



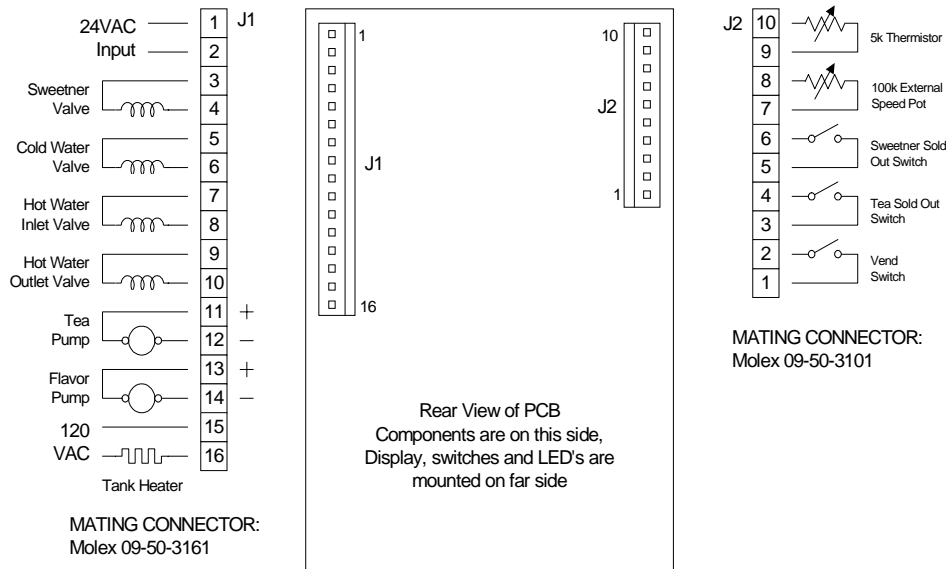
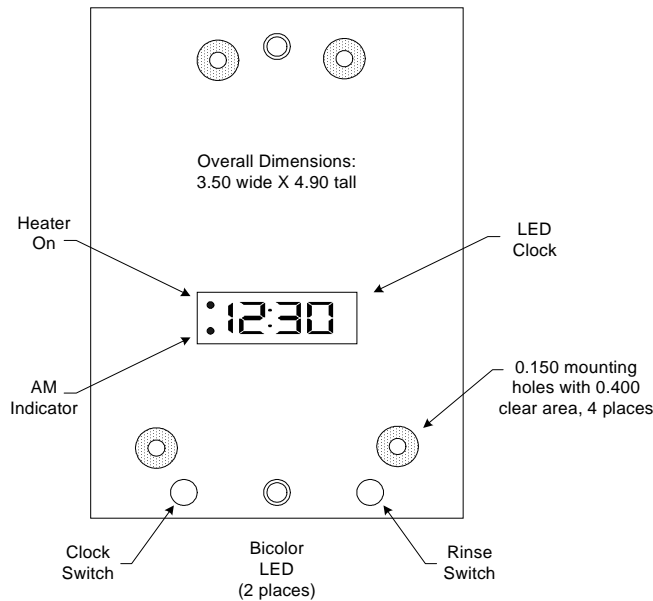
# Solid State Timers and Controllers

## EPC-13745

## Tea Dispensing Controller

The EPC-13745 is a microprocessor-based controller designed to perform all of the operations required to mix, brew, and dispense hot tea beverages. The device controls all valves, pumps, and heaters while sensing the hot water temperature, tea and sweetener availability. The hot water temperature control is performed with a two point comparator circuit providing on/off control with hysteresis. The time of day is set using the Clock switch and LED display, this time is used to perform automatic system rinses at 3:00 am to maintain internal cleanliness. A real time clock with lithium battery backup maintains the time.

