IntelliTrace CTC

Commercial Heat Trace Controller

NEW!

c UL us

- 1 & 2 Circuit Models
- 40 Amps per Circuit
- SSR Control
- 100 – 277 VAC, 50/60 Hz
- cULus Non Hazardous Areas
- Soft Start Feature
- Operating Temperature: -40˚F to 104˚F (-40˚C to 40˚C)
- Modbus RTU/RS485, RS422, TCP/Ethernet, & BACnet IP
- 10" x 8" x 6" (26cm x 21cm x 15cm) NEMA 4X FG Wall Mount Enclosure
- High Resolution Color TFT Display
- LED Indication for Power, Load & Alarm per Circuit
- Front Panel Capacitive Touch Switches
- PID, On/Off or Manual Control Modes
- One or Two Sensor Inputs / Circuit – Min, Max & Averaging
- 2 Circuit Ambient Control from 1 RTD Sensor
- Full Monitoring & Alarms
- High / Low Temperature & Current, GFEP & Sensor Failure
- Programmable Duty Cycle On Sensor Failure
- AC & DC Alarms
- Password Protected Security Levels

Description

The Chromalox intelliTRACE CTC is a microprocessor based system with SSR power control that switches 40 Amps per circuit at 120-277 VAC. The CTC is a single or dual point commercial heating cable controller with integrated ground-fault protection. This controller may be used with CZH, CMi or CPR heating cables. The CTC is intended for use in commercial nonhazardous applications.

There are three user-selectable control modes available on the CTC: Manual, Off or Auto. An output of 1% to 100% is available while in Manual Mode and you may choose either PID or ON/OFF control while in the Auto Control Mode.

You may employ one or two RTD sensors per circuit. When using two RTD sensors, the CTC may be set to Low, High or Average. The CTC may also be configured as a 2-circuit ambient sensing controller that uses only one RTD to control both circuits. This provides the owner with much more flexibility and redundancy to help meet their evervarying demands.

The CTC employs a soft start feature that uses a proprietary software algorithm which reduces the inherent self-regulating in-rush current, resulting in less nuisance tripping at cold temperatures. The soft start feature is selectable which allows this controller to be employed in non-heat trace applications as well.

All process conditions may be monitored and managed both locally and remotely. All process variable, communication and alarm settings and security codes are user-adjustable via simple page menu navigation.

In terms of system supervision, the CTC controller monitors temperature, current load and ground fault equipment protection leakage current (GFEP). Additionally, the alarms on the CTC consist of high and low temperature, high and low current, high GFEP current and sensor failure.

Should the CTC unit realize a failed sensor, the controller automatically switches into a user adjustable manual output duty cycle. To eliminate abrupt current spikes, the Chromalox CTC employs bumpless transfer power switching when switching over from either manual or auto mode.

The CTC unit is housed in a compact wall mountable, NEMA 4X FG or optional 316 SS enclosure and it features a high resolution TFT display, LED indication of Load, Power & Alarm status for each circuit and front panel capacitive touch user interface buttons which are mounted on a hinged door.

The CTC enclosure provides electrical connections for the heating cable, the AC Power and the RTD Sensors and it comes complete with stainless steel mounting brackets.

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To comply with NEC code one of the following must apply:

1. Customer supplied 2 pole GFEP breaker in branch circuit breaker box upstream of the controller.

2. Requirement shall not apply in industrial establishments where there is alarm indication of ground faults and the following conditions apply:

   a. Conditions of maintenance and supervision ensure that only qualified person(s) service the installed system.

   b. Continued circuit operation is necessary for safe operation of equipment or process.

Specifications

Input

Sensor Type	3-wire RTD, 100 Ω PT, 0.00385 Ω/Ω/°C, 20 Ω balanced lead wire
Number of Sensor Inputs	1 or 2 per Circuit
Sensing Configuration	Range: Single, Low, High, Average, Use RTD1 to control both circuits

Output

Power Switching	SSR
Number of Circuits	1 or 2
Capacity	40 Amps per Circuit

Control Types

PID	Control mode must be set to Auto
Autotune	On or Off
Proportional Band, (°F)	Range: 1 – 100
Integral (sec/repeat)	Range: 0 – 9,999
Rate or Derivative, (seconds)	Range: 0 – 500
On/Off	Control mode must be set to Auto
Dead band, (°F)	Range: 2 – 100
Manual	Range: 0 – 100%
Soft Start, Current Clamping	Enable or Disable

Settings

Temperature (PV)	Range: -80°F to +1100°F (-62°C to +593°C)
Low Temperature Alarm	Range: -80°F to +1050°F, Off (-62°C to +566°C, Off)
High Temperature Alarm	Range: -80°F to +1150°F, Off (-62°C to +621°C, Off)
Low Current Alarm	Range: 0.1 A – 50.0 A, Off
High Current Alarm	Range: 0.1 A – 50.0 A, Off
GFEP	Range: 30 mA – 150 mA
GFEP Alarm Condition	Alarm Only, Alarm & Trip, Alarm & Latch, Alarm & Trip & Latch
Output on Sensor Failure	Range: 0–100%, Bumpless Transfer to Manual Mode
Calendar	Year, Month, Day, Date, Hour & Minute
Audible button depress	Range: On, Off
Security	3 Levels of password protected security
Alarm State	Normally Open, Normally Closed

