Multi-Staging Solutions

Heat source staging controls designed to maximize efficiency & reliability

HVAC Systems | Multi-Staging | Alternative Energy | Zoning | Snow Melting | Setpoint

tekmar®

Better Control. Better Systems.

A Watts Water Technologies Company

Heat Source Staging with Maximum Efficiency & Reliability

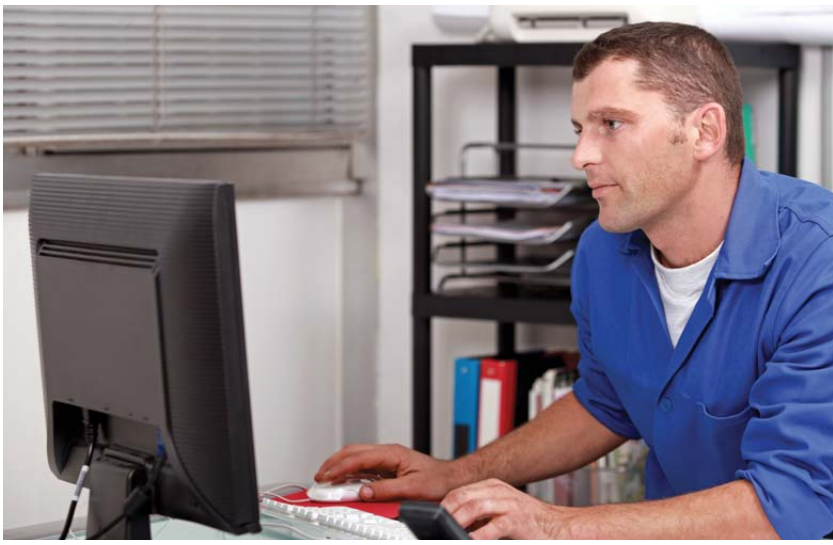
Multiple heat source plants offer many advantages over single boiler units, including redundancy, load matching and fuel cost savings.

Get the most out of multiple heat source plants with intelligent staging, rotation and temperature control. By matching heating demands to the required heat output, multi-staging controls improve comfort while reducing operating costs.

tekmar multi-staging controls ensure efficient, reliable operation by staging both condensing and non-condensing boilers to respect their ideal operating conditions. Performance is enhanced with added features such as equal run-time rotation and pump exercising. tekmar offers the better design, with the better control, for a better system.

Remote Monitoring Options Offer Worry-Free Operation

Monitoring the operation of your heating plant is an effective way to save money, time and frustration. When connected to a tN4 Gateway 483, tekmarNet® compatible boiler controls provide access to updated system information through any web browser. The Boiler Control 284 provides additional monitoring and adjustment capability to energy management systems through BACnet® IP or Modbus® protocols. Refer to the comparison chart on page 6 for model specific information.



Choose Your Level of Control

Choose from 3 different product lines to suit your application needs. Classic, Performance & Designer series products offer distinct features & benefits to perfectly match your existing system or design requirements.

Classic Series

Classic series controls are stand-alone units that operate either modulating or on/off boilers to provide a target temperature. Superior system operation is achieved with equal run-time rotation, pump exercising and DHW priority.

Performance Series

The Performance series builds on the features of the Classic series with the addition of tekmarNet® communication, primary pump sequencing and the ability to operate a mixed boiler plant. Performance series controls can operate as stand-alone units, or can be connected to communicating thermostats for indoor temperature feedback. For remote system access, connect to a tN4 Gateway 483.

