PLASTIC PROCESS EQUIPMENT, INC.



KTC15
Temperature Controller
Operation Manual

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Warranty

This product is guaranteed to be free from defects in materials and workmanship for a period of two years from the date of delivery. If the unit should malfunction, it must be returned to the factory for evaluation. Upon examination, if the unit is found to be defective, at our option, it will be repaired or replaced at no cost to the customer.

Warranty does not cover: contact points, fuses, or triacs.

Warranty is null and void when: Signs of abuse or tampering are found, incorrect fuse type is used, application of High Voltage rated over the system's required specifications, or application of High Voltage to thermocouple inputs.

PPE accepts no responsibility or liablity for the APPLICATION by the customer of temperature controllers. This liability is assumed by the customer. Upon inspection, if the returned product does not meet our warranty requirements, customer may be subject to a reasonable service charge. There are no warranties, expressed or implied, for temperature controllers except as stated herein. In no event shall PPE be liable for consequential, incidental, or special damages beyond our control. The buyer's sole remedy for any breach of this agreement shall not exceed the purchase price paid by the buyer to PPE.

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Controller Layout

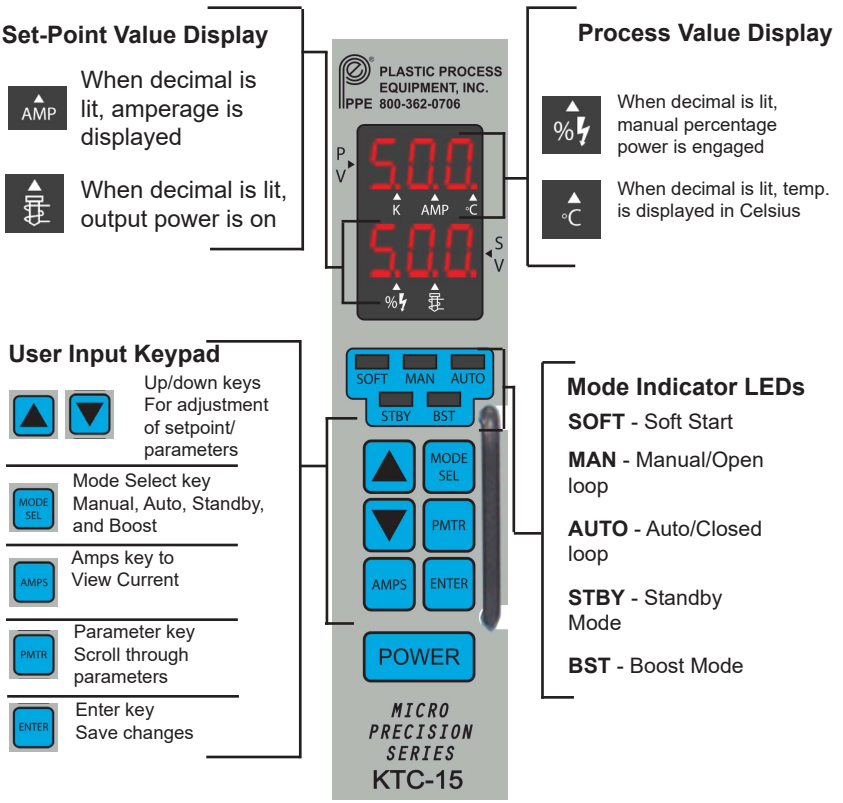


Figure 1

Basic Operation Procedures

The KTC15 temperature controller is ready to run from factory settings.

Basic Operation:

Turn power on by pressing the *POWER* button.

SOFT START mode: The controller will start in SOFT START mode if the process value is below 212° F or 100° C. After the SOFT START duration time (parameter P19), the controller will go into AUTO mode (factory default).

Note*: MODE changes cannot be made during SOFT START mode unless the lock is disabled in parameter (P22).

SETPOINT CHANGE: To change the setpoint value, use the *UP* and *DOWN* keys to select the desired temperature then press *ENTER*. The minimum and maximum values for temperature and setpoint are 32° - 999° Fahrenheit (5° - 650° Celsius).