Display, HMI, Indication

Display	3.5" 320 x 240 RGB Full color graphic TFT module
Human Interface	5 Capacitive Touch Input Buttons
LED Indication	Power (Green), Load (Amber), Alarm (Red) – Per Ckt

Alarms

Alarm Types	Low & High Temperature, Low & High Current, High GFEP, Sensor Failure
Alarm Relays	1 x DC Alarm Output, 1.8 Amp, 0 - 50 VDC 1 x AC Alarm Output, 1.8 Amp, 12 - 240 VAC

Alarm Contact State

Mode	Default	Optional
Normal Operation	Closed	Open
Alarm Condition	Open	Closed
Power Off	Open	Open

Communications

Modbus	RTU/RS-485 (2 or 4 wire)
Modbus	TCP/Ethernet (optional)
Webserver/Ethernet IP	(Optional)
BACnet IP Communications	(Optional)

Operating & Environmental

Temperature	-40°F to 104°F (-40°C to 40°C)
Power Supply	100 to 277V 50/60Hz
Protection	IEC IP66
Enclosure rating	NEMA 4X FG (Optional Stainless Steel)
Approvals	UL/cUL Ordinary Area Locations. (UL File: E84610)

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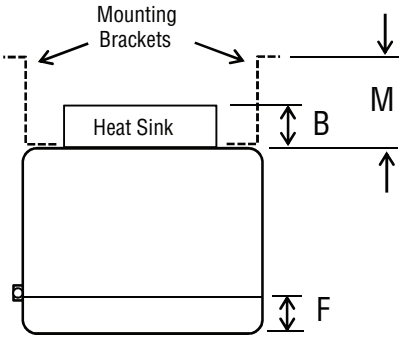
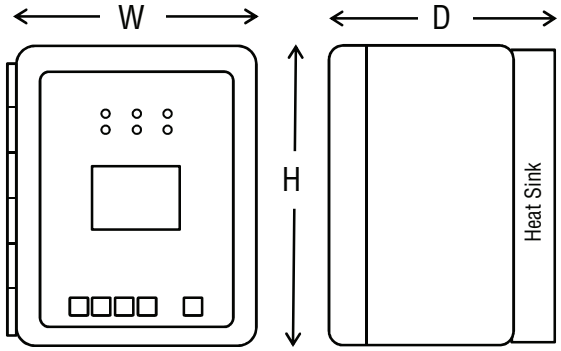
Commercial Heat Trace Controller *(cont'd.)*

Dimensions

		H	W	D	F	B	M
316 SS Enclosure	Inch	11.8	9.9	7.6	0.7	1.8	3.0
	cm	30.2	25.1	19.4	1.7	4.4	7.6
Fiberglass Enclosure	Inch	10.3	8.5	8.0	1.2	1.8	3.0
	cm	26.2	21.3	19.7	3.2	4.4	7.6



Top View



Front View Side View

Ordering Information

To Order — *Complete the Model Number using the Matrix provided.*

Model Product Description

CTC The Chromalox CTC series IntelliTRACE Controller will control 1 or 2 circuits and is designed for Commercial Heat Trace Line and/or Ambient Sensing applications in Non-Hazardous areas. The CTC is a wall mounted device that operates at 100-277 VAC and rated at 40A per circuit in a -40˚F to 104˚F (-40˚C to 40˚C) Ambient. Standard features: NEMA 4X FG enclosure, 3.5" High Resolution TFT Display with integral display heater, front panel capacitive touch switches & LED Indication of Power, Load & Alarm. ON/OFF, PID or Manual SSR power control with a selectable Soft Start program. The CTC accepts up to 2 RTD sensors per circuit for Ambient and/or Line Sensing applications. With multiple sensors, output behavior is based on min, max, average temperature or as 2-circuit ambient sensing control from a single RTD. Other standard features include: 2 x common alarm outputs (1 x AC, 1 x DC), Alarms for Low/High Temperature & Current, GFEP (Ground Fault Equipment Protection) & Sensor Failure, ModBus RTU/RS485 (or /RS422) Communications and user selectable manual output on failed sensor. 16 Gauge Stainless Steel wall mounting brackets are included. UL/cUL Approved Optional features include: NEMA 4X 316 SS Enclosure, ModBus TCP/Ethernet, Webserver/Ethernet or BACnet IP communications. Standard 1 year warranty.

Code	Number of Circuits
1	1 Circuit
2	2 Circuits

Code	Communications
0	ModBus RTU/RS485 (& RS422)
1	ModBus TCP/Ethernet
2	Webserver/Ethernet
3	BACnet IP/Ethernet**
9	Other Communications

Code	Enclosure	Enclosure Size H x W x D, In (cm)
0	NEMA 4X Fiberglas	10 x 8 x 8 (25 x 21 x 20)
1	NEMA 4X 316 SS	12 x 10 x 8 (30 x 25 x 19)

Code	Add to Complete Model Number
0	

CTC ☐ ☐ ☐ ☐ **Typical Model Number**

Note: The CTC comes complete with one set of 16 gauge stainless steel wall mounting brackets.
** Only Single Circuit CTC Controllers can have BACnet IP inside of controller.
Two Circuit CTC Controllers must use external BACnet IP Converter - see MBC data sheet for more information.

Model	Description	PCN
CTC1-000	ITC 1 Loop, FG ENC, RS485	512655
CTC2-000	ITC 2 Loop, FG ENC, RS485	512663
CTC1-100	ITC 1 Loop, FG ENC, BACnet IP	512671