



Temperature Control | Process Cooling | Material Handling | Size Reduction

BESTOBELL AQUATRONIX

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1.800.668.3979 | www.bestobell.com

ROYAL™ SERIES

Temperature Control Unit



Reliable

Accurate

Exceptional

The standard in temperature control

functionality and design with standard operating ranges from 32°F to 250°F and pump offerings of ¾ to 7½ HP on compact models and ¾ to 10 HP on upright models.

Royal™ Series TCU

Superior and Reliable Temperature Control

Royal™ Series TCUs feature simplified internal cast or non-ferrous fluid circuit with 40% fewer connections and 80% fewer mechanical parts. Highly efficient Royal™ Series pumps provide higher flow rates at lower pressure.



High Temperature Operation

The standard 250 °F operation, with 16 psig pressure, can be increased to 300 °F operation with 55 psig water pressure.



Stainless Steel Construction

Wash-down duty enclosure designed for the stringent needs of food and beverage applications.



Alarm Package

Integrate unit specific audible/visual indicators into the TCU.



Remote Controller

Install a remote control enclosure to maximize operator awareness and control.



Auto Purge

Employ an automatic system purge to force water from the process system.



Multi-Zone Capable

Utilize multiple TCU units in a single system with factory-installed common water and electrical connections.

Superior temperature control with the Royal™ Series Temperature Control Units.

Success and profitability is often measured in degrees. As such, highly accurate and reliable temperature control can have a significant impact on a process and a business as whole.

The Royal™ Series Temperature Control Units (TCUs) offer industry leading temperature control in a rugged and efficient package. Every model is designed with dual stage immersion heaters that maximize energy usage while maintaining temperature setpoints.

As a leading supplier of temperature control products, the Royal™ Series is a culmination of decades of application and product knowledge. The 2010 Series compact products offer up to 7.5 HP pumps while the 2012 Series upright products extend the capability to 10 HP. These high-efficiency pumps offer higher flow rates at lower pressure, dramatically enhancing water flow for superior temperature control.

With heaters up to 48 kW and a variety of product options, the Royal™ Series is a versatile solution designed to meet the needs of today's agile manufacturing environments.

- 1. Reliable:** As a leader in temperature control, industry has come to depend on Royal™ Series TCUs.
- 2. Accurate:** Royal™ Series units maintain system temperature targets with a 1°F variance from set point.
- 3. Exceptional:** Industry-leading features and advanced controls enable maximum efficiency and enhanced capabilities.



Tech Tip: For maximum unit life and efficiency, setup a regular maintenance program to service the unit.



Royal™ Series Compact Temperature Control Unit (TCU)

Applications

The Royal™ Series TCUs can be utilized in any application that requires accurate temperature control. Typical applications include, but are not limited to, the following:

