

Symbio® Chiller Control Comparison



Trane UCP2™ control panels were offered on water-cooled CenTraVac™ chillers built from mid 1993 through 2001. These panels have many of the control features of the new panels. However, they have limited communications and service interface capabilities. For improved user communications, logging and servicing capabilities, Trane Service recommends that these panels be replaced with new Trane Symbio control panels.

Features	UCP2 Control Panel	Symbio® Controller	Symbio® Benefits
Base Technology	Separate control modules for unit display, starter, and temperature control functions. Display has 2 line, 40 character alphanumeric display.	Networked digital sensors and display, controlled by Symbio digital controller and AdaptiView color graphic display.	Provides unit control flexibility and monitoring not possible with early generation digital controls.
Primary Repair Components	Most failures require replacement of complete control module. These modules were designed in 1990 and have not been used on new Trane chillers for 8 years.	Modular digital component design that minimizes cost of individual service parts and all components are used in Trane present production equipment.	Repair components are in stock and affordable.
Remote Monitoring	No remote monitoring capability.	Enables remote connectivity to monitor, analyze and maximize your building's performance.	Symbio 800 unit controllers integrate seamlessly and securely with Tracer or non-Trane building automation systems for simplified equipment monitoring and management.
Trane Communications Capability	Com 3 Trane digital communication. Not compatible with current Trane building automation systems.	Compatible with current Tracer building automation system.	Communicates with Tracer systems which allows advanced energy saving strategies such as Tracer chiller plant optimization.
Facility Communications Capability	Requires Tracer Summit for digital LonTalk, BACnet, and Modbus communications capability with facility communications systems.	There are a variety of chiller communication options depending on the application requirements. Native LonTalk, BACnet, Modbus, and Air-Fi communications capability.	Communicates with leading commercial and industrial building management systems. No intermediate panel needed.
Temperature Control Strategy	Proportional Derivative and Integral control. No feedforward element.	Feedforward Adaptive Control - Feedforward is an open-loop, PID - predictive control strategy designed to anticipate and compensate for load changes. It uses evaporator entering-water temperature as an indication of load change.	Responds faster and maintains stable leaving-water temperatures. It also eliminates the inherent proportional error seen with deadband controls.
System Control Strategy	Limited support of variable pumping control strategies.	Variable Primary Control - The Symbio 800 chiller controller uses a patented, variable, water-flow compensation algorithm to maintain stable, precise capacity control. Variable-flow compensation is a new, optional, control feature that includes water differential-pressure-sensor transducers. Variable-flow compensation improves the ability of the chiller to accommodate variable flow, even in combination with an Adaptive Frequency™ Drive (AFD).	Varying the water flow reduces the energy consumed by pumps, which can be a significant source of energy savings, depending on the application.
Chiller Protective Control Strategy	Same adaptive protection strategies as AdaptiView.	Adaptive protection strategies - The Symbio controller monitors chiller refrigerant temperatures, refrigerant pressures and electrical phase imbalances and adjusts chiller operation when conditions approach alarm limits. An example of such a condition is when there is a partial failure of a cooling tower, limiting total capacity.	Maximizes the ability to keep the chiller running under adverse phase imbalance and refrigerant conditions.

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Motor/Power Protective Control Strategy	UCP2 has same advanced starter protections as AdaptiView.	Advanced motor/power protection - Digital control protection from current overload, phase imbalance, phase loss, momentary power loss, and over and under voltage variations. It also has a self diagnosing starter "dry run" feature.	Digital controls are more accurate and faster than analog overload controls. Also, Symbio provides voltage imbalance and dry run protections that address important causes of chiller failures.
AFD Control Capabilities	Existing Trane UCP2 chiller controllers are compatible with Trane AFD, but many require upgraded modules in order to work.	Symbio provides the most advanced generation of control for Trane AFD chillers. An AFD upgrade will typically improve chiller efficiency 15 to 25%.	When UCP2 controlled chillers are being upgraded with a Trane AFD, a Symbio controls upgrade should be considered as an alternative to a UCP2 control module upgrade.
Unit Startup Strategy	UCP2 uses same soft start method as AdaptiView.	The chiller controller uses soft loading except during manual operation. Large adjustments due to load or setpoint changes are made gradually.	Soft start adjusts the start rate to conditions and does not extend pull down unnecessarily. Soft start prevents overshoot and protects the compressor from cycling unnecessarily. Also it prevents demand peaks that can occur during morning startups without false starts.
Power Failure Recovery Strategy	UCP2 has an adaptive restart function, will restart within 3 minutes if conditions are satisfied.	Fast Restart - The controller allows the CenTraVac chiller to restart during the postlube process. If the chiller shuts down on a nonlatching diagnostic, the diagnostic has 30-60 seconds to clear itself and initiate a fast restart. This includes momentary power losses.	Typically restarts 30-60 seconds after a power failure.
Performance Monitoring Capability	UCP2 monitors the same performance parameters as AdaptiView.	Capable of measuring entering and leaving water, oil temperature, tons, power consumption, power factor (uncorrected), compressor phase amps, and compressor phase voltage.	Allows users to monitor and diagnose chiller operation trends.
Logging and Reporting	Text based messages only, no graphical logs or reports.	Recorded data logs include ASHRAE 3 report, Custom report, Graphical custom historical data log, purge report, and 50 alarm log.	Allows users to monitor and diagnose chiller operation trends.
Setpoint Saving and Backup	Manually edited and recorded parameters. No service tool or software backup.	All unit configurations and setpoints are recorded digitally allowing complete backup and restoring of unit operating parameters.	Speeds replacement and assures accuracy in case the panel requires repair.



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