

Engineered for Raypak® Boilers & Water Heaters

Electronic Temperature Controllers

**Versa IC
Platform**



The Hot Water Management Experts

Electronic Temperature Controllers

Engineered for Raypak® Boilers & Water Heaters

Leading-Edge Controllers

For over 60 years, Raypak's low-mass, high-recovery designs have set the standard for hot water space heating/supply boilers. To optimize performance and take full advantage of its boilers' many benefits, Raypak developed its own specialized controllers whenever standard commercial versions were not adequate. In the 1950s, Raypak led the way in load-tracking modulation, utilizing the ModuSnap controller with its Raytherm boilers. In the early 1980s, Raypak introduced the B6000, the first true electronic central boiler/BMS system for modulating boilers.

Today, Raypak's array of temperature controllers offers such state-of-the-art features as: sequence-control of up to 16 boilers; PID technology (see below); optimized approach to outdoor reset; Building Management System interfacing; modulation or stage-firing control; and other energy-saving functions. **Unlike off-the-shelf controllers, Raypak's four controller models have been specially designed to maximize the performance of our leading-edge boiler systems.**

The Right Boiler for the Right Application

Raytherm® series



Rugged, outdoor proven even in the toughest environments, offers exceptional value while being the simplest unit to commission and maintain. With its atmospheric-burner, horizontal water-tube design and standard Category I (B-vent) venting for indoor applications, installation is familiar and trouble free.

Hi Delta® series



Also with a horizontal water-tube design, the unit features 100% fan-assisted combustion in on-off or multi-stage configurations. With multiple venting options, Raypak has you covered. Full onboard diagnostics in real English. Low NOx compliant in all 50 states.

MVB® series



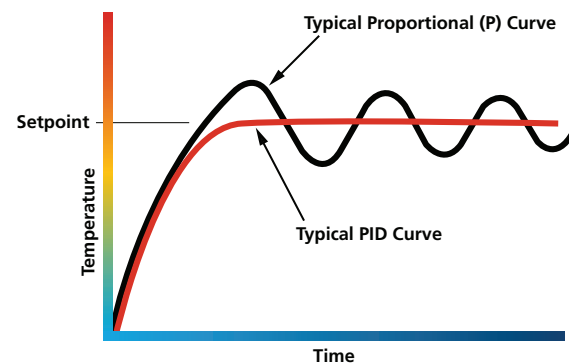
A vertical-tube boiler with a modulating (7:1), fan-assisted burner offers the smallest (5.4 square feet) installed footprint of its kind and efficiencies of 84% (Cat I) or 86.2% (Cat IV). Full onboard diagnostics in real English, storing up to 15 reported faults. Low NOx compliant in all 50 states. Minimum inlet temp 120°F. Fits through a 30" door. Built-in cascade control for up to 4 units.

XTherm® and XFyre® series



XTherm® vertical condensing boilers and XFyre® mod-con style boilers offer efficiencies up to 99% as well as Centrotherm Polypropylene or PVC venting options on most sizes. Indoor/outdoor construction. True modulation up to 12.5:1 XTherm and 5:1 XFyre. Low NOx compliant in all 50 states. Built-in cascade control for up to 4 units. Full onboard diagnostics in real English.

Using PID Technology to Maximize Performance and Efficiency



Raypak controllers feature state-of-the-art PID technology, an application of Proportional, Integral and Derivative functions in varying algorithms to optimize system performance. Other controllers on the market either do not utilize PID technology or use only the Proportional (P) function (the component that controls output in proportion to how far the monitored point is from the target temperature). Raypak's controller series also makes use of the Integral (I) function which factors in the time it takes to reach the target temperature and enhances the proportional response accordingly. Add to this the Derivative (D) function which monitors how quickly the monitored point is approaching or drifting away from the target temperature. With all three functions, a properly designed PID-based control achieves set point quickly and levels off at the target temperature with minimal over- or under-shooting. The result is maximum system efficiency and performance.