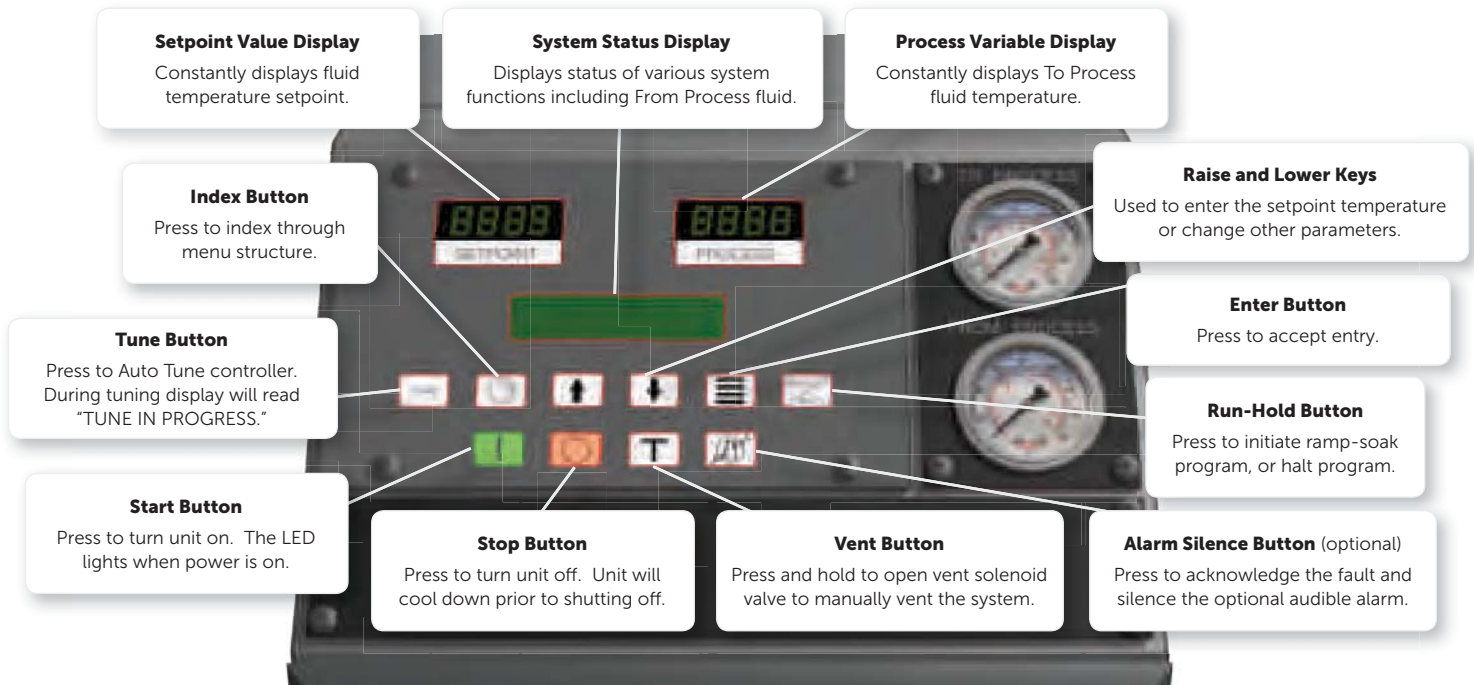
- Injection molding
- Blow molding
- Extrusion
- Thermoforming
- Food & Beverage
- Pharmaceutical
- Packaging
- Medical

M2B+ Controller: Functionality & Simplicity.

Decades of product application and field experience culminate in the intuitive design of the M2B+ Controller offered on every Royal™ Series Temperature Control Unit.

The built-in controls for the Royal™ Series are easy to use, easy to understand, and designed with the operator in mind. From the straight-forward ability to adjust the setpoint to the automatic tuning capability, the M2B+ has set the standard in the industry.

The control display features superior monitoring of a wide range of system parameters, including motor rotation/phase loss, welded contactors, and unit pressures. System status is displayed on the on-board LCD to maximize unit adaptability.



The Robust Control Features:

- PID Control for both heating and cooling.
- Cascade control with optional remote input sensor.
- Setpoint, To Process, From Process, and DT displays.
- Multiple levels of password protected access for operators, supervisors, and technicians.
- Selectable sensor types (Type K, J, & T thermocouples; 100 ohm and 1000 ohm RTDs).
- Autovent sequence at start-up to remove air from the installation (adjustable timer from 1 to 10 minutes).
- Sixteen segment Ramp/Soak program.
- Start, stop, vent, and alarm silence switches.
- Auto shut down feature cools the unit in stages prior to shutting down.
- Sensor inputs for pressure switch, pump rotation/phase loss, safety thermostat, weld contact, and high and low water level for pump tank applications.
- Switch input for second setpoint and remote start.
- Crash cool functionality to rapidly cool the process fluid.
- Alarm outputs for temperature, low or high flow (with optional flow meter), open temperature sensor, low water pressure, pump failure, over temperature, contactor weld, high and low water level (for pump tank units).
- Analog setpoint temperature input (current or voltage).
- Resettable run elapse time meter.

Options to meet the operational requirements of your facility.

Compact Configuration

Compact units are designed for a broad range of applications with operating temperature ranges from 32 °F to 250 °F, with a minimum of 16 psig water supply pressure. Heaters for the compact units are available in 9, 12, 18, or 24 kW. For processes requiring the separation of cooling fluid from process fluid, an optional heat exchanger is available in models with the 9 or 12 kW heaters. These designs maximize the available space to limit the floor space required for installation.

