

SMEMA Functions

This option provides SMEMA 1.1 Busy/Board Available signal generation to coordinate product handling from upstream and downstream equipment. Detectors at the entrance and exit of the furnace system will generate a BUSY or BOARD_AVAILABLE signal. If a BUSY signal at the entrance or a BOARD_AVAILABLE signal at the exit persists for more than a fixed period of time (3 seconds), a board jam may be considered to have occurred. The conveyor motion will not be stopped in the event of a jam, but the machine goes into Cool-Down and an Alarm condition is displayed.

Product Sensor and On-Screen Tracking

The purpose of the product sensor and on-screen tracking feature is to count the number of product units travelling through the furnace. A set of sensors at the entrance and exit detect the leading edge of a product unit leaving the loading station or arriving at the unloading station. The tracking feature sets off an alarm if the exit sensor does not detect the arrival of an expected product unit at the unloading station. The product unit length must be set in the Recipe screen (see figure 1)

To initiate count, activate one or more tracking lanes by clicking the lane radial buttons on the upper left corner of the process screen.

Product Length

The Product Length field on the Recipe screen is used to determine the time it takes for a part to pass the Exit Sensor. This time is 1.5 times the part length divided by the belt speed. This time is used to ignore false readings as the part passes by the sensor.

Enter the product length in inches.

Exit Transit Time

The Exit Transit Time field is the time it takes a part to travel from the Exit sensor to the end of the belt where the next machine gets the part. The Boat_Available output signal is turned ON after the amount of time set in Exit Transit Time field as a signal to the next machine that there is a part ready to be acquired at the exit.

Enter Exit Transit time in seconds.

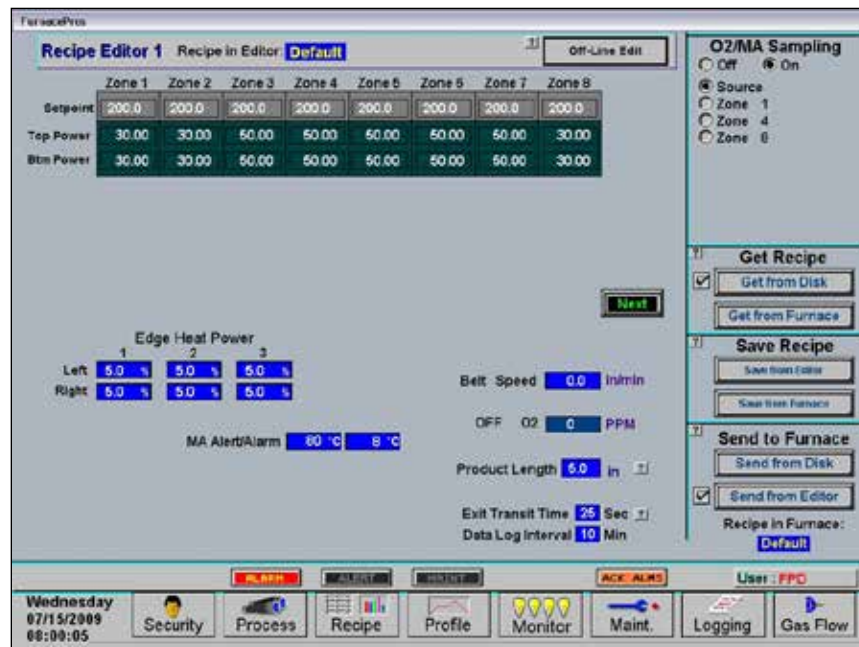


Figure 1. Recipe Screen showing Product Tracking settings

Product Tracking Sensors

The Product Tracking Sensors are self-contained fixed-field 880 nm infrared diffuse mode sensors located at the entrance and exit of the furnace. Their high excess gain and fixed-field technology allow them to detect objects of low reflectivity, while ignoring background surfaces. The cutoff distance is fixed. The most common furnace sensor model has a cutoff of 100 mm (4 inches). Backgrounds and background objects must always be placed beyond the cutoff distance.

Part Number	Sensor Model	Output	Range (cutoff)
350-79752-25	S18SN6FF25	NPN	25 mm (1 inch)
350-79752-50	S18SN6FF50	NPN	50 mm (2 inches)
350-79752-01	S18SN6FF100Q	NPN	100 mm (4 inches)

Table 1. Product Tracking Sensor Range (cutoff distance)

The Sensor compares the reflections of its emitted light beam from the product unit back to the sensor's two differently aimed detectors. If the near detector light signal is stronger than the far detector light signal, the sensor responds to the object. If the far detector light signal is stronger than the near detector light signal, the sensor ignores the object.

The cutoff distance is fixed (see Table 1). Objects lying beyond the cutoff distance usually are ignored, even if they are highly reflective. However, it is possible to falsely detect a background object under certain conditions. False sensor response will occur if a background surface reflects the sensor's light more strongly to the near detector (sensing detector) than to the far detector (cutoff detector). The result is a false ON condition. To cure this problem, angle the sensor slightly so the background does not reflect light back to the sensor.



Figure 2. Product Sensor

An object beyond the cutoff distance moving past the face of the sensor can cause unwanted triggering of the sensor if more light is reflected to the near detector than to the far detector. The problem is easily remedied by rotating the sensor 90°. The object then reflects the two fields equally, resulting in no false triggering.

Sensor Indicators. The sensor features two LED sensors (green and yellow). See table 2 for guide.

Indication	Condition
Green ON Steady	Power to sensor is ON
Green Flashing	Output is overloaded
Yellow ON Steady	Normally Open (NO) output is conducting
Yellow Flashing	Excess gain marginal (1 to 1.5x) in light condition

Table 2. Product Sensor Indicating Lights

Sensor Wiring. See table 3 and drawing 802-101777 for sensor hookup and wiring guide.

Wire color	Designation
Brown	+24 Vdc
Blue	dc common
Black	Normally Open (NO) output (not used)
White	Normally Closed (NC) output to Furnace PLC

Table 3. Product Sensor Wiring