

# MODSYNC™

The intelligent solution for control and sequencing of multiple boiler systems.



# The ModSync Sequencing System

## What is ModSync?

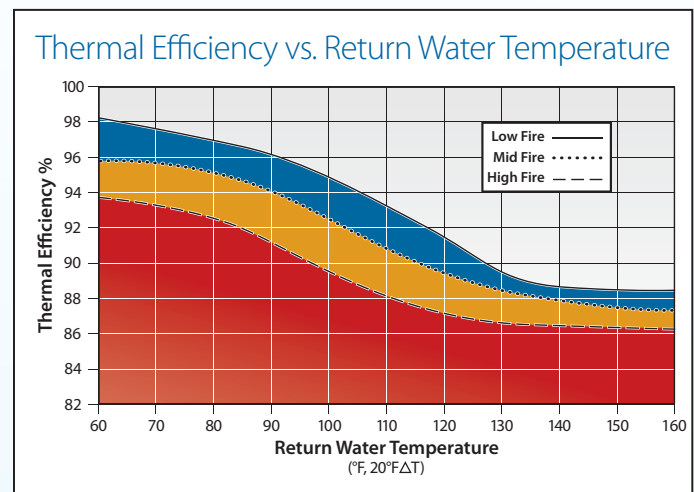
Advancements in condensing boiler technology have allowed the opportunity for significant efficiency increases associated with hydronic heating systems. The majority of condensing boiler installations incorporate multiple boilers to provide higher partial load efficiencies and redundancy. Although the boiler efficiencies increase with condensing designs, the key to maximizing the system efficiency relies on the sequencing control that interfaces with the boilers.

Antiquated control methodologies used for years do not take advantage of condensing technology and therefore limit system efficiencies. A new boiler sequencing system was needed with updated control philosophies and a user-friendly interface. This new sequencing system is called the ModSync.

The ModSync provides a user-friendly touchscreen interface that is easy to configure and navigate. Multiple screens provide all the key information for monitoring and configuring the loop parameters. System interface options of up to 75 boilers can be accomplished using the ModSync.

## Condensing Boiler Efficiency

Condensing boiler efficiency is based on two main determining factors: the temperature of the water returning from the system and the BTU firing rate output of the boiler. Increased efficiencies are gained with colder return water temperatures and minimum firing rate levels.



## Why Should I Use ModSync?

The ModSync has been specifically designed for use with multiple condensing boilers to maximize the efficiency of the hydronic system. Hydronic systems are configured to maintain building room temperatures on “design days”, thus ensuring there is plenty of heat available during the coldest days of the year.

What happens if the outdoor temperature is warmer than the design temperature? On these days, the boiler system has too much capacity. The warmer the day, the less boiler capacity is required. Lower hydronic loop temperatures can be used while still maintaining building temperature. Lower hydronic loop temperatures equate to higher system efficiencies.

The ModSync provides outdoor reset functionality to adjust the hydronic loop temperature setpoint based on the measured outdoor temperature. As the outdoor temperature increases, the ModSync automatically decreases the hydronic loop setpoint. Lower loop temperatures during warmer days allow for significant energy savings while still maintaining building comfort levels. The ModSync provides independent outdoor reset functions based on the building status, Occupied and Unoccupied. Each function has unique user defined variables that determine a linear setpoint value based on the measured outdoor temperature.

# Features

**Ease of Use:** The ModSync combines sophisticated control capabilities with a user-friendly, easily configured touchscreen interface. A “Question and Answer” setup feature eliminates the guesswork and simplifies system start-up.

**Intelligent Lead/Lag:** Patent-pending optimization of boiler lead/lag position keeps a consistent number of cycles/run hours across all stages.

**Remote Monitoring:** inSite’s remote access capabilities allow the ModSync to be monitored and configured using a LAN or WAN connection. Smart-phone compatibility provides another solution for monitoring system variables.

**Outdoor Reset:** The system setpoint is automatically adjusted based on outdoor temperature. Warmer outdoor temperatures lower the hydronic loop setpoint, increasing system efficiency.

**Setback Scheduling:** The loop setpoint can be configured to change based on occupancy of the building. This allows for automatic switchover to lower operating temperatures during off hours such as nights, weekends and holidays.

**System Interface Flexibility:** The ModSync can be custom programmed by in-house specialists to match your most demanding system design requirements, eliminating “canned logic” limitations.

**Multiple Setpoint Modes:** Easily select between ModSync Outdoor Reset, Remote Setpoint (4-20mA, 0–10VDC), E/BMS Communication or Manual setpoint modes through the ModSync touchscreen.

