PLASTIC PROCESS EQUIPMENT, INC.

BTC-15
Temperature Controller
Operation Manual

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Warranty

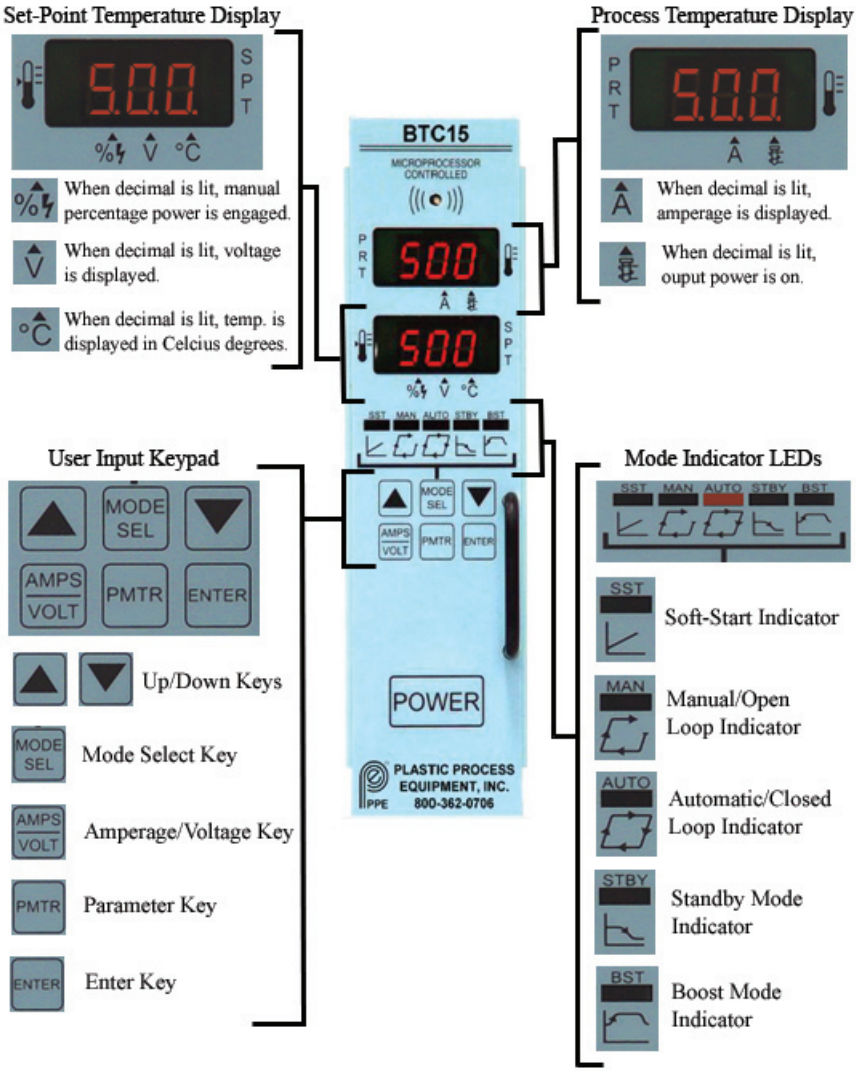
This product is guaranteed to be free from defects in materials and workmanship for a period of two years from the date of delivery. If the unit should malfunction, it must be returned to the factory for evaluation. Upon examination, if the unit is found to be defective, at our option, it will be repaired 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.

Controller Layout



Basic Operation Procedures

The BTC-15 temperature controller is ready to run from factory settings.

Basic Operation:

1. Turn power on by pressing the *POWER* button.

2. Controller will start in SOFT START mode if starting temperature is under 212° F or 100°C. To change the set-point, press the *UP* or *DOWN* keys to the desired temperature indicated in the SPT display. The controller will save changes automatically after 3 seconds.

Notes:
After the SOFT START duration time, the controller will automatically go into AUTO mode or the previous mode it was set at.

SOFT START time can be configured in parameter (P16).

Minimum and maximum values for temperature and set-point are 32° - 999° Fahrenheit or 5° - 650° Celsius.

Mode Change:

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

To change mode:

1. 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.

Standby and Boost:

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

Standby:
AUTO-STANDBY - controller reduces temperature to a preset standby set-point temperature. Configurable in parameter (P15).
MANUAL-STANDBY - controller reduces % output power to a preset % power. Configurable in parameter (P14).

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 set-point increases by a preset temperature. Configurable in parameter (P12).
Contoller will remain in BOOST mode until preset time in parameter (P11) has elapsed.
MANUAL-BOOST - controller raises the % power output to a preset % power. Configurable in parameter (P13).

Controller will remain in BOOST mode until preset time in parameter (P11) has elapsed.