Mode:
There are 4 running modes available: manual (open loop), automatic (closed loop), standby (idle), and boost. A solid lit LED indicates the mode the controller is in.

To change mode:
Press the *MODE SELECT* key until the blinking LED is over the desired mode, then press the *ENTER* key. A solid lit LED will indicate the current running mode.

Note*: To exit the mode function with no changes, press the *MODE SELECT* then the *UP* or *DOWN* key.

ENTER must be pressed after any adjustment (such as setpoint, parameter, or mode) is made to store new information.

Standby and Boost:
The controller has two configurations for standby and boost modes: auto or manual.

Standby:
AUTO-STANDBY - controller goes to the preset standby set-point temperature set in parameter (P16)

MANUAL-STANDBY - controller goes to the preset % power set in parameter (P17).

The controller will remain in STANDBY mode until it is manually changed to another mode, or by pressing *MODE SELECT* then *UP* or *DOWN*.

Boost:
AUTO-BOOST - controller goes to the preset BOOST set-point temperature set in parameter (P13).

MANUAL-BOOST - controller goes to the preset % power set in parameter (P15).

Controller will remain in BOOST mode until preset time has elapsed, set in parameter (P12 & P14).

Parameter Changes:
1. Press the *PMTR* key until the desired parameter is reached. (List of parameters is available on page 8).

2. Press the *UP* or *DOWN* key to change the options for the selected parameter.

3. When complete, press the *ENTER* key to store to memory. (Changes can be made to all parameters before pressing *ENTER*).

To exit at any time, press the *ENTER* key.

Error Reset:
Upon detection of TOH, TSH, or HIA, the controller must be powered off, then on, to clear the error once the issue has been corrected. Refer to Pg. 8 for error codes.

Parameters

#	Parameters	Defaults
P01	Keypad Lock - (ON or OFF)	OFF
P02	Auto Power On - (ON or OFF)	ON
P03	Control Type - Power Control Type (BST, TP, HLF, PHS)	TP
P04	Over Current Limit - (1 - 21) Amps	16
P05	Celsius or Fahrenheit (°C or °F)	F
P06	Thermocouple Type - (J or K)	J
P07	Over-temp. Alarm Limit - (8° - 30° Fahrenheit), (6° - 17° Celsius)	30
P08	Under-temp. Alarm Limit - (5° - 30° Fahrenheit), (5° - 17° Celsius)	30
P09	T/C Pinched - (1 - 250) seconds or (000 = disabled)	60
P10	Open TRIAC, Heater Check Enabled (ON or OFF)	ON
P11	APO Enable - (APO or OFF)	APO
P12	Auto Boost Time Setting - (5 - 999) seconds	30
P13	Boost Temperature - (5° - 250° Fahrenheit), (5° - 120° Celsius)	75
P14	Manual Boost Time Setting - (5 - 999) seconds	30
P15	Manual Boost Power - (5 - 100%)	25%
P16	Standby Temperature - (50° - 350° Fahrenheit), (50° - 175° Celsius)	250
P17	Manual Standby Power - (5 - 100%)	10%
P18	PID Type - (BB or STP)	STP
P19	Soft Start Time - (0 - 20) minutes	5
P20	Soft Start Temperature - (212° - 350° Fahrenheit, (100° - 177° Celsius)	212
P21	Soft Start Control Type - (BST,TP, HLF, PHS)	PHS
P22	Soft Start Lock - (ON or OFF)	ON
P23	Audible Alarm - (ON or OFF)	ON

Parameter Description

P01) Keypad Lock - **ON:** Disables all keys, except for the *PMTR* key, to prevent unwanted changes. **OFF:** All keys enabled.

P02) Auto Power On - After a power outage, controller will automatically power up upon the return of power if enabled.

P03) Control Type - Power output type (BST, TP, HLF, PHS)

- BT – burst cycle mode
- TP – time proportional mode
- HLF – half cycle phase mode
- PHS – phase fire mode

Parameter Description (c)

P04) Over Current Limit Detection - Maxiumum amperage controller will allow for load (Over Current Condition (HIA)). Recommended for user to adjust to heater current +10% for better protection.