Controller Applications & Boiler Compatibility At-A-Glance:

Controller	Applications		Boilers/Water Heaters				
	Space Heating	Hot Water Supply	XFyre	MVB	Hi Delta	Raytherm	XTherm
VERSA IC	●	●	●	●	●	○	●
TempTracker	●	●			●	●	
TempTracker Mod	●	●				●	
TempTracker Mod+Hybrid	●	●	●	●	●	●	●

● = Available Q1, 2016 ○ = Phased in Q3, Q4 of 2016

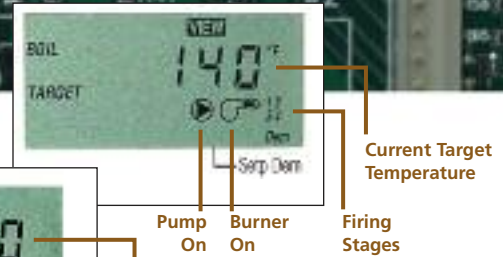
TempTracker | TempTracker Mod

Multi-Stage Controller | Modulating Boiler Controller

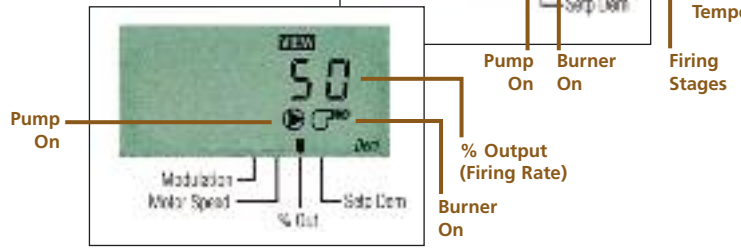
TempTracker stage-controllers are designed to sequence multiple boilers up to four total stages, whether it's one to four on/off boilers, two two-stage boilers, or one boiler with up to four stages. They are available factory-mounted or loose on Hi Delta boilers, and loose on Raytherm boilers.

TempTracker Mod is a single-boiler modulating control that is optional on Raytherm.

Both controls can be used for space heating and hot water supply with eight application-specific modes to meet various applications, including outdoor reset for heating systems. The controls monitor and display inlet and outlet temperatures on all applications as well as monitor outdoor temperature when an outdoor reset mode is selected.



At right: TempTracker, Target Temperature View



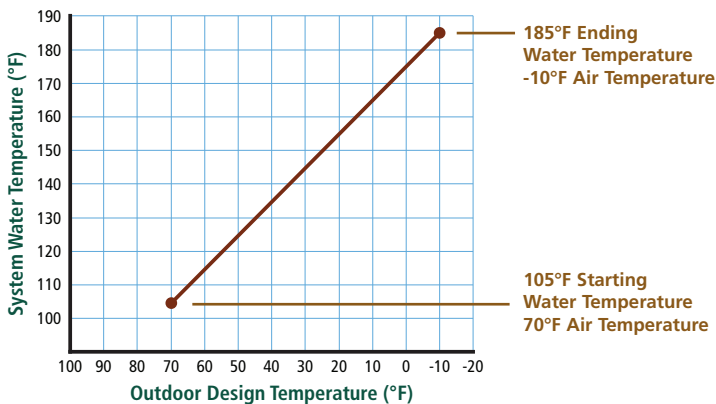
Above: TempTracker Mod, % Output View

Features

- TempTracker - 1-4 boilers/stages
TempTracker Mod - 1 Raytherm
- Selectable P or PID logic
- LCD display
- NEMA 1 enclosure
- Boiler inlet and outlet water sensors
- System water sensor
- Outdoor air sensor optional
- Alarm ready (pilot duty)
- CSA approved
- 24 VAC, 60 Hz, 3 VA supply power requirement
- Relay Ratings
Stage 1: 5A @ 120 VAC
Stages 2 to 4: 3A @ 120 VAC
- Limp-Along Feature- Ability to operate with as few as 1 of the 3 water sensors. Provides service indication when a sensor fails.
- BMS 0-10VDC setpoint control
- BMS 0-10VDC firing rate control

Fully-Adjustable Outdoor Reset Slope

Raypak's custom software allows for complete adjustment of the outdoor reset slope start and end points.



