

REFINED DESIGN PUTS MORE CONTROL AND INFORMATION AT YOUR FINGERTIPS

The new SMART SYSTEM™ is the most advanced integrated boiler control on the market today.

LARGER LCD SCREEN

Displays more information.

SOFT KEYS

For simple programming.

NAVIGATION DIAL

For fast transitions from screen to screen and easy adjustment of settings.

USB PORT

USB port permits connection to a laptop computer. SMART SYSTEM PC software may be used to troubleshoot and program KNIGHT® functions, set date and time, monitor historical data, including faults, trends and energy consumption.

**SMART
SYSTEM™**



AT-A-GLANCE COLOR-CODING



BLUE SCREEN

Normal system operation.



YELLOW SCREEN

Maintenance due - shows the installer's name and number on the display.



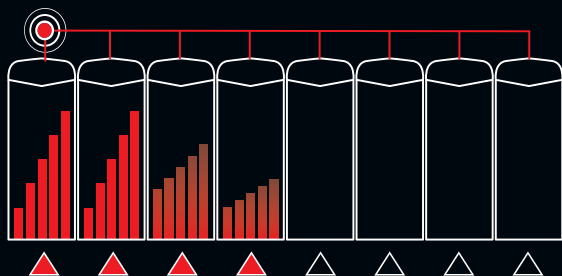
RED SCREEN

Lockout mode.

NEW SELECTABLE CASCADE OPTIONS

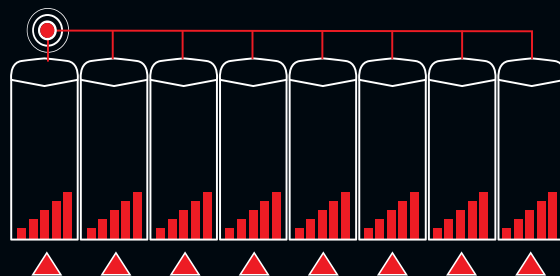
When multiple KNIGHT boilers are installed together, the SMART SYSTEM built-in sequencer can be set for "Lead-Lag" cascade or "Efficiency Optimized" cascade operation.

LEAD-LAG CASCADE



The "lead unit" boiler modulates with demand to capacity. As demand increases, additional boilers fire and modulate to capacity. This continues, with additional boilers firing and modulating to capacity until all units are operating. Every 24 hours, the SMART SYSTEM automatically shifts the lead boiler role to the next in the sequence, distributing lead-lag runtimes equally.

EFFICIENCY OPTIMIZED CASCADE



This feature optimizes the modulation capabilities of the Boiler Plant while evenly distributing run time across all cascaded boilers. Every 24 hours the SMART SYSTEM automatically shifts the 1st boiler on role to the next in the sequence, distributing run time equally.

SMART SYSTEM Cascade option allows 2 - 8 boilers to be sequenced.

DIAL IN SYSTEM PERFORMANCE

INTERNAL CASCADING SEQUENCER

NEW! WITH MULTIPLE PROGRAMMABLE SYSTEM EFFICIENCY OPTIMIZERS

Fine-tune installations using Lead-Lag or Efficiency Optimization Cascade features.

NEW! CONTROLS UP TO THREE SETPOINT TEMPERATURES

Allows three different temperature inputs to be controlled. Boiler can be run at the lowest temperature demand for optimal efficiency.

NEW! OUTDOOR RESET FOR EACH TEMP LOOP

The boiler setpoint temperature responds to changes in outdoor air temperature. Outdoor temperature monitor guides the reset schedule to meet the load.

NIGHT SETBACK

Program a heating loop temperature setback for any time of the day, each day of the week.

DOMESTIC HOT WATER PRIORITIZATION W/PUMP CONTROL

On DHW call, SMART SYSTEM overrides the outdoor reset and starts the DHW pump to the indirect water heater alternating to meet both heating and hot water demands.

NEW! DHW NIGHT SETBACK

Resets DHW setpoint to save water-heating energy during times of low or no usage.

