

**L.B.WHITE**

World Provider Innovative Heating Solutions

# SMART SENSE™

*an Automatic Variable-Rate Heat Solution*

U.S. Patent No. 9,328,937



Now works with these leading environmental control systems:

**MAXIMUS, DICAM,  
GENIUS, AP, VALCO, & PMSI!**

**SAVE**  
up to **35%**  
**on Heating Costs**

*Field-Tested with Proven Results  
(see details inside)*



# Smart Sense™ Technology

## A Difference You Can Feel

Smart Sense is a technologically-advanced swine facility heating solution. This innovative heating technology eliminates the inefficiency of standard on/off controls by managing the heat automatically through the house control. Smart Sense operates at maximum efficiency to provide:

- Fuel-cost savings up to 35%
- Consistent room temperature
- Enhanced animal welfare
- Improved air quality

The L.B. White system generates only the amount of heat required to reach, maintain, and hold a desired temperature by modulating Btu output. This is achieved only through our patent-pending technology engineered for L.B. White forced air heaters and radiant heat brooders.



An L.B. White forced air heater and radiant heat brooder with Smart Sense.

## Smart Sense Heating System

Smart Sense automatically manages the heat in pig buildings based on temperature curve settings and heat management preferences.

What's in a complete Smart Sense system?

- Forced air heaters with proportional control gas valve and electronic control
- Radiant heat brooders
- Radiant heat zone control panels with a proportional valve
- a House control with the required software and capacity to operate Smart Sense heaters **OR** an L.B. White SmartBox that connects to any OEM house control

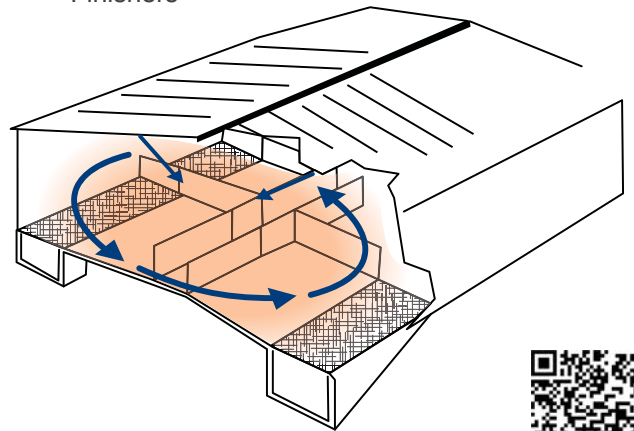
### Heat On Demand

Smart Sense operates more efficiently because it automatically controls the heater Btu output to produce the amount of heat required to reach and maintain room temperature. Smart Sense technology eliminates room temperature target overshoot and distributes heat consistently, evenly in pig buildings.

## Smart Sense™ Applications

Precision-based temperature management significantly enhances pig performance during critical stages of swine production. Smart Sense technology was developed for all production phases and can be installed in any application, including:

- Farrowing
- Nursery
- Finishers
- Farrow-to-Finish
- Wean-to-Finish



Scan the QR code to view the L.B. White Wean to Finish Heating Protocol, or download it at [www.lbwhite.com](http://www.lbwhite.com).





# Smart Sense™ Technology

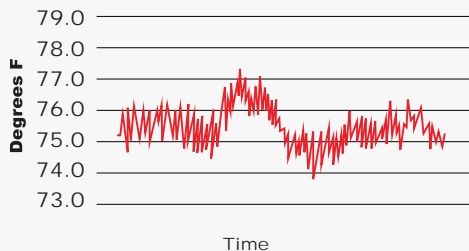
## Manage Room Temperature Automatically

Don't React to the Room Environment—Control It!

Smart Sense automatically provides heat at only the rate required to reach a set point, and then maintains that temperature. This technology has been field tested with major integrators and growers across the upper Midwest. The results of these tests reflected increases in fuel-cost savings and improved heat management.