Programmable Functions

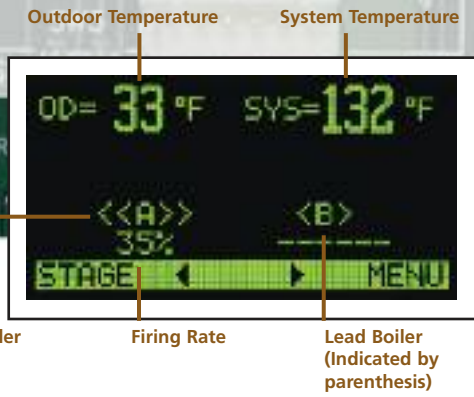
- 8 programming modes for TempTracker and TempTracker Mod
- Adjustable outdoor reset ratio
- Min. system water temperature (70°F)
- Max. system water temperature
 - Heating: 220°F
 - DHW: 190°F
- Temperature differential (2 to 42°F)
- Boiler target (70 to 220°F)
- Outdoor cutoff (35 to 85°F)
- Boiler mass (low, med, high)
- Stage-on delay (P mode) (10 sec. to 8 min.)
- System pump-off delay (0 to 20 min.) Stage Control only
- Temperature measurement (°F or °C)
- Boiler pump off delay (0 to 20 min.) Mod Control

Ordering Information (TempTracker)	
Option No.	Description
B-26	2-stage setpoint
B-27	2-stage outdoor reset
B-21	4-stage setpoint
B-23	4-stage outdoor reset
B-40	Raytherm Mod
B-41	Raytherm Mod outdoor reset

TempTracker Mod+ Hybrid

Multi-Boiler Modulating Controller

The TempTracker MOD+ Hybrid is available as a loose option and controls up to four MVB, XTherm, XFyre and Raytherm boilers for precise load tracking of space heating and hot water supply systems. Expand the control to 16 boilers by adding up to two six-boiler expansion modules. TempTracker Mod+ Hybrid monitors and displays supply water temperatures on all applications including outdoor temperature when outdoor reset mode is selected. As an added feature, this model offers PID logic as well as automatic or manually selectable lead-lag boiler operation. During boiler servicing or in the event of a controller problem, a manual override feature can be activated to bypass programmed operation.



At right: TempTracker Mod+ Hybrid, Standard View

Features

- 1-4 boilers, expandable to 16 with optional expansion modules
- Selectable P or PID logic
- LCD display
- NEMA 1 enclosure
- System water and outdoor air sensors
- 365-day time clock
- Auto/manual lead-lag and enable/disable functions
- Manual override
- DHW override
- Lockable enclosure
- UL and cUL approved
- 120 VAC, 60 Hz, 12 VA supply power requirement
- Relay ratings - 1A inductive; 6A @ 120 VAC 15A total for all circuits
- Remote Setpoint (4-20 mA)
- Raypak has highly customized the TempTracker Mod+Hybrid to maximize the overall system efficiency when used with our boilers and water heaters.
- Hybrid control function for multi-boiler installations using condensing and non-condensing boilers.