NEW! DHW MAX FIRING RATE

Allows you to limit the maximum percentage of firing rate when in DHW mode.

NEW! SEPARATELY ADJUSTABLE SH/DHW MODE SWITCHING TIMES

Allows controls to be tailored to meet system demand. Design system setup for flexibility.

NEW! INDIRECT WATER HEATER ZONE PUMP CONTROL

All boilers in cascade can be used to meet DHW demand as well as satisfy building load.

SYSTEM & BOILER PUMP CONTROLS

Provides power to system and boiler pumps on a call for heat. Programmable post purge allows pumps to operate after a call has been satisfied. Option for Continuous System Pump Operation.

NEW! PUMP RELAY WITH FREEZE PROTECTION

Parameters adjustable by installer for flexibility in low-temperature applications.

NEW! INSTALLER ACCESS TO BMS AND RAMP DELAY SETTINGS

Set up or change these parameters through the control itself on the front of the boiler; no PC software required.

LOW-WATER FLOW INDICATOR

Uses temperature differential to protect against low flow in heat exchanger by reducing modulation or forcing boiler shutdown.

PASSWORD SECURITY

Dual passwords for installer and user.

NEW! PRODUCT SERVICE INDICATOR

Program reminders for cycle count, operation hours or last service. Installer's name and number may be displayed.

BUILDING MANAGEMENT INPUTS & OUTPUTS

NEW! OPTIONAL MODBUS CAPABILITY

Allows boiler communication through Modbus protocol. Simplifies BMS/boiler interface for status monitoring.

0-10V BUILDING MANAGEMENT SYSTEM (BMS) CONTROL INPUT

BMS-driven input for modulation rate or temperature control.

NEW! 0-10V CASCADE SETPOINT AND MODULATION CONTROL

BMS-driven input for modulation rate or temperature control of cascade.

NEW! 0-10V HEAT DEMAND INPUT

Enables thermostat or a 0-10V signal to initiate a call for heat. Gives the BMS options on how to enable boiler or cascade.

NEW! 0-10V BOILER RATE OUTPUT

Signal output of modulation rate allows BMS to monitor boiler firing rate.

NEW! 0-10V PUMP SIGNAL INPUT

Input from variable speed system pump allows faster reaction to changes of flow in system, reducing possibility of temperature over-shoot and cycling.

NEW! 0-10V SIGNAL TO CONTROL VARIABLE SPEED BOILER PUMP

Allows control to maintain a higher ΔT at low firing rates and reduces boiler flow when it responds to lower flow rates in the system loop.

5 FLEXIBLE OPTIONS FOR DIRECT-VENTING UP TO 100 FEET!

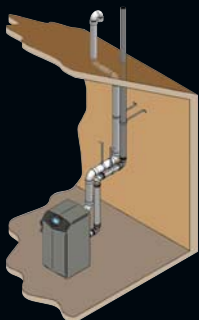
Placement of units within a building will never be a problem with KNIGHT. It permits up to 100 feet of air intake and 100 feet of exhaust vent with 3" PVC, CPVC or stainless steel pipe. Three Wall-Mounted KNIGHT models (WBN 50 -105) also permit intake and vent runs up to 40 feet using 2" pipe.



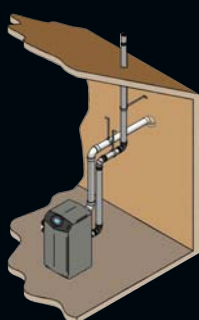
SIDEWALL VENT TERMINATION



FACTORY SUPPLIED AND SHIPPED WITH EVERY MODEL



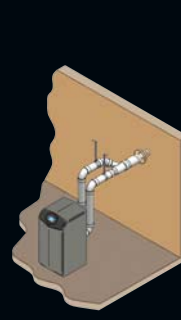
Direct-Vent Vertical



Vertical with Sidewall Air



Direct-Vent Vertical*



Direct-Vent Sidewall*



Direct-Vent Sidewall

*An optional concentric vent kit is sold separately to allow a single penetration for both combustion air and vent pipes.