Parameter Changes:

1. Press the *PMTR* key until the desired parameter is reached.

2. Press the *UP* or *DOWN* keys to cycle through options/ values for the selected parameters.

Make changes to all parameters as necessary.

3. When complete, press the *ENTER* key to store to memory.

To exit with no changes, press the *ENTER* key.

Parameters

#	Parameters	Defaults
P01	Auto Power On - (YES or NO)	YES
P02	Control Type - Fuzzy Logic Control Phase or Burst mode (PH or BT)	PH
P03	Load Current - (1 - 21) Amps	16
P04	Temperature Format - Celsius or Fahrenheit (°C or °F)	F
P05	Thermocouple Type - Type J or Type K (J or K)	J
P06	Over-temperature Alarm - (8° - 30° Fahrenheit), (6° - 17° Celsius)	30
P07	Under-temperature Alarm - (5° - 30° Fahrenheit), (5° - 17° Celsius)	30
P08	Thermocouple Pinched - (1 - 250) seconds or (000 = disabled)	60
P09	Open TRIAC or Heater - (1 - 240) seconds or (000 = disabled)	60
P10	APO Enable - (YES or NO)	YES
P11	Boost Time Setting - (5 - 999) seconds	30
P12	Boost Temperature - (5° - 250° Fahrenheit), (5° - 120° Celsius)	75
P13	Manual Boost Power - (5 - 100%)	25%
P14	Manual Standby Power - (5 - 100%)	10%
P15	Standby Temperature - (50° - 350° Fahrenheit), (50° - 175° Celsius)	250
P16	Soft Start Time - (0 - 20) minutes	5
P17	Soft Start Lock - (YES or NO)	YES
P18	Audible Alarm - (YES or NO)	YES
P19	Keypad Lock - (YES or NO)	NO
P20	Frequency (Hertz) DISPLAY ONLY	

Parameter Description

P01) Auto Power On - After a power outage, controller will automatically power up upon the return of power if enabled.

P02) Output type - Temperature control algorithm (PH or BT)
- PH – phase mode
- BT – burst mode

P03) Load Current - Maximum amperage the controller will output.

Parameter Description cont...

P04) Temp. Format - temp. display in degrees Celsius or Fahrenheit.

P05) T/C Type - Select thermocouple types J or K.

P06) Over-temp. alarm - Sounds alarm when over set point temperature by parameter set amount.

P07) Under-temp. alarm - Sounds alarm when under set point temperature by parameter set amount.

P08) T/C Pinched - The length of time, in seconds, that the controller will use to detect a pinched thermocouple.

P09) Open TRIAC/Heater - The length of time, in seconds, that the controller will use to detect an open TRIAC or an open heater.

P10) APO Enable - In the event of a broken T/C when the controller is at set point, the controller uses an averaged output to maintain temperature. T/C must be repaired as soon as possible. APO – average power output

P11) Boost Time setting - Amount of time desired for boost mode.

P12) Auto Mode Boost Temp. - Temp. desired over set point for boost (Set-point temp. + boost temp.).

P13) Manual Mode Boost Power - Desired percentage output during boost mode.

P14) Manual Mode Standby Power - Desired power output during standby mode.

P15) Auto Mode Standby temp. - When standby mode is selected, controller lowers temp. below set-point value to desired setting. Controller will stay in standby until mode is changed.

P16) Soft-Start Time - The length of time, in minutes, that the controller will go through during the Soft-Start sequence.

P17) Soft-Start Lock - This setting prevents users from changing the mode while the controller is in soft-start.

P18) Audible Alarm - Enables or disables the audible alarm.

P19) Keypad Lock - Disables all keys, except for the *PMTR* key, to prevent unwanted changes. Once enabled, it must be disabled before any changes can be made.

P20) Frequency - AC frequency (Display only).

Display Codes

Display Codes: Displayed on PRT (process temperature display)

Display Code	Description	Explanation
Hi	High Temperature	Temperature has exceeded set-point temperature by amount set in parameters.
Lo	Low Temperature	Temperature has dropped below set-point by amount set in parameters.
OTC	Open Thermocouple	Thermocouple line has opened or broken.
RTC	Reverse Thermocouple	Wire pair has been reversed.
PTC	Pinched Thermocouple	Shorted thermocouple, wire pair has been “pinched”.
TOH	Open TRIAC/Heater	TRIAC or heater is open.
TSH	TRIAC Shorted	TRIAC gate is shorted open.
HIA	Over Current Detection	Load has exceeded current set in parameters.
APO	Average Power Output	Thermocouple is open and APO is currently running.
P(XX)	Parameter (XX) Selected	Selected parameter that will be modified.

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.