Programmable Functions

- Selectable modulating outputs (4-20 mA, or 0-10 VDC)
- Adjustable outdoor reset ratio (1:4 to 4:1)
- Min. system water temperature (70 to 180°F)
- Max. system water temperature (90 to 240°F)
- Automatic/manual lead-lag (1 to 1440 hrs.)
- Initial setpoint (70 to 240°F)
- Outdoor cutoff (20 to 100°F)
- Morning boost (30 min.)
- Night setback (0 to 75°F)
- DHW override (with or without priority)
- System sensor gain (-5 to +5°F)
- Outdoor sensor offset adjustment (-5 to +5°F)
- Boiler gain (-10 to +10°F)
- Boiler-on delay (0 to 60 min)
- System pump-off delay (0 to 360 min)
- Standby boiler delay (1 to 60 min)
- Temperature measurement (°F or °C)
- BACnet MSTP - on/off (9600, 19200, 38400 baud rate)



Hybrid system using 2-MVB's and 1-XTherm

Ordering Information	
Option No.	Description
B-36	4 boilers
B-37	10 boilers
B-38	16 boilers
B-39	Remote setpoint module
B-62	BACnet MSTP module

VERSA IC®

Integrated Control Platform

Raypak's VERSA IC combines modulating temperature control, safety limits, and ignition programming into one user-friendly Integrated Control Platform. It is CSA certified for each of these functions. The same control includes diagnostics to monitor boiler and system faults, provide local alarm, and transmit both to a BMS System via a built-in Modbus RTU port. Large (3.5") LCD Display, Freeze Protection, and 0-10 VDC Remote Set Point are just a few of the many VERSA IC standard features.

Easy front access, facilitates set-up and troubleshooting. All low-voltage wiring is plug-in. Flash memory for future upgrades.

Each VERSA IC has cascade capability for up to 4 boilers. Inlet and outlet sensors are factory-installed in each boiler. Remote sensors shipped loose. Controller monitors blower speed and can drive external motorized auxiliaries such as extractors and louvers. Relay for DHW Indirect and remote alarm are provided.

VERSA IC is now standard on all models of Raypak XFire, MVB and XTherm products.



Standard Features

- 3.5" LCD Display
- Touch Pad Interface
- CSA Certified for multiple functions
- Cascade up to 4 boilers/stages
- Modulating
- Selectable P or PID Logic
- Inlet Sensor
- Outlet Sensor
- Individual Boiler Delta-T Monitor
- Remote Set Point, 0 – 10 VDC
- Rotation Function
- Manual Override
- Full Diagnostics – 16 safety/ignition points
- Two-way BMS Communication
- Modbus Port included
- Relay Ratings, 5A @ 250 VAC
- CSA Certified
- DHW Indirect Sensor
- Burner Status Contact

Options

- Outdoor Reset Sensor
- Alarm Bell
- B85 BMS Protocol Converter - BACnet MS/TP, BACnet IP, N2 Metasys, or Modbus TCP
- B86 BMS Protocol Converter - LONworks

Programmable Functions

- Adjustable Outdoor Reset Ratio Parameters
- Min. System Water Temperature
- Max. System Water Temperature
- Control Band Differential (2 to 10°F)
- Setpoint (50 to 190°F)
- Outdoor Cutoff (35 to 85°F)
- Adjustable PID
- Boiler DHW and System Pump Post Purge (0 to 10 min.)
- Freeze Protection
- Cold Water Protection

VERSA IC[®]

Integrated Boiler Control

BMS

BACnet[®]
Metasys[®]
Modbus[®]
gateway module
(optional)



LONworks[®]
gateway module
(optional)



Raypak Leadership in Boiler Management

The modulating or stage-fire VERSA IC[®] fully integrates temperature control, ignition, safety, temperature safety and individual fault monitoring. Field upgradable. Raypak's unique Cold Water Protection control function is now built-in; simply add the appropriate 3-way valve or variable-speed pump. A Modbus communications port is standard for continuous monitoring, trending, and troubleshooting.

- Cascade up to 4 boilers
- Modbus RTU comm port standard
- All faults and interlocks monitored and reported in plain English
- Building Management System integration via optional gateways
 - BACnet MS/TP, BACnet IP, N2 Metasys or Modbus TCP
 - LONworks



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