Energy Management System with ArcticSense

Fastrax™ Energy Management System (EMS) is designed to turn gas fired blowers on when there is freezing rain or snow detected by monitoring site conditions such as precipitation, ambient air temperature and rail temperature. Fastrax™ EMS components include a circuit board, ambient air temperature sensor, and optional precipitation sensor and/or rail thermostat.

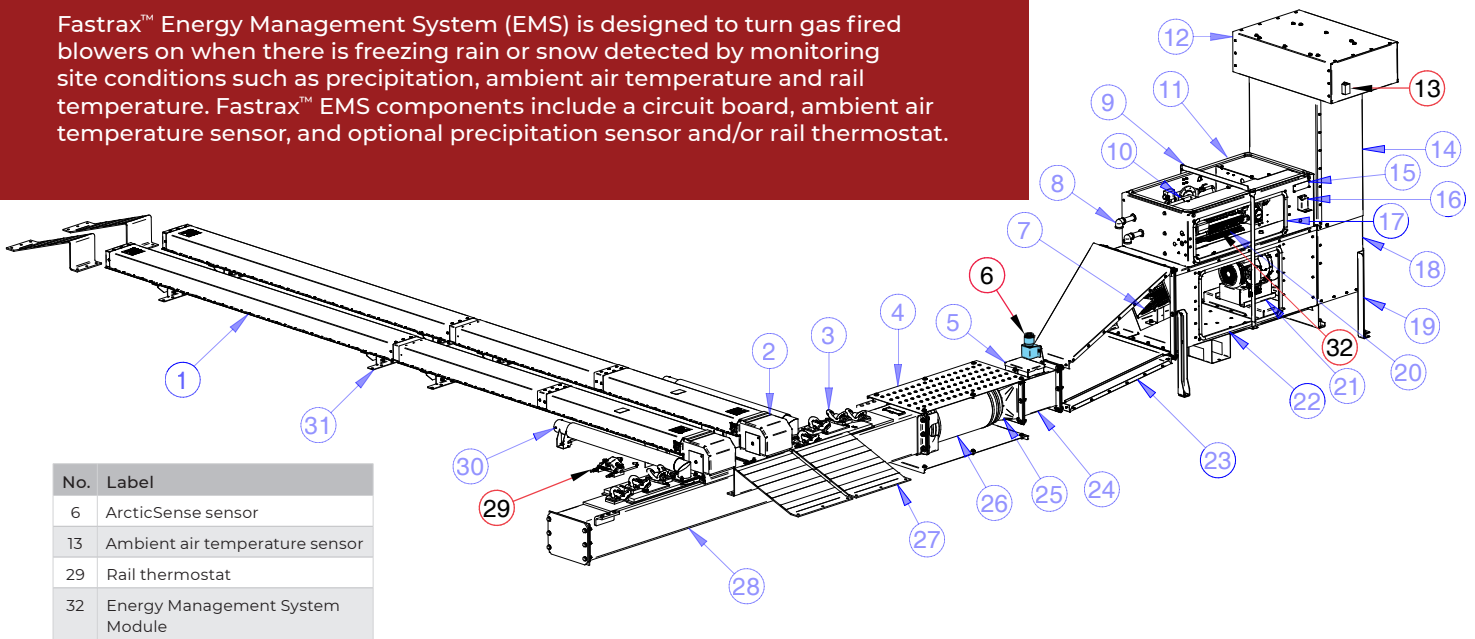| No.	Label
6	ArcticSense sensor
13	Ambient air temperature sensor
29	Rail thermostat
32	Energy Management System Module

Figure 25 – Energy Management System Diagram

Three EMS types:

1. HELLFIRE Energy Management System

HELLFIRE heaters are designed to accept all the EMS components, a circuit board[1], a plug in precipitation sensor, ambient air temperature sensor and rail thermostat. No extra enclosure or wiring required, simply plug them into the control board.

[1]The EMS have different circuit boards for HELLFIRE 2005 and HELLFIRE 2014 and therefore are not compatible with one another.

2. Single Heater Energy Management System

The Single Heater EMS automates the control of a single heater, typically at an end of a siding.

The Single Heater EMS includes an aggressive retry function that attempts three retries before reporting an alarm in the event of a heater failure. This EMS system is typically used on the Mark 6 and other manufacturers heaters.

3. Multi Heater Energy Management System

The Multi Heater EMS is recommended for the automatic control of 2 to 6 heaters, or 2 to 10 heaters, typically at a double crossover. The Multi Heater EMS is installed in the signal bungalow to provide a single control point for all heaters and use of existing control wiring.

The Multi Heater EMS includes a switch warming function, daily heartbeat heater trial, manual run timer, RTC timer, stagger start timer and test cycle. The switch warming function turns the switch heaters on briefly after extended periods to remove any blown snow accumulation or fallen ice in the switch. The heartbeat function helps avoid train delays by testing the heaters for 5 minutes daily, reporting any failures before a snowstorm.

Rail Thermostat

The rail thermostat for HELLFIRE blowers optimizes fuel consumption. It functions independently of the Energy Management System module, cycling the heater off when the rail temperatures rises above 49°F (4°C) then back on again once the temperature drops below 38°F (3°C).

ArcticSense Snow Detection

Arctic Sense Snow Detection is a combination of ambient temperature andprecipitation sensing. Snow or ice landing on the ArcticSense sensor melts and the water is detected. The combination of the
snow/rain temperature set point, moisture sensitivity set point, and
delay ON and OFF time turn the switch heater ON or OFF automatically, as required.
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Figure 23 – Precipitation Sensor   Figure 24 – Ambient Temperature Sensor

Energy Management System