Upright Configuration

The upright design of the Royal™ Series takes advantage of the vertical space to employ additional sizes and options based on facility needs. Available heaters include the 9, 12, 18, 24, 36, and 48 kW models. As with the compact design, heat exchangers are available for models utilizing heaters up to 24 kW. While the required floor space remains the same as the compact model, the upright is approximately 20 inches taller, allowing for greater option flexibility.



Royal™ Series Upright

Royal™ Series Compact

High Temperature Operation

Standard Royal™ Series units operate from 32 °F to 250 °F. Units can be provided for operation up to 300 °F and include silicon carbide seals. Applications for this option require a minimum of 55 psig water supply pressure.

Stainless Steel Construction

Royal™ Series units are available in stainless steel NEMA 4/4X construction for wash-down applications typically found in the food and beverage markets.

Alarm Package

An optional top-mounted alarm system provides both audible and visual indication in the event that the Royal™ Series model requires operator attention. Alarms can be configured for pressure, phase rotation, phase loss, heater temperature, welded contacts, and/or flow with optional flow meter.

Remote Controller

At times, access directly to the Royal™ Series Temperature Control Unit is not possible. To ensure full control and system awareness, a Remote Control option is available. The M2B+ controller is integrated into a separate enclosure to be mounted in a more convenient location while a local start/stop switch is installed directly on the Temperature Control Unit.

Auto System Water Purge

Integrated directly into the Royal™ Series Temperature Control Unit is an optional automatic system water purge. Pressurized air is forced into the system to remove any remaining water.

Multi-Zone Capable

Royal™ Series Temperature Control Units can be paralleled together into a single system with factory-installed common water piping and common electrical wiring. Side-by-side configurations are available for up to three zones, while stack rack options are available for up to eight zones.

Rugged Reliability.

The Royal™ Series Temperature Control Units have been designed for a long life cycle. As such, the ease of maintenance is crucial for continuing operation.



Fewer Connections

Mechanical components within the design have been reduced by 80%, further ensuring extended life cycles. Connections within the fluid circuit have been reduced by 40% to limit the number of potential leak points and restrict the number of locations that must be inspected during the regular maintenance cycle.



Easy Electrical Access

The electrical components are easily accessible on the front side of the unit for regular inspection and upkeep.



Quick-Release Panels

To assist with the regular inspection cycle, the Royal™ Series integrates an innovative two-fastener quick release panel for effortless internal access.



Tech Tip:

Auto tuning a unit for an application requires a 20° F variance between the setpoint and process readings.

Units will sequence through two heating and one cooling cycles and automatically input the appropriate PID parameters.

Royal™ Series Temperature Control Units are integrated into nearly every production environment with ease.



Specifications

Royal™ Series Compact TCU (9 kW Heater)

Model	Pump HP (kW)	Flow GPM (LPM)	Pressure PSIG (kPa)	Loss PSIG (kPa)	FLA*	Dimensions in Inches (CM)			Shipping Wt. Lbs (Kg)
					@460V	Height	Width	Depth	
2010	0.75 (.56)	30 (113.6)	25 (172.4)	0.0 (0.0)	12.7	28.8 (73.0)	13.0 (33.0)	28.0 (71.1)	210 (96)
2010	1.0 (0.75)	35 (132.5)	30 (206.9)	1.0 (6.9)	13.1	28.8 (73.0)	13.0 (33.0)	28.0 (71.1)	210 (96)
2010	2.0 (1.5)	50 (189.3)	30 (206.9)	1.5 (10.3)	14.7	28.8 (73.0)	13.0 (33.0)	28.0 (71.1)	210 (96)
2010	3.0 (2.24)	60 (227.1)	40 (275.8)	2.0 (13.8)	16.1	28.8 (73.0)	13.0 (33.0)	28.0 (71.1)	210 (96)
2010	5.0 (3.73)	75 (283.9)	54 (372.3)	2.5 (17.2)	18.9	28.8 (73.0)	13.0 (33.0)	28.0 (71.1)	240 (109)
2010	7.5 (5.6)	90 (340.7)	63 (434.4)	3.0 (20.7)	22.3	28.8 (73.0)	13.0 (33.0)	28.0 (71.1)	240 (109)

* Full Load Amps (FLA) assumes a 9 kW heater and a 460/3/60 VAC supply. Consult factory for larger heaters and different voltages.

