CLAIMS

What is claimed is:

1. A device comprising:

an enclosure assembly comprising:

a cap;

a base mechanically coupled with the cap; and

a support bracket mechanically coupled with the base;

and

a printed circuit board (PCB) assembly comprising:

a processor;

a memory electrically coupled with the processor

a first sensor electrically coupled with the processor;

a second sensor electrically coupled with the processor;

a third sensor electrically coupled with the processor; and

a communication interface electrically coupled with the processor,

wherein:

the first sensor is a low-sensitivity vibration sensor configured to operate in a sleep state of the device and further configured to trigger the device into an active state;

the second sensor is a temperature sensor; and

the third sensor is a high-sensitivity vibration sensor configured to operate in the active state of the device.

2. The device of claim 1, wherein the communication interface is a wireless communication interface and at least a portion of the cap is substantially radio frequency (RF) transparent.

3. The device of claim 2, wherein the device when installed generally forms a shape of a tapered cylinder having a maximum height of 2.1 inches and a maximum diameter of 1.2 inches.

4. The device of claim 3, wherein the wireless communication interface is a Bluetooth® Low Energy (BLE) interface.

5. The device of claim 1, wherein the vibration sensor is an accelerometer sensor.

6. The device of claim 1, wherein the temperature sensor comprises at least one of a thermocouple or a thermistor.

7. The device of claim 1 further comprising a battery clamp.

8. The device of claim 7, wherein the battery clamp is positioned on the PCB assembly.

9. The device of claim 7 further comprising a battery.

10. The device of claim 9, wherein the battery is a lithium battery.

11. The device of claim 1, wherein the processor and the memory are embedded in a microcontroller.

12. The device of claim 1, wherein:

the third sensor is a triaxial accelerometer sensor having an x-axis, a y-axis, and a z-axis; and

the triaxial accelerometer sensor is positioned such that the z-axis is approximately perpendicular to a mounting surface of the base.

13. The device of claim 12, wherein:

the base is configured to allow the mounting surface to be attached to a machine surface to allow monitoring of machine vibration and machine temperature;

the base is configured to allow the support bracket to be rotated by a user around a perpendicular axis of the mounting surface; and

the PCB assembly and the triaxial accelerometer sensor are stationary relative to the support bracket.

14. The device of claim 13, wherein the base comprises a threaded mounting stud positioned approximately perpendicular the mounting surface.

15. The device of claim 1, wherein the PCB assembly comprises three rigid sections for component placement electrically coupled using two flexible PCB interconnects.

16. A method of manufacturing a device, the method comprising:

mechanically assembling a printed circuit board (PCB) assembly comprising:

a processor;

a memory electrically coupled with the processor

a first sensor electrically coupled with the processor;

a second sensor electrically coupled with the processor;

a third sensor electrically coupled with the processor; and

a communication interface electrically coupled with the processor,

wherein:

the first sensor is a low-sensitivity vibration sensor configured to operate in a sleep state of the device and further configured to trigger the device into an active state;

the second sensor is a temperature sensor; and

the third sensor is a high-sensitivity vibration sensor configured to operate in the active state of the device;

and

mechanically assembling the PCB assembly within an enclosure comprising;

a cap;

a base mechanically coupled with the cap; and

a mount mechanically coupled with the base.

17. A method comprising:

installing a device on a machine, the device comprising:

an enclosure assembly comprising:

a cap;

a base mechanically coupled with the cap; and

a support bracket mechanically coupled with the base;

a printed circuit board (PCB) assembly comprising:

a processor;

a memory coupled with the processor

a first sensor coupled with the processor;

a second sensor coupled with the processor;

a third sensor coupled with the processor; and

a communication interface coupled with the processor,

wherein:

the first sensor is a low-sensitivity vibration sensor configured to operate in a sleep state of the device and further configured to trigger the device into an active state;

the second sensor is a temperature sensor; and

the third sensor is a high-sensitivity vibration sensor configured to operate in the active state of the device;

and

a battery;

and

receiving first sensor data, second sensor data and third sensor data transmitted via the communication interface.