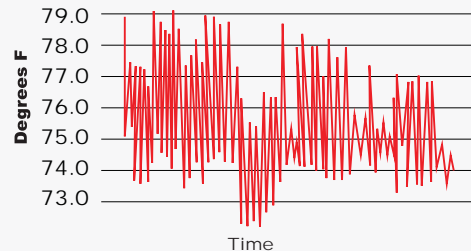
### FIELD TEST RESULTS – PRESTAGE FARMS, IOWA

#### with Smart Sense Technology



North Room	Wk 1	Wk 2	Wk 3
Avg. Low Temp.	75.83	74.42	73.57
Avg. High Temp.	77.00	75.71	75.00
Avg. Temp. Differential	1.16	1.28	1.42

#### with a Standard On/Off Control



South Room	Wk 1	Wk 2	Wk 3
Avg. Low Temp.	74.16	72.28	72.28
Avg. High Temp.	81.50	79.85	77.57
Avg. Temp. Differential	7.33	7.57	5.28

Notes: 1. Temperatures recorded in degrees Fahrenheit. 2. Test site location—Prestage Farms, Iowa (2,400 head) 3. Test duration—January through April 4. Results—22% savings.



## Save up to 35% in Fuel Costs

Field studies have shown Smart Sense to be so efficient and effective at managing heat that payback on the system can be realized in as little as 1 year. **The results of these studies have indicated a fuel-cost savings of up to 35%.**

Test Site	Head Count	Fuel (gallons)	Cost of Fuel <sup>†</sup>	20% Savings	35% SAVINGS
Farm 1 – Iowa <sup>1</sup> (wean-to-finish)	2,400	6,300	\$10,080	\$2,016	\$3,528
Farm 2 – Ohio <sup>2</sup> (nursery)	2,400	13,800	\$22,080	\$4,416	\$7,728
Farm 3 – Iowa <sup>3</sup> (nursery)	1,200	3,600	\$5,760	\$1,152	\$2,016

<sup>†</sup> \$1.60 per gallon at time of study. Payback results will vary by cost of fuel.

<sup>1</sup> Initially tested at Farm 1 from February-May 2012 in a north room, and during that period reported a 23% savings in fuel costs.

<sup>2</sup> Tested at Farm 2 in March 2011, and after several turns reported a 35% savings in fuel costs.

<sup>3</sup> Tested at Farm 3 in 2012, and after several months reported a 25% savings in fuel costs.



# Smart Sense™ Technology

## Guardian with Smart Sense™ Forced Air Heaters



**Operates at firing rates as low as  
25% of max Btu/h**

while maintaining acceptable carbon monoxide levels and ignition characteristics.

Guardian™ heaters with Smart Sense™ provide an automatic variable-rate control, compared to manual control in today's standard Guardian heaters.

Smart Sense allows the heater to run longer at lower firing rates and become part of the circulation system. This results in a much more consistent room temperature.

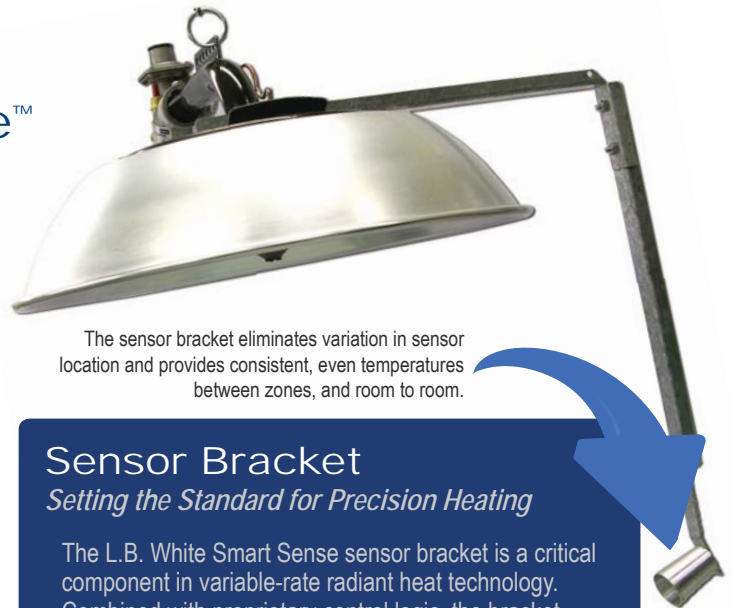
- Available Smart Sense configurations:
  - 60,000 Btu/h
  - 100,000 Btu/h
  - 250,000 Btu/h
- Ignition types:
  - Spark
  - Hot Surface
- CSA certified U.S. and Canadian models

## Infraconic with Smart Sense™ Radiant Heat Brooder

L.B. White Smart Sense™ technology provides the ability to set and manage temperatures at pig level independently of the ambient room temperature.

