

Introduction

Overview

Sage Boiler Control Overview

The Sage Boiler Control (SBC) is a complete boiler monitoring and automation system. The SBC provides advanced boiler modulation, operating control, diagnostics, multiple boiler lead-lag and auxiliary device control. The SBC provides advanced control features in an easy to use package.

Flexible, Field Selectable Control

Control modes, water system, boiler auxiliary and modulating lead/lag control features are menu selectable without the need for external programmers, laptops or down loads. Every boiler is shipped with factory defaults that make field menu selections unnecessary unless you are applying additional control features.

Boiler Monitoring and Diagnostic Displays

The SBC's two line by sixteen character LCD display may be used for monitoring boiler inlet and outlet, remote system and outside air temperatures, modulation rate setpoint and modulating percent and mixing valve demand percent. Additionally, the display automatically presents boiler sequence messages, alarms, hold and lockout messages. A diagnostic menu is included that provides the last 10 alarm messages and boiler inlet temperature alarm history. Boiler inlet temperature alarm history includes time and date, the lowest inlet temperature reached and the amount of time the water temperature dropped below the alarm setpoint.

Modulation Rate and On/Off Modes

The SBC may simply control boiler modulation and on/off output based on the boiler water outlet temperature and an operator adjusted setpoint. However, using parameter selections, the SBC allows the boiler modulation and on/off output to respond to remote system water and outside air temperatures, Domestic Hot Water Priority (DHWP) input or Energy Management System (EMS) modulation rate demand, remote setpoint or remote start/stop commands. Parameter selections of remote system water temperature and remote mode determine the choice of one of six different control modes.

Advanced Availability

The above control modes are menu selectable options. However, if a selected sensor fails, the SBC automatically changes to a control mode that will allow continued automatic operation of the boiler. For example, in the event of a remote system temperature sensor failure, the SBC will automatically switch to boiler outlet temperature sensor based control.

Outdoor Air Reset

When selected the modulation rate setpoint is automatically adjusted based on outside air temperature. Outdoor air "reset" setpoint saves fuel by adjusting the water temperature of a heating boiler lower as the outside air temperature increases.

Warm Weather Shutdown (WWSD)

Some boilers are used primarily for heating buildings, and the boilers can be automatically shutdown when the outdoor air temperature is warm. When outside air temperature is above the WWSD setpoint, this function will prevent the boiler, boiler pump and/or the system pump from starting.

Domestic Hot Water Priority (DHWP)

Some boilers are used primarily for building space heating, but also provide heat for the domestic hot water users. When the outdoor temperature is warm, the outdoor reset setpoint may drop lower than a desirable domestic hot water temperature. When enabled and a DHWP contact input is detected, the hot water setpoint is adjusted to be greater than a field adjustable DHWP Setpoint.

Water Side Control Outputs

In order to maximize the life and availability of a hot water systems it may be desirable to automate mixing valves, boiler pumps, system pumps, and standby system pumps. The SBC makes this type of automation totally integrated and cost effective. The control of these devices is field selectable through simple yes/no menu selections.

Combustion Air Side Control Outputs

Boiler room Combustion air dampers (fresh air dampers) and Vent Inducer control outputs are field selectable options.

Peer-To-Peer Network

The SBC includes state-of-the-art modulating lead-lag sequencer for up to eight (8) boilers capable of auto rotation, outdoor reset and peer-to-peer communication. The peer-peer network is truly "plug and play". Communication is activated by simply connecting a RJ11 telephone line between boilers. The SBC provides precise boiler coordination by sequencing boilers based on both remote system water temperature and boiler modulation rate. For example, the lead boiler can be configured to start a lag boiler after operating above 90% modulation rate for longer than an adjustable time. The boilers are modulated in "unison" (parallel) modulation rate to ensure even heat distribution

Modbus Communication Interface

A factory configured RS485 Modbus interface is available for Energy Management System (EMS) or SCADA system monitoring and control.