Designer Series

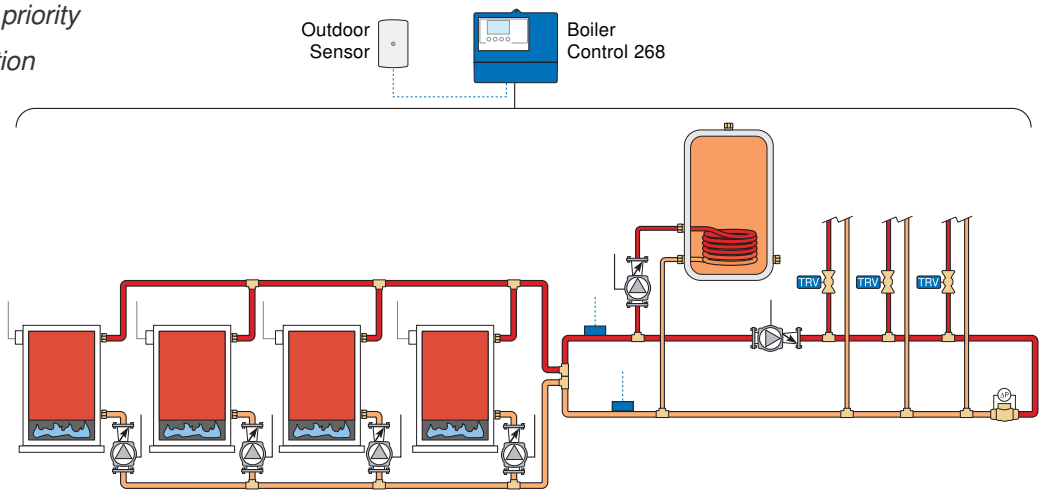
The Designer series includes innovative features to provide the most flexible, efficient boiler plant solution offered by a pre-programmed control. Mixed boiler plants with condensing and non-condensing units can be staged intelligently to achieve optimum performance for each equipment type. Remote monitoring and adjustment options are available through BACnet® IP, Modbus® and tekmarNet® communication.

Classic Series

Stand-Alone Boiler Plant Operation Plus DHW

Boilers are staged to provide a target temperature based on outdoor temperature reset or setpoint operation. System performance is improved with boiler equal run-time rotation, pump exercising and boiler minimum and maximum settings.

- *Outdoor temperature reset*
- *Domestic hot water priority*
- *Equal run-time rotation*
- *Pump exercising*

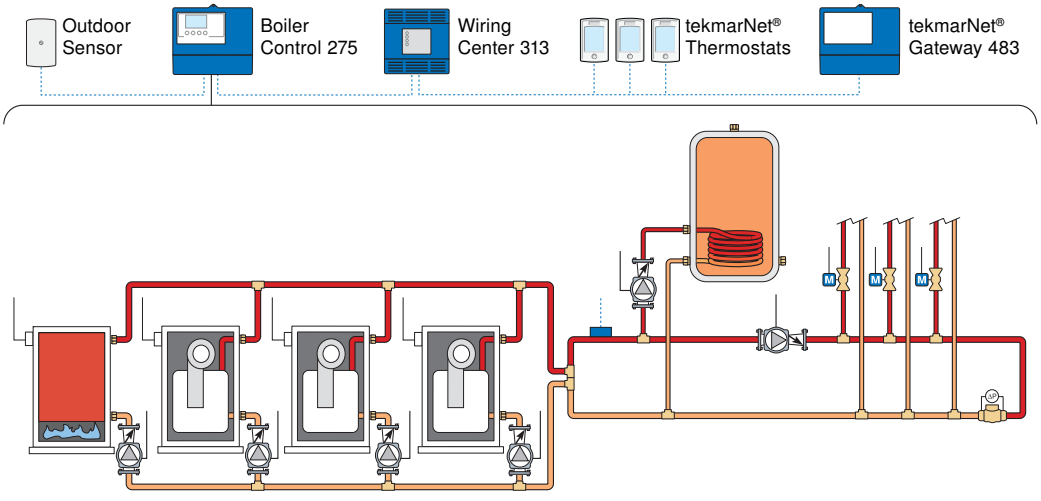


Performance Series

Mixed Plant Operation with Remote Monitoring

The Boiler Control 275 sequences three modulating condensing boilers and uses fixed last staging for the non-condensing boiler. Communication with tekmarNet® thermostats provides indoor temperature feedback for increased comfort and energy savings. Up-to-date system information is communicated through the tekmarNet® connection to the Gateway 483, allowing reliable remote access from any web browser.