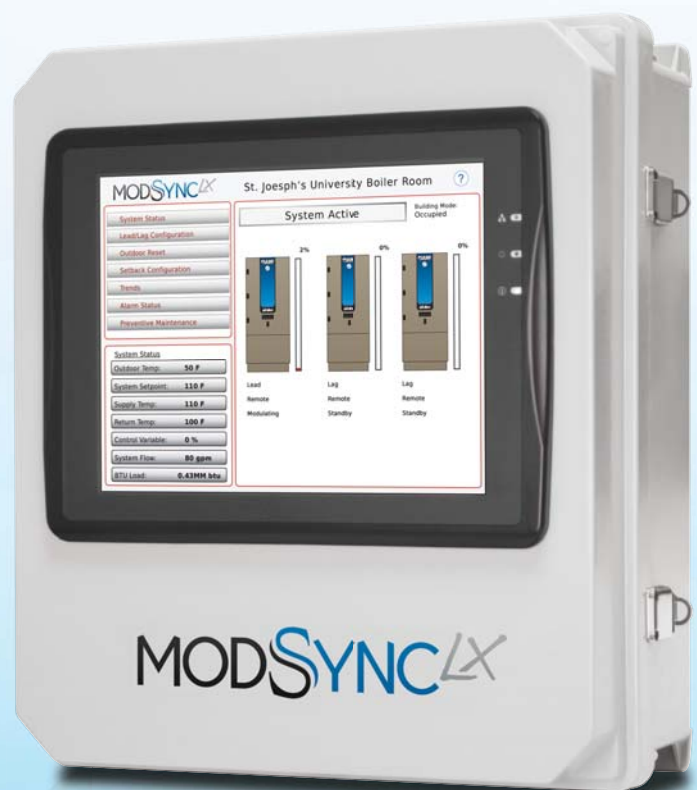
**Trending:** Key variables such as Supply Temperature, Return Temperature and Setpoint can be trended to show system response and performance data.

**Alarm Status and History:** Alarm status is easily communicated with a text description of the current alarm. No alarm code deciphering or cross-referencing is required. The Alarm History features provide a date and time stamp of any recent alarm conditions.

**Building Integration:** The ModSync can be configured to communicate with Energy/Building Management Systems using Modbus, BACnet, Lonworks or N2 protocols.

**Text Messaging:** A text message can be sent to as many as six numbers if an alarm condition occurs. Query information about the boiler loop status by sending a text message to the ModSync.

**Wireless Interfacing:** Wireless modules can be provided to interface between the ModSync, the Boilers and the Energy/Building Management System. Wireless installations decrease installation time considerably and simplify retrofit boiler opportunities.