P05) Select degrees Celsius (°C) or Fahrenheit (°F).

P06) T/C Type - Select thermocouple types J or K.

P07) Over-temp. Alarm Limit - Alarm when process temp. is over setpoint value as set in parameter.

P08) Under-temp. Alarm Limit - Alarm when process temp. is under setpoint value as set in parameter.

P09) T/C Pinched - Time, in seconds, that the controller will take to detect a pinched or shorted thermocouple. (There is current, no rise in temperature)

P10) Open TRIAC/Heater - Controller detection for open TRIAC, open heater, or open wire. (No current and no rise in temperature)

P11) APO Enable - In the event of a T/C break and the controller is at set point, the controller uses the last average output power (APO) to maintain temperature. (Automatic Bumpless Transfer). T/C must be repaired as soon as possible.

P12) Auto Boost Time setting - Time (in seconds) desired for boost mode (while in automatic/closed loop mode).

P13) Auto Mode Boost Temp. - Boost temperature over setpoint. (Boost temp. + setpoint)

P14) Man Boost Time setting - Time (in seconds) desired for boost mode (while in manual/open loop mode).

P15) Manual Mode Boost Power - Manual percentage power output during boost mode for a set time (P14).

P16) Auto Mode Standby temp. - Standby/idle setpoint value.

P17) Manual Mode Standby Power - Manual percentage power output during standby mode.

P18) PID Algorithm - Bang Bang or Step Response.

P19) Soft-Start Time - Time duration, in minutes, that the controller is in Soft-Start. (Bake Out)

P20) Soft-Start Temperature - Temperature the controller uses in Soft-Start. (Bake Out)

P21) Soft-Start Control Type - Power output type the controller uses in Soft-Start. (Bake Out)

P22) Soft-Start Lock - Prevents users from changing mode while in soft-start.

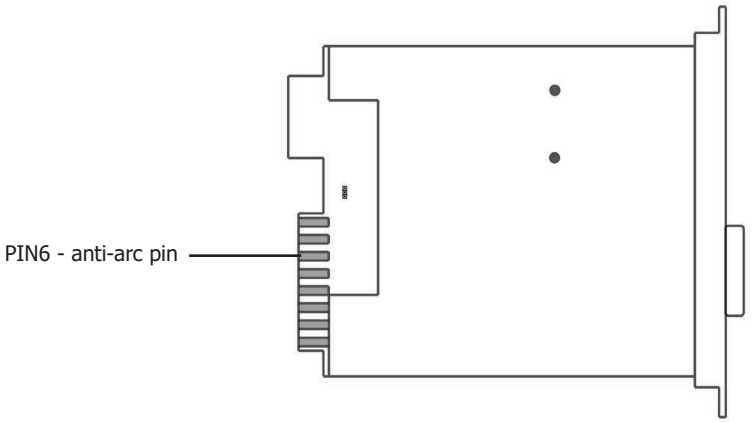
P23) Audible Alarm Enable/Disable - controller audible alarm.

Display Codes

Display Codes: Displayed on PRT (process temperature display)

Display Code	Description	Explaination
Hi	High Temperature	Process temp. over setpoint value.
Lo	Low Temperature	Process temp. under setpoint value.
OTC	Open Thermocouple	Thermocouple is open or break.
RTC	Reverse Thermo-couple	Thermocouple wire reversed.
PTC	Pinched Thermo-couple	Thermocouple has been shorted/ pinched.
TOH	Open TRIAC/Heater	TRIAC, heater is open.
TSH	TRIAC/Heater Shorted	TRIAC or heater shorted. (100% power output)
HIA	Over Current Detec-tion	Load has exceeded the amperage set in parameters.
APO	Average Power Output	Thermocouple is open and APO is currently running.

NOTE: Power off controller before removing or inserting into mainframe



Anti-Arcing Protection: Prevents damage to the contact points of the controller when removed from the mainframe while power is still on. If the controller is placed in a mainframe without anti-arcing protection pin in place, a TOH error may occur (NO POWER OUPUT). Pin may be purchased and blank inserted into the space in the connector to resolve the error.