- *Mixed plant control options*
- *tekmarNet® communication*
- *Outdoor temperature reset*
- *Primary pump sequencing*
- *Domestic hot water priority*
- *Setpoint operation*
- *Equal run-time rotation*
- *Pump exercising*



Mixed Boiler Plants With Optimum Efficiency

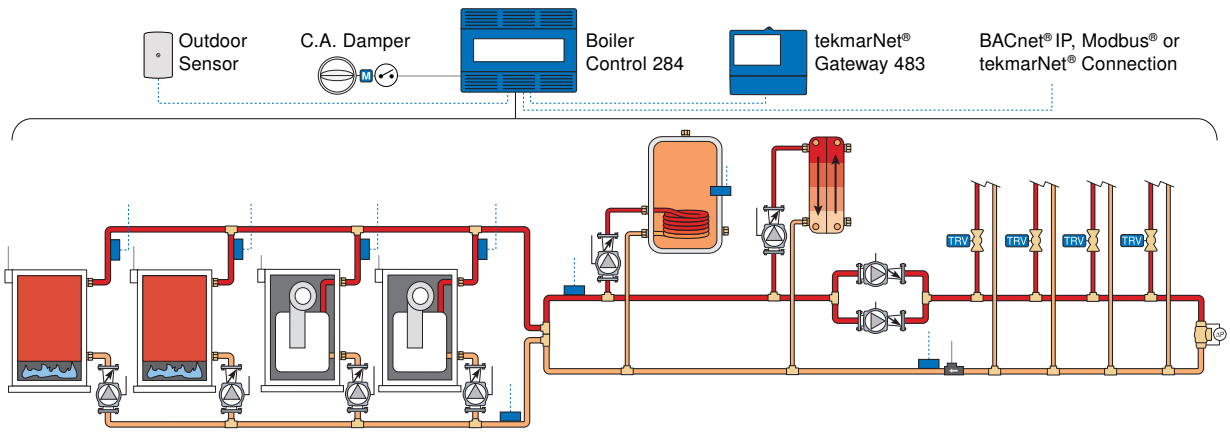
With modern control methods, it is possible to design plants with a mixture of condensing and non-condensing boilers. This type of 'mix and match' heating plant has the ability to maximize system efficiency while minimizing capital investment. Both Performance and Designer series multi-staging controls include features to support mixed boiler plant operation. Designer series multi-staging controls determine the optimum conditions to stage each boiler type, resulting in mixed plant efficiencies that are comparable to fully condensing plants.

Designer Series

Mixed Plant Operation. Integration with Energy Management System.

The Boiler Control 284 operates two single stage non-condensing boilers & two modulating condensing boilers to provide a boiler target temperature for space heating, indirect DHW and setpoint loads. The boiler target temperature for the space heating load is determined using outdoor temperature reset. Condensing and non-condensing boiler groups are sequenced separately to respect their ideal operating conditions, while dual primary pumps provide redundancy. System performance can be monitored with a tekmar Gateway 483, and further monitoring and adjustment capability is provided through BACnet® IP or Modbus® communication to an energy management system.

- *Control up to 4 modulating, single stage or two stage boilers*
- *BACnet® IP or Modbus® communication*
- *tekmarNet® communication*
- *Outdoor temperature reset*
- *Primary pump sequencing*
- *Domestic hot water priority*
- *Setpoint operation*
- *Energy, flow & pressure monitoring*
- *Combustion air damper control*
- *Programmable schedules*
- *Pump exercising*



Multi-Staging

Multiple Boilers & Pumps

Compare Multi-Staging Controls

System Requirements		263	265	268	274	275	284
On/Off Boilers Maximum Number of each type	1 Stage	2	-	9**	4	4	4*
	2 Stage	1	-	4	2	-	4*
	3 Stage	-	-	3	1	1	1
	4 Stage	-	-	2	1	1	1
Modulating Boilers Maximum Number of each type	Burner Firing Rate	1	3	-	-	4	4*
	Target Temperature	-	-	-	-	-	4*
Mixed Boiler Plant Control Combine condensing & non-condensing boiler groups		-	-	-	-	-	●
DHW Through Valves (V) or Pumps (P) Indirect domestic hot water (IDHW) operation		V/P	V/P	V/P	P or ●	P or ●	P
Stand-by Pump Operation Automatic back-up pump start to improve system reliability		-	-	-			●
Setpoint Operation Hot water for hot-tubs, pools & snow melt		●	●	●	●	●	●
Dedicated DHW Operation Hot water for dedicated domestic hot water (DDHW) tank					●	●	●
BACnet® & Modbus® Communication Remote monitoring & adjustment capability with BAS		-	-	-	-	-	●
Accept EMS 0-10 V (dc) Connect to tekmarNet® / EMS systems		-	●	●	●	●	●

