**ThomTech**Design™

Snow Owl Passive Data Collection System

The Snow Owl Passive Data Collection System is an event logging and storage system for recording snowplow actions and tagging them with date, time, and location information. The events are stored as data records (each event is one record) on a memory storage card. The card is removed at the end of the day and the data is downloaded into a database application on a Windows based desktop computer. Because data is not actively transmitted using a wireless modem (such as cellular or radio), this system is considered a passive system. ThomTech also provides active systems using a variety of wireless modems for real-time applications and mapping display requirements. The diagram below illustrates our mobile data computer (MDC) and examples of the external sensors that can interface with our system.
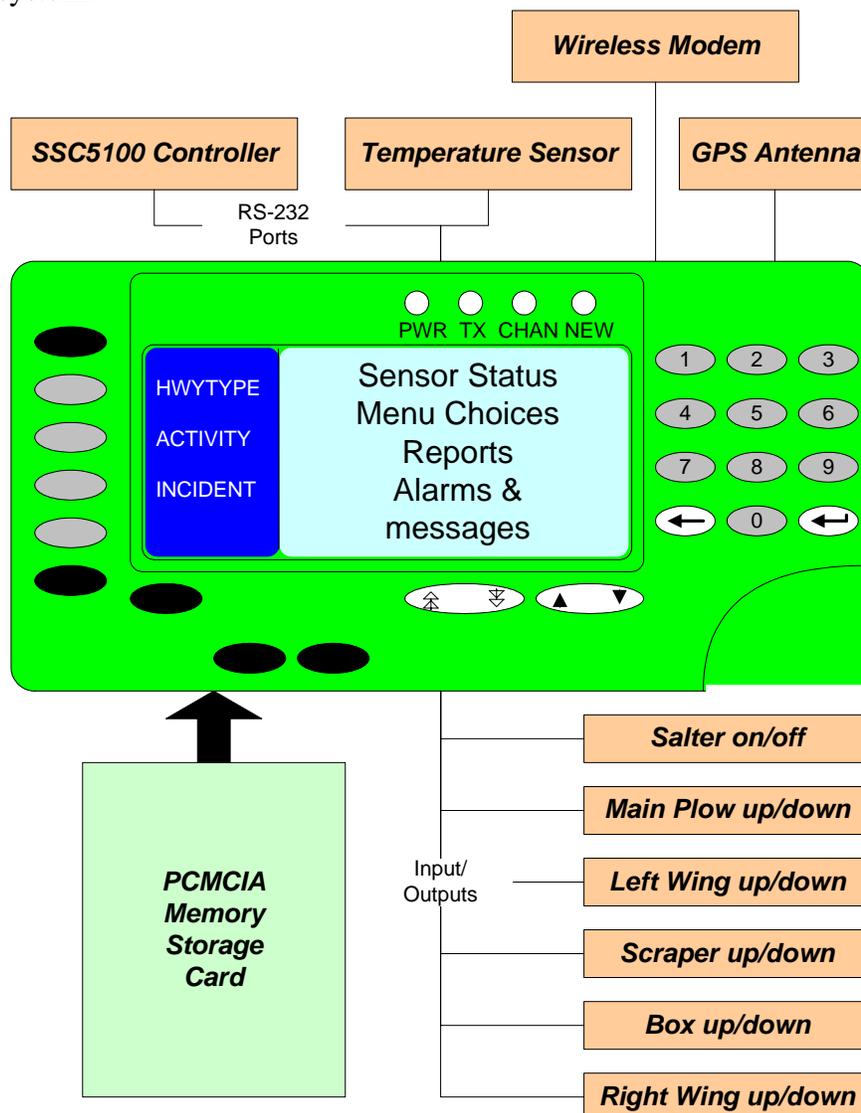
Sensor Interface

The SSC5100 controller provides a series of data fields each time an event occurs, such as turn spreader on/off, change spread rate, hit blast button, etc. The temperature sensor tags events with air and pavement temperature. The input/outputs (I/O) are standard two state voltage threshold devices that indicate movement (up/down) of the active plow devices, such main plow, wings, and scraper. These data fields are also added to the event record. The GPS antenna receives the location signals from the global positioning system (GPS) and sends them to the embedded GPS receiver. This signal provides the date, time, latitude, and longitude data fields for each record. The PCMCIA card is inserted into the card slot on the bottom of the MDC. The PCMCIA card records the events as records composed of several data fields. The data record fields are explained later in this document.

Event Logging:

Events are generated by several methods. The MDC seeks to record changes in snowplow activity and mark these changes (or tag them) with GPS information. An event is generated each time one of the following occurs:

1. An input/output (I/O) changes state (for example the main plow is changed from up to down, underbody blade up/down, salter on/off, etc.).
2. The SSC5100 provides a data set, this occurs if the rate changes, spreader turned on/off, blast button on/off, warning/error message, change for granular to liquid, or prewet on/off.
3. The unit travels 1000 feet or operates for 10 seconds.
4. Manual event is inputted by the operator, change highway type, record an activity, or mark an incident (such as downed light pole, drainage problem, pot hole, etc.).

Technical Specifications:

Supply voltage:	9 - 18 volts
Current consumption:	
• Typical (LCD heater off, medium backlight):	0.22 amps
• Maximum (LCD heater on, full backlight):	1.29 amps
Temperature range:	
• Operating:	-22 to +149°F
• Storage:	-22 to +176°F
Approximate Size (W x D x H):	8.5 x 2 x 3.5 in.
Weight:	1 pound
Interfaces:	2 RS-232, 6 I/Os wireless modem