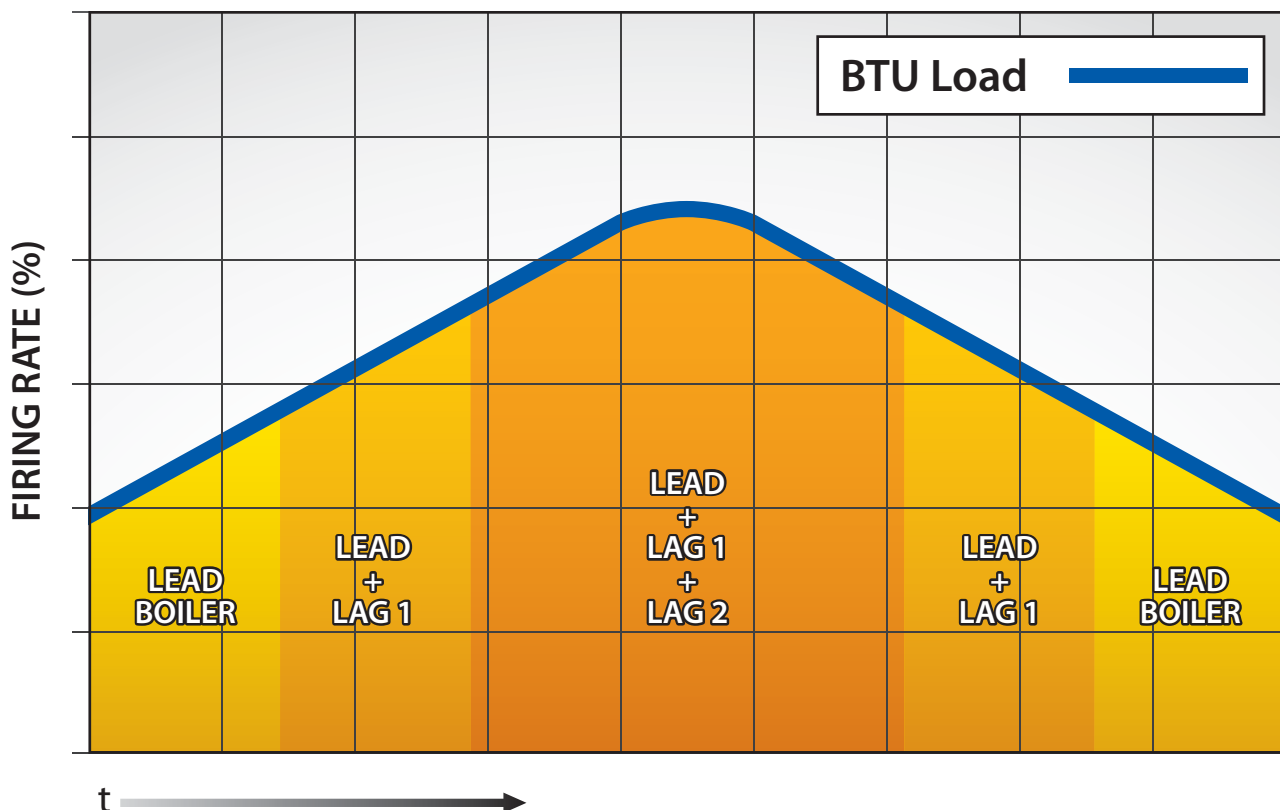
# Features

## Boiler Staging Logic:

The ModSync has been designed for use with multiple condensing boilers to maximize the efficiency of the hydronic system. The ModSync boiler staging logic is unique to the condensing controls market:

- The ModSync monitors outdoor temperature and calculates a hydronic loop setpoint.
- A control variable proportional to the heat requirements of the hydronic loop is calculated. This variable is used to determine the exact number of boilers and their associated firing rates required to meet the load demand.
- Whenever multiple boilers are operating, the ModSync uses a parallel modulation method. Boiler stages are modulated simultaneously at the lowest firing rate possible to maintain system efficiency.
- As the hydronic loop temperature increases, the ModSync will begin to decrease the firing rate of the hydronic boilers. If all of the hydronic boilers are at low fire, the ModSync will begin to stage the boilers off. The hydronic boilers will continue to be disabled based on the temperature rise and control variable response.

## Three (3) Condensing Boiler System





# Intelligent Lead/Lag and Sequencing

## Intelligent Lead/Lag:

Lead/lag designs are used with multiple boiler installations to maintain an even number of operating cycles and run hours across all of the boilers in the system. Traditional sequencing systems rotate the boilers based on a random time schedule. This control technique is flawed in that it does not take into account any operational history of the boilers in the loop.

The ModSync solves this issue through a patent-pending intelligent lead/lag technology that automatically assigns the lead/lag positions based on each boiler's operating history.