Features & Benefits	263	265	268	274	275	284
Outdoor Temperature Reset Adjust water temperature based on outdoor temperature for energy savings	●	●	●	●	●	●
Warm Weather Shut Down Shut down heating systems in warmer weather	●	●	●	●	●	●
Automatic Differential Manage boiler run times automatically to reduce cycling	●	●	●	●	●	●
Indirect DHW Priority Suspends space heating to focus on indirect domestic hot water (IDHW)	●	●	●	●	●	●
Equal Run-Time Rotation Boilers run equal amounts of time & receive equal wear	●	●	●	●	●	●
Pump Exercising Briefly run pumps to prevent seizing	●	●	●	●	●	●
Pump Post Purge Run pumps to flush residual heat energy from the boiler	●	●	●	●	●	●
Primary Pump Rotation Pumps run equal amounts of time & receive equal wear	-	-	-	●	●	●

* Total number can be combinations of modulating & on/off boilers.

** Only 8 boiler outputs are available if using domestic hot water. The 9th output is used for DHW generation.

Compare Multi-Staging Controls

Features & Benefits Continued	263	265	268	274	275	284
Fixed Lead Option Run high efficiency boilers first to maximize energy savings	-	●	●	●	●	●
Fixed Last Option Run inefficient boilers last to improve overall plant efficiency	-	-	●	●	●	●
tekmarNet® Communication - 2 or 4 Wire Network communication provides greater functionality	-	-	-	4	4	4
tekmarNet® Communication - Number of Boiler Buses Up to 24 tekmarNet® devices can be connected per bus	-	-	-	1	1	4
Remote tekmarNet® Monitoring Access tekmarNet® systems via the internet with a Gateway 483	-	-	-	●	●	●
Built-in Setback Simple, programmable schedule for greater energy savings	●	-	-	●	●	●
DHW Recirculation Pump Conserve energy by running pump on a schedule	-	-	-	●	●	Recirc. or C.A.
Combustion Air Damper Output Close damper when system is off & open before operation	-	C.A. or Alert	C.A. or Alert	C.A. or Alert	C.A. or Alert	
Alert Output Provide notification of error & warning events	-					●
Energy, Flow & Pressure Monitoring Provide advanced system monitoring	-	-	-	-	-	●
Boiler Outlet & Vent Temperature Monitoring & Limiting Provide advanced monitoring & limiting to improve overall plant reliability	-	-	-	-	-	●
Flow Proof Proof of flow to enable backup primary pump or trigger failure notification	-	-	-	Flow or C.A.	Flow or C.A.	●
Combustion Air Proof Proof of combustion air before allowing boiler plant operation	-	-	-			●

Member of BACnet International

tekmar is proud to be a member of BACnet International. As a silver member, tekmar joins over 80 of the leading building automation vendors and integrators in the world in pursuing advancement of BACnet® as a communication protocol.

BACnet is a registered trademark of ASHRAE. ASHRAE does not endorse, approve or test products for compliance with ASHRAE standards. Compliance of listed products to the requirements of ASHRAE Standard 135 is the responsibility of BACnet International (BI). BTL is a registered trademark of BI.

The Boiler Control 284 is a BTL listed product. This verifies that the BACnet® features of the 284 have been independently tested for conformance with BACnet® implementation standards.

Better Design, Better Control, Better Systems.

At tekmar Control Systems, we believe the indoor comfort of a building depends on the performance of its heating, ventilating & air conditioning (HVAC) system. That's why tekmar offers affordable control solutions designed to produce the best in comfort, efficiency & system performance.

Our focus on innovation to add greater value to our products & services allows us to pioneer technologies & anticipate the needs of tomorrow. We stand by our products & offer in-depth technical support & training to ensure our customers are completely satisfied.

World Class Technical Support

Our local Representatives are knowledgeable experts in both HVAC controls & their operating mechanical systems. They offer assistance in system design, product selection & installation support. We're here when you need us most. To contact a Representative in your area, visit www.tekmarControls.com

Dependable Warranty

We strive to provide the highest quality products to our customers. In keeping with that goal, all of our products are 100% quality tested, & backed by the most dependable 3-year limited warranty in the industry.

We Offer the Complete Solution

- *A wide range of products to match the needs of today's systems*
- *Manufactured in a state-of-the-art Canadian facility*
- *A network of experienced & knowledgeable Representatives*
- *Training & technical tools available to support your success*
- *Dedicated staff focused on innovation & customer service*

For more information regarding tekmar products, visit
www.tekmarControls.com

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