### Mechanical & Wiring



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**Artisan Controls Corporation, 111 Canfield Ave., Bldg B15-18, Randolph, NJ, 07869, USA**



## Solid State Timers and Controllers

### Electrical Specifications .....

- Operating Voltage:** 24V AC,  $\pm 10\%$ , 50/60Hz.
- Valve Output Rating:** Four outputs capable of driving 10W DC solenoid valves with bridge rectified 24V AC power. Solid state 0.5A outputs with flyback diodes.
- Pump Output Rating:** Two outputs capable of driving 10W DC pump motors on a pulse width modulated basis. Solid state 0.5A outputs with flyback diodes. Flavor pump output percentage slaved to Tea pump. Tea pump output determined by 100k external strength adjustment potentiometer.
- Heater Output:** SPNO relay contacts rated at 3A resistive at 125VAC/30VDC. Mechanical life is  $1 \times 10^7$  operations, electrical life is  $5 \times 10^5$  operations at rated load.
- Temperature Sensor:** Thermistor rated for 5000 Ohm @ 25°C, provided by customer.
- Temperature Control:** Two point comparator circuit providing on/off control with hysteresis. Low sensing temperature 180°F, high temperature 185°F. Additional 160°F temperature sense point for rinse control.
- Temperature Accuracy:** Maximum measurement error of  $\pm 1^\circ\text{F}$  plus external sensor error.
- Real Time Clock:** Integrated circuit with lithium battery backup maintains clock time in excess of 1 year with power removed. Accuracy  $\pm 2$  minutes per month.
- Clock Display:** Four digit display with colon. Colon blinks to indicate clock operation, lower dot indicates am when illuminated. Upper dot indicates heater output is energized when illuminated.
- Switch Inputs:** Dry contact DC input circuits. External switch must switch low level current of 1mA at 5VDC.
- Status Indicators:** Bi-color (red/amber) LED's.
- Transient Protection:** Power input protected by silicon transient suppressor which responds to transients within  $1 \times 10^{-12}$  seconds to a peak pulse power dissipation of 1500 watts.
- Construction:** Open PC board construction with Molex connectors, mating parts shown on mechanical diagram. Dimensions in accordance with Tandem Technologies drawing LBJ0602036 Rev D.
- Operating Temperature:** 0°C to 55°C.
- Agency Reconitions:** UL/cUL pending, UL listed Class 2 transformer required for 24V power.
- Data Sheet Revision Date:** March 6, 2003

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### **Operation** .....

Dispensing - Upon pulling of the spigot handle which closes the vend switch input, all of the valve outputs are energized and the pump motors are pulsed in accordance with the setting on the 100k ohm external speed pot. Releasing the spigot handle turns all outputs off. If either the Sweetner Sold Out switch or the Tea Sold Out switch closes during the vending cycle, the vend cycle is ended and must be re-started after remedying the sold out item.

Tea Sold Out - Pulling the spigot handle will run the tea motor at a high speed until the Tea Sold switch opens again, then the motor will run an additional 17 seconds to assure proper pump prime. Closure of the switch resets the 17 second time. The bi-color LED displays solid yellow during this sequence.

Sweetner Sold Out - The Sweetner Sold Out switch must re-open for two seconds to satisfy the sold out condition. The bi-color LED displays flashing yellow during this sequence.

Setting the Clock - Pressing the integral Clock switch will cause the displayed time to advance by one minute. Holding the switch down will cause the time to continue to advance, the rate of time advance increases the longer the switch is continuously pressed.

Heating - The units automatically drives the heater output in accordance with the detected temperatures. If the temperature is below 180°F the heater is on. As the temperature rises above 180°F the heater is maintained until the upper threshold of 185°F is reached, at which time the heater output is turned off. The measured temperature drops until it reaches the lower threshold of 180°F and the heater output is again turned on. The upper left dot on the clock displays the state of the heater output, the dot is illuminated when the output is engaged.

Rinse - The system has a built-in rinse sequence designed to maintain appropriate sterility in the mixing chamber. Pressing the integral Rinse switch starts this sequence which provides 4 seconds of cold water, 40 seconds of hot water, and a soak time of 120 seconds. The spigot handle must be pulled for any water to flow. If the handle is returned to the off position the water stops but the flow time is maintained so that when the handle is pulled again the cycle continues from where it was stopped. The unit automatically requires a rinse after 3am each day, this requirement is held in the battery-backed memory of the real time clock to prevent avoidance of the rinse requirement. If a rinse is required no dispensing can occur. The bi-color LED's display a red color during this sequence. If a rinse is started and the 160°F temperature requirement is not met, the bi-color LED's toggle between red and yellow until the temperature exceed 180°F. The rinse cycle then can be re-started.

Purge - After 3 hours of no dispense activity the unit automatically enters the purge cycle, which provides four 3 second hot water dispenses with 10 seconds in between each.

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