Gain control of the pig-occupied zone with Smart Sense versus 3-stage or hi-lo control panels that are not controlled by precision-based technology.

- Both standard manual and spark ignition I-17 brooders function with Smart Sense
- Requires sensor mounting kits for existing and new installations
- Operates with an existing 0-10 vdc control or with the SmartBox™ controller



The sensor bracket eliminates variation in sensor location and provides consistent, even temperatures between zones, and room to room.

### Sensor Bracket *Setting the Standard for Precision Heating*

The L.B. White Smart Sense sensor bracket is a critical component in variable-rate radiant heat technology. Combined with proprietary control logic, the bracket keeps the sensor always locked into position to achieve precise results based on suggested protocols and desired pig pattern.



### HEAT MANAGEMENT PROTOCOL

Smart Sense maintains an even room temperature through the house control. With this system, growers are not required to setup probes.

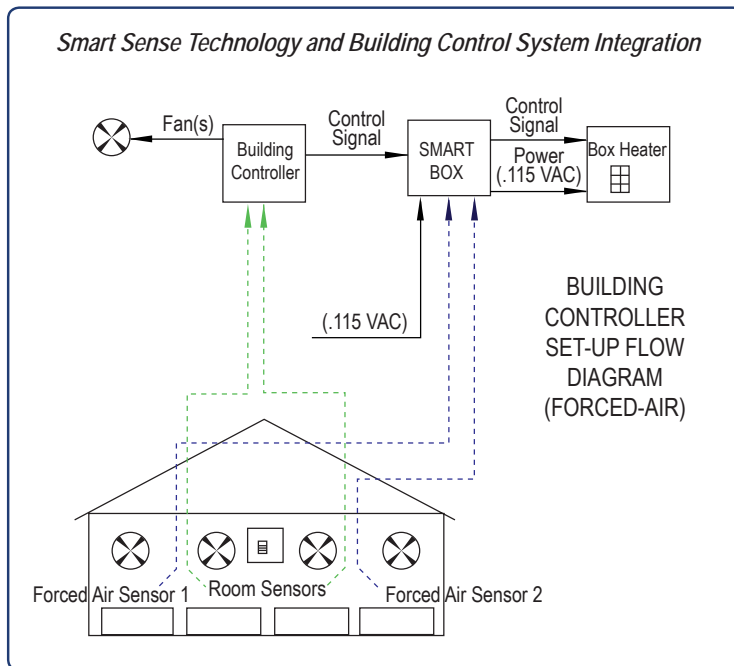




# Smart Sense™ Technology

## Smart Sense™ Controls

**Option 1: OEM Environmental Control**  
 Smart Sense heaters (forced air and radiant brooders) can be managed by an OEM house control that has the required software and capacity (0-10 vdc, 0-20 ma, 4-20 ma).\* Contact L.B. White for an updated list of OEM controls that operate Smart Sense. If your house control does not support Smart Sense heaters, please contact the control manufacturer to inquire about its availability.



WORKS WITH:  
**MAXIMUS,**  
**DICAM**  
**GENIUS**  
**AP**  
**VALCO**  
**PMSI**  
 control systems.