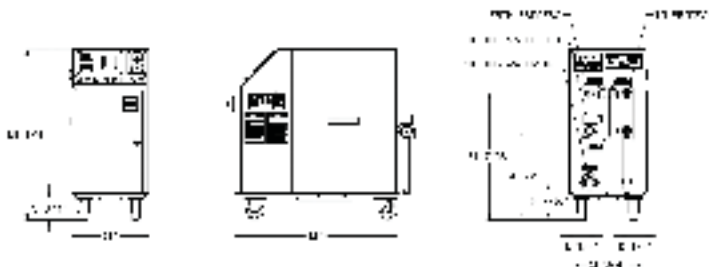
* Shipping weight does not include packaging materials, such as pallets, cardboard, etc.

Royal™ Series Upright TCU (9 kW Heater)

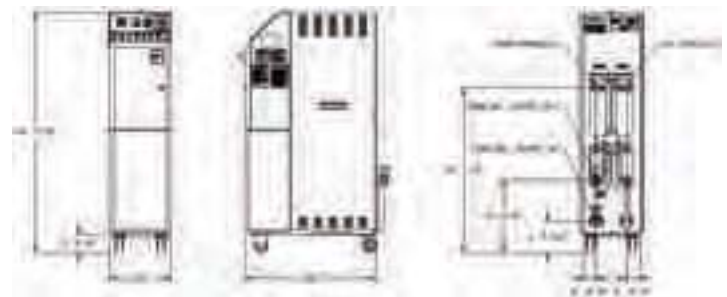
Model	Pump HP (kW)	Flow GPM (LPM)	Pressure PSIG (kPa)	Loss PSIG (kPa)	FLA*	Dimensions in Inches (CM)			Shipping Wt. Lbs (Kg)
					@460V	Height	Width	Depth	
2012	0.75 (0.56)	30 (113.6)	25 (172.4)	0.0 (0.0)	12.7	48.0 (122.0)	13.0 (33.0)	28.0 (71.1)	210 (96)
2012	1.0 (0.75)	35 (132.5)	30 (206.9)	1.0 (6.9)	13.1	48.0 (122.0)	13.0 (33.0)	28.0 (71.1)	210 (96)
2012	2.0 (1.5)	50 (189.3)	30 (206.9)	1.5 (10.3)	14.7	48.0 (122.0)	13.0 (33.0)	28.0 (71.1)	210 (96)
2012	3.0 (2.24)	60 (227.1)	40 (241.3)	2.0 (13.8)	16.1	48.0 (122.0)	13.0 (33.0)	28.0 (71.1)	210 (96)
2012	5.0 (3.73)	75 (283.9)	54 (344.8)	2.5 (17.2)	18.9	48.0 (122.0)	13.0 (33.0)	28.0 (71.1)	240 (109)
2012	7.5 (5.6)	90 (340.7)	63 (344.8)	3.0 (20.7)	22.3	48.0 (122.0)	13.0 (33.0)	28.0 (71.1)	240 (109)
2012	10 (7.46)	100 (378.5)	65 (379.2)	5.0 (34.5)	26.0	48.0 (122.0)	13.0 (33.0)	28.0 (71.1)	270 (123)

* Full Load Amps (FLA) assumes a 9 kW heater and a 460/3/60 VAC supply. Consult factory for larger heaters and different voltages.

* Shipping weight does not include packaging materials, such as pallets, cardboard, etc.



Royal™ Series Compact



Royal™ Series Upright

Get More From Your Production Floor.

Sterling supports your manufacturing needs across multiple industries with a full line of auxiliary equipment to help you drive efficiency and performance in your operation. Our technical support team is ready to evaluate your operation and ensure the right solution for all of your equipment needs.