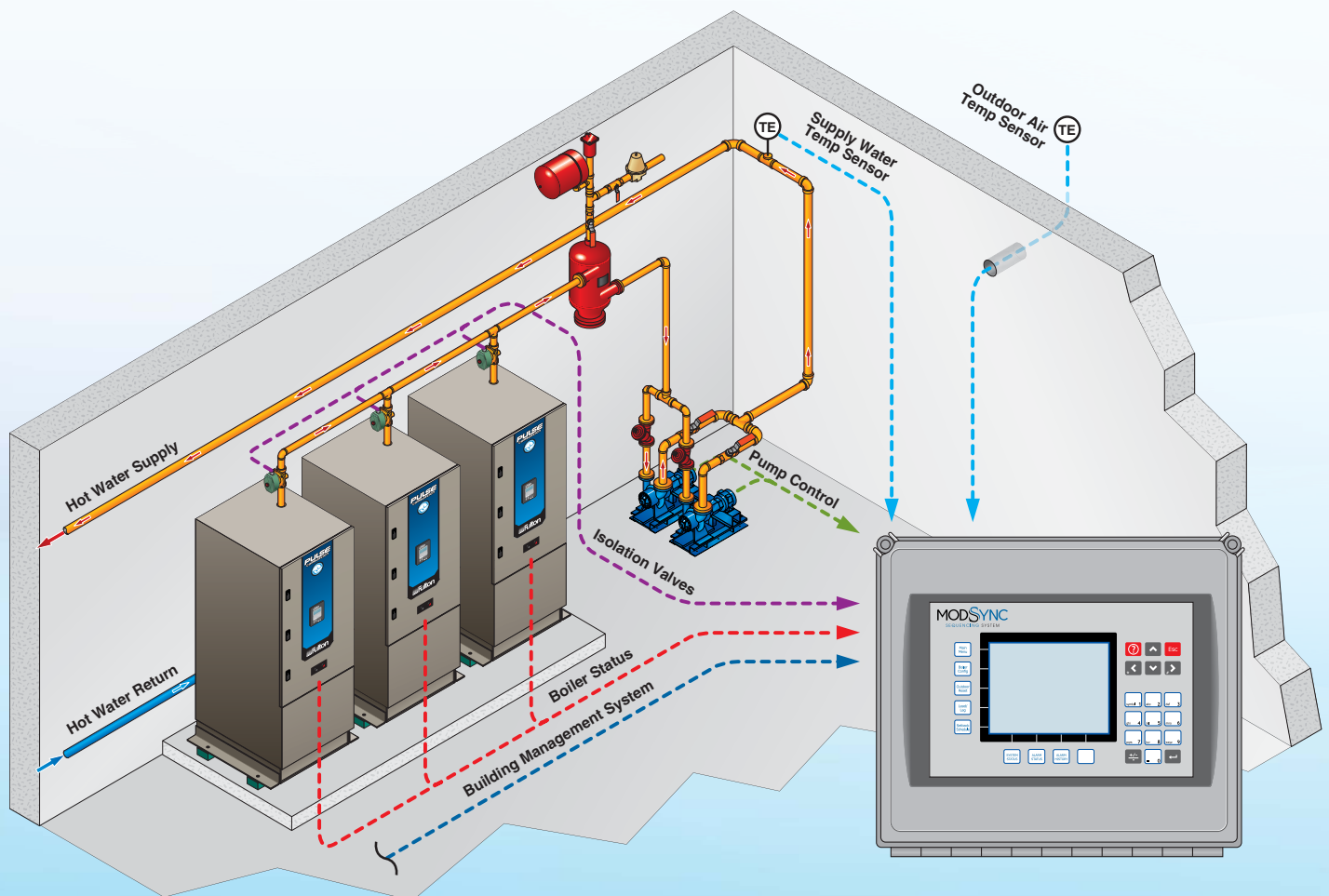
The ModSync's intelligent Lead/Lag technology provides peace of mind that the boiler system is being controlled and operated to its optimal potential.

## Customizable:

In addition, the ModSync is perfect for applications involving condensing and non-condensing (hybrid) boiler designs. The control logic is designed to take advantage of the condensing boiler during shoulder loads and bring the non-condensing boilers online only during the peak design days.

Additional control options include: Boiler isolation valves, primary/secondary pumps, common Hydronic/DHW boiler loops, process valve control and integration with multiple types of boiler designs.

The ModSync control logic can also be customized for use with multiple steam boiler and thermal fluid heater applications.



# ModSync Models

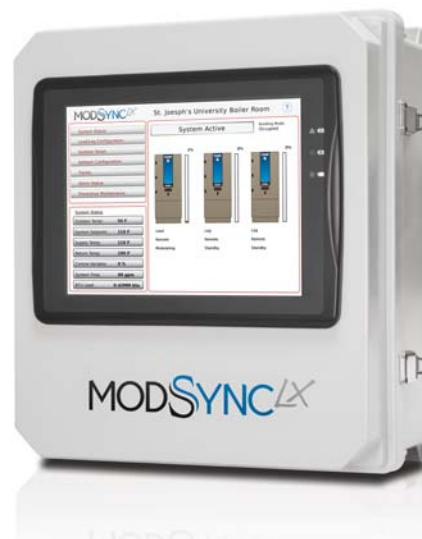
## ModSync



## ModSync Color



## ModSync LX



The ModSync can be configured with multiple hardware platforms to meet different system control requirements. The ModSync Color and LX versions provide enhanced graphics capabilities and trending options.

DESIGN FEATURES	ModSync	ModSync Color	ModSync LX
Screen Design	4.7" Monochrome	5.7" Color	12.1" Color
Number of Stages	20	75	75
Outdoor Reset	●	●	●
Intelligent Lead/Lag	●	●	●
E/BMS Interfacing	●	●	●
Alarm History	8 Alarms	100 Alarms	100 Alarms
Question and Answer Configuration	●	●	●
SMS Text Messaging	●	●	●
BTU Load Calculation		●	●
Customized Programs	●	●	●
Data Trending		●	●
Wireless Interface		●	●