## Zone Panel Controls – For Brooders

### *I-17 Manual Ignition for OEM 0-10V Control*

- 24 Brooder capacity—Model 500-28543
- Solenoid valve, control module, power supply, and sensor bracket

### *I-17 Spark Ignition for OEM 0-10V Control*

- 24 Brooder capacity—Model 500-26487
- Solenoid valve, control module, power supply, sensor bracket

### *I-17 Spark Ignition for the SmartBox Control*

- 24 Brooder capacity—Model 500-28564
- Solenoid valve, control module, power supply, sensor bracket



### *I-17 Manual Ignition (use with any zone control or thermostat)*

- Low-High Zone
  - 20 Brooder capacity—Model 500-09958
  - 40 Brooder capacity—Model 500-09959
- Low-Medium-High Zone
  - 20 Brooder capacity—Model 500-09875-B
  - 40 Brooder capacity—Model 500-22553



# Smart Sense™ Technology

## Smart Sense™ Configurations for OEM Environmental Control

### Smart Sense (Universal) – Forced Air Heaters

Forced air heaters with automatic variable rate heat managed by an OEM environmental control (e.g., Maximus, Dicam) that has the required software and capacity to manage Smart Sense heaters.



- Saves up to 35% in fuel costs
- Features water tight casing and connections
- Includes sediment trap and 10' power cord

<b>Forced Air</b>	Btu/h	Fuel	10 ft. Gas Hose	Piping Hardware	Gas Regulator	Eyebolts & Chain	2-Way Air Diverter	Shipping Weight	List Price
AW060 / AD060 (Hot Surface and Spark)	15,000 / 60,000	LP/NG	●	●	●	●	●	55 lbs.	HSI \$1,313.64 SI \$1,365.16
AW100 / AD100 (Hot Surface and Spark)	25,000 / 100,000	LP/NG	●	●	●	●	●	70 lbs.	HSI \$1,326.79 SI \$1,392.04
AW250 / AD250 (Hot Surface and Spark)	65,000 / 250,000	LP/NG	●	●	●	●	●	113 lbs.	HSI \$1,383.93 SI \$1,457.51

### Smart Sense – Radiant Heat

<b>Brooders</b>	Btu/h	Fuel	Filter with Sleeve	Gas Hose Kit (6' quick connect)	Shipping Weight	List Price
I-17 Manual Ignition (zone controlled)	17,400	LP/NG	●	●	26 lbs.	187.58
I-17 Automatic Spark Ignition (house controlled)	17,400	LP/NG	20427	●	26 lbs.	386.40



### Smart Sense – Zone Controls for Radiant Heat

<b>Control Panels</b>	For Models	Part No.	Capacity	Shipping Weight	List Price
Zone Control - Auto Modulation, use w/ OEM Controller*	Manual Ignition	28543	Medium	9 lbs.	1,127.50
Zone Control - Auto Modulation, use w/ OEM Controller*	Spark Ignition	26487	Medium	9 lbs.	967.89



\* Includes sensor bracket for Infraconic radiant heat brooders as shown above the zone control image.

### Set up a Smart Sense Heating System 3 Different Ways

- 1) Smart Sense forced air heaters with Smart Sense radiant heaters.
- 2) Smart Sense forced air with standard radiant heaters.
- 3) Smart Sense radiant heaters with standard forced air heaters.

● Indicates heater accessories that are purchased separately.



# Smart Sense™ Technology

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NOTES:

# Smart Sense™

## Automatic Variable-Rate Heat Technology

- Saves up to 35% in fuel costs
- Automatically manages room temperature
- Works with the ventilation system to provide consistent, even heat throughout the room
- Reduces day-to-day management

“With Smart Sense, I don’t have to worry about human error and making constant temperature adjustments. The automated control turns the heaters on at their lowest firing rate and then ramps up to provide the heat needed to reach the set points on my temperature curve. It’s hands off ... **and that saves me time and money.**”

**Aaron Russel**  
Cargill Grower



L.B. White Forced Air Heaters and Brooders with Smart Sense



www.lbwhite.com  
(800) 345-7200  
411 Mason Street,  
Onalaska, WI 54650

### About L.B. White

For 65 years, L.B. White has been setting the standard in swine confinement heating. Today, L.B. White is proud to be the exclusive provider of automatic variable-rate heat for both forced air box heaters and brooders with patent U.S. Patent No. 9,328,937 Smart Sense™ technology.