Controls

*Intelli*Trace

ITC1 & ITC2

Digital Heat Trace Controller
1 & 2 Circuit

- 1 & 2 Circuit Models
- 40 Amps per Circuit
- SSR Control
- 100 – 277 VAC, 50/60 Hz
- Hazardous (Class I, Division 2) or Non Hazardous Areas
- Soft Start Feature
- Operating Temperature: -40˚F to 104˚F (-40˚C to 40˚C)
- Modbus RTU/RS485, RS422 & TCP/Ethernet
- 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
- CE, UL/cUL

Description

The Chromalox intelliTRACE ITC series is designed for line or ambient sensing heat trace applications such as freeze protection and/or process temperature control. This controller may be used with constant wattage, mineral insulated or self regulating heating cables. The ITC is intended for use in industrial locations in either hazardous (Class I, Division 2) or non-hazardous environments.

The ITC Series is offered in either a single circuit or an independently controlled and monitored dual circuit platform. They provide a unique, industry-leading combination of heating capacity, application flexibility and technology.

The ITC is a microprocessor based system with SSR (Solid State Relay) power control which switches an impressive 40 Amps per circuit at 100-277 VAC.

There are three user-selectable control modes available on the ITC: 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 for either circuit. When using two RTD sensors, the ITC may be set to Low, High or Average. The ITC 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 ever-varying process demands.

The ITC employs a soft start feature that uses a proprietary software algorithm which eliminates 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 ITC controller monitors temperature, current load and ground fault equipment protection leakage current (GFEP). Additionally, the alarms on the ITC consist of high and low temperature, high and low current, high GFEP current and sensor failure. For GFEP see next page for specifics.

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

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

CONTROL SYSTEMS

Controls

ITC1 & ITC2
Digital Heat Trace Controller
1 & 2 Circuit
(cont'd.)

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)

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 and Class I, Division 2, Groups A,B,C,D Hazardous Locations. (UL File: E347725) CE

Controls

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1 & 2 Circuit *(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*
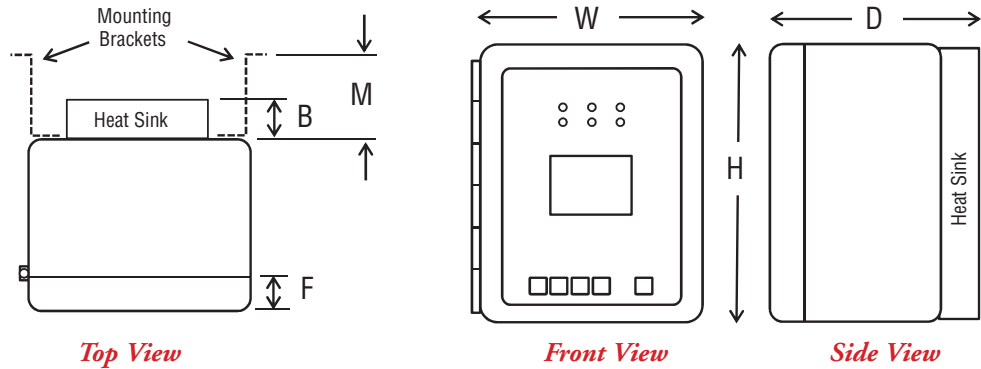
Ordering Information

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

Model Product Description

ITC The Chromalox ITC series IntelliTRACE Controller will control 1 or 2 circuits and is designed for industrial Heat Trace Line and/or Ambient Sensing applications in Non-Hazardous or Hazardous (Class I, Division 2) areas. The ITC 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 ITC 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 gage Stainless Steel wall mounting brackets are included. UL/cUL & CE Optional features include: NEMA 4X 316 SS Enclosure, ModBus TCP/Ethernet, Webserver/Ethernet or BACnet 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/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	

| **ITC** | **2-** | **0** | **0** | **0** | **Typical Model Number** |

Note: The ITC comes complete with one set of 16 gauge stainless steel wall mounting brackets.

Model	Description	PCN	Model	Description	PCN
ITC1-000	ITC 1 Loop, FG ENC, RS485	316101	ITC1-010	ITC 1 LOOP, SS ENC, RS485	316494
ITC2-000	ITC 2 Loop, FG ENC, RS485	316110	ITC2-010	ITC 2 LOOP, SS ENC, RS485	316507
ITC1-100	ITC 1 Loop, FG ENC, Ethernet	316128	ITC1-110	ITC 1 LOOP, SS ENC, Ethernet	316929
ITC2-100	ITC 2 LOOP, FG ENC, Ethernet	316136	ITC2-110	ITC 2 LOOP, SS ENC, Ethernet	316937

CONTROL SYSTEMS

CHROMALOX

H-137