# Remote Monitoring for ModSync



## Accurately Monitor and Adjust:

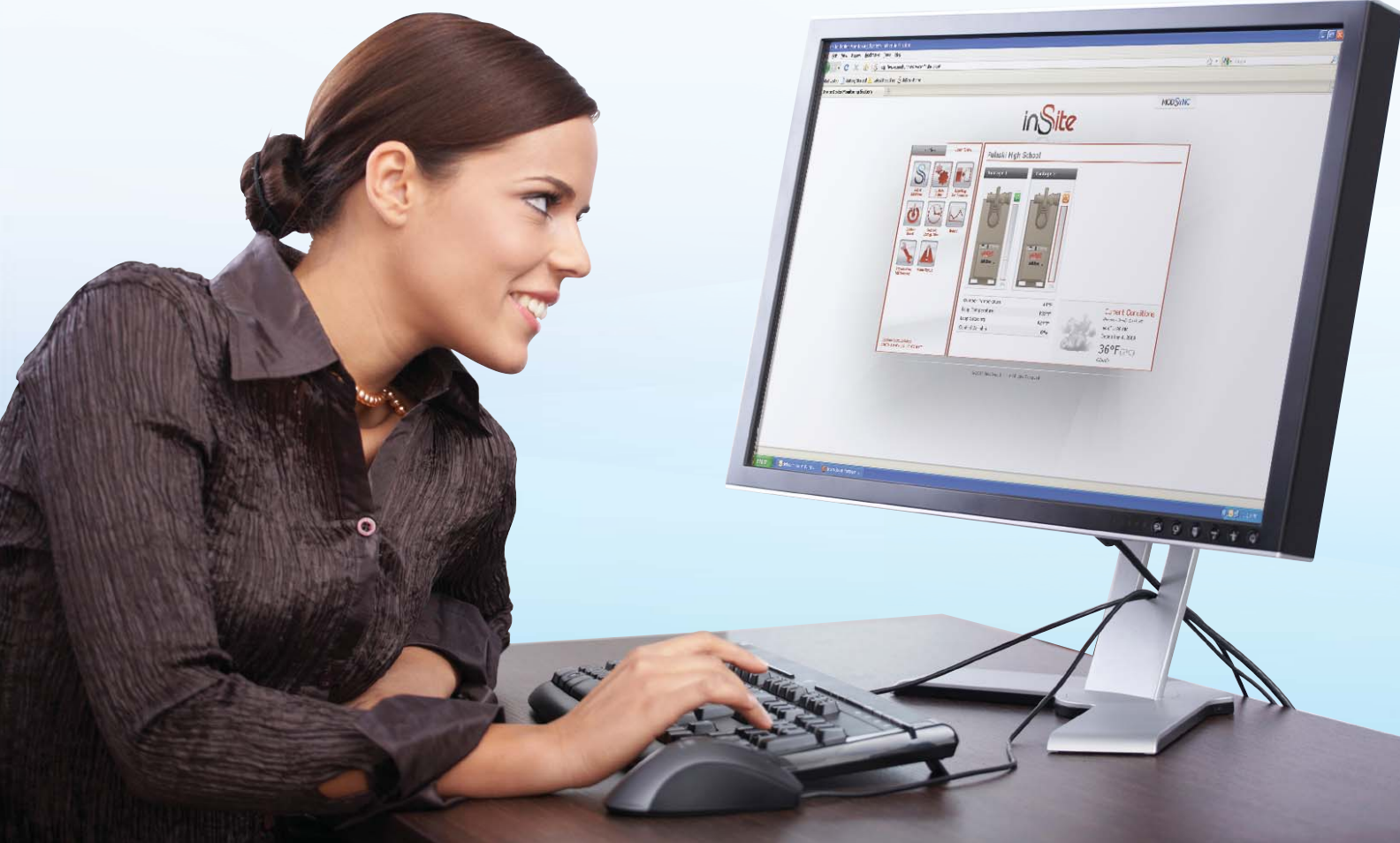
- Real-time System Status using a web browser.
- System trends.
- Maintenance schedules.
- Alarm Status/History. Provides e-mail alerts to notify personnel of any alarm condition.
- ModSync program updates.

Boiler Room and control system monitoring is now easier than ever with inSite. inSite has been designed to interface directly to a ModSync for remote monitoring and system access using any traditional web browser. No software to install or expensive licensing fees are required.

inSite has been designed with security in mind. The system interface uses a static IP address, meaning that a building LAN connection is not necessary. Up to five (5) users can be configured per site with Admin/Client access rights.

### *Is your system operating at its peak efficiency?*

Let us help. With an annual subscription agreement, inSite service engineers are available to review your system performance and recommend adjustments to optimize efficiency and performance. Our service engineers will provide a monthly report detailing the system operation and can make recommendations or modifications directly to the ModSync based on your preferences. Remote technical assistance provides direct factory support to resolve any equipment operational issues quickly and effectively. No guesswork. Just results.





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