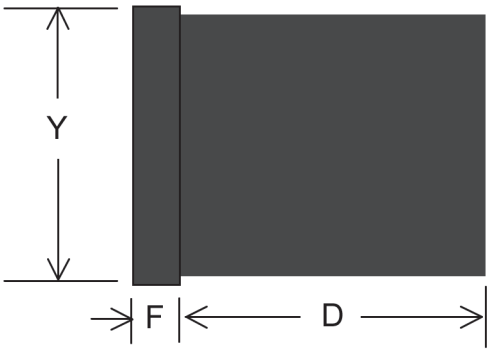
ENVIRONMENTAL

Standards .....UL, cUL, CE, RoHS2. EMI - EN61326, Safety EN61010-1 & UL61010C-1 Pollution degree 2, Installation category II; RoHS2 2011/65/EU
Protection .....Front Panel: NEMA 4, IP66 (IP65 with USB fitted). Behind panel IP20
Temperature & RH .....0 to 55˚C (-20 to 80˚C Storage), 20% to 95% RH Non-Condensing

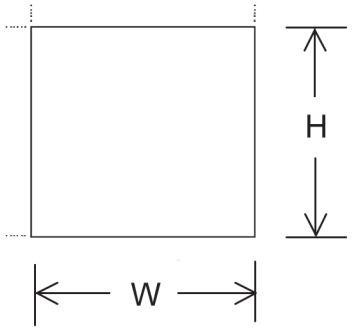
Front View



Side View



Panel Cutout



Model	X	Y	F	D	W	H
4081 & 4082	3.78" (96 mm)	3.78" (96 mm)	0.39" (10 mm)	4.61" (117 mm)	3.62" (92 mm)	3.62" (92 mm)

Accessories

Description	Part Number
ChromaloxPro Configuration Software	0149-50092
Universal S/W Converter & PC Cable 20/40/50/60/80 Series	0149-50086
Cable Only - 40/50/80 Series to Universal Adapter	0149-50088
Snubber	0149-01305

4081 & 4082 Advanced Temp. & Process Controller *(cont'd.)*

Model	Advanced Temperature & Process Controller
4081	1 Control Loop
4082	2 Control Loops

Code	Unit Type
C	Controller
U	Controller with USB Port
R	Controller/Recorder with USB Port & Real Time Clock

Code	Profiler Option
0	Not Fitted
P	Profiler

Code	Output 1
0	None
R	*Relay (2 Amp resistive at 240 VAC, SPDT, Form C)
S	SSR (0/10 VDC, 500Ω Minimum load)
A	*Analog (Linear DC: 0-20mA, 4-20mA, 0-5V, 0-10V, 2-10V)
T	*Triac (0.01 to 1 Amp AC, 20 to 280Vrms, 47 to 63Hz)

Codes — Output 2 & Output 3 (Choose the Appropriate Code for Each)

Out 2	Out 3	Output Type
0	0	None
R	R	*Relay (2 Amp resistive at 240 VAC, SPDT, Form C)
S	S	*SSR (0/10 VDC, 500Ω Minimum load)
T	T	*Triac (0.01 to 1 Amp AC, 20 to 280Vrms, 47 to 63Hz)
M	M	*Dual Relay Output - 2 Amp resistive, 240 VAC, SPST, Form A, norm. open, comm. term.
W	W	*Dual SSR Output - Non Isolated, 0/10 VDC, 500 Ω Minimum load
P	P	*Isolated Power Supply 24 VDC, 910 Ω Minimum (Only 1 Power Supply Supported)

Code	Base Outputs
1	1X Relay
2	1X Relay & 1X Analog
3	2X Relay & 1X Analog
4	2X Relay & 2X Analog

Code	Feature Option A
0	None
1	RS485 (ModBus/RTU) Digital Comms
2	Digital Input (Voltage Free or TTL Input)
3	Remote Setpoint - Analog Input A
4	Ethernet Port - ModBus TCP Slave

Code	Auxiliary Input
0	None
2	[1]Universal Input (Avail. on Single Loop Controllers Only)

Code	Feature Option C
0	None
1	Multiple Digital Inputs (1 - 8 Digital Inputs)

Code	Power Supply
0	100 - 240V AC
1	24 - 48V AC/DC

4082-	R	P	S	R	R -	2	4	0	1	0	Typical Model Number

Order Table Notes:
[1] Only available on Single Loop Models.
*Reinforced 240V safety isolation from inputs and other outputs

Technical Notes:
1. Quick Start manuals are shipped with the controller. Full installation and instruction manuals are available online at www.chromalox.com

SINGLE CHANNEL