

FCC ID: M5ZVM1

Installation and Operation Instructions for the Wireless Vibration Sensor.

## Point Six, Inc.

### Wireless Vibration Sensor Model Point Sensor Vibration

#### Installation and Operation Instructions

The Point Sensor Vibration wireless pressure sensor transmits a digital value representing vibration, or other vibration levels from various range sensor elements and a unique serial number to a 418 MHz receiver. The Point Sensor Vibration is enclosed in a high impact ABS enclosure for direct surface mounting in the environment to be measured. Point Sensor Vibration is battery operated, the battery may be replaced by the user.

**Application:** Apply the sensor to a surface to with double-sided adhesive tape. Make sure that the side labeled with FCC ID is visible and away from any metal surfaces.

**Service Function:** The wireless vibration sensor has an installation mode switch. A momentary push of this switch will start the convert/transmit cycles. When new and until this button is pushed the Point Sensor Vibration will not transmit. The Point Sensor Vibration will transmit a special installation status mark in the data packet immediately after the installation/start switch is pushed. After the start a push of the installation switch will result in the immediate transmission of data and ID and installation status mark.

**Battery:** A 3.6 Volt lithium battery powers the Point Sensor Vibration wireless sensor. The battery will last for more than 10 years in the idle state (as shipped from the manufacturer). The Point Sensor Vibration will transmit data for as long as 3 years at a rate of once each 30 seconds once started. The Point Sensor Vibration is completely covered with a conformal coating to protect the electronics from the environment and condensation. The Point Sensor Vibration may be placed in a quiescent state (battery life greater than 10 years) by holding the installation switch closed for more than 5 seconds.

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MADE IN USA

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES, OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS: (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESERED OPERATION

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## Wireless Vibration Sensor Data Format

The Point Six, Inc. 418 MHz wireless sensors require a compatible receiver with the ability to receive, error check and provide RS232 and RS422/485 interface. This document describes the data format provided by the **HA9-wow** 418 MHz. Receiver.

The transmit packet from a receiver is approximately 15 milliseconds in duration and consists of 13 bytes of data:

- 1-byte ID/Mode field
- 8-byte serial number
- 2-byte vibration level as a 12-bit number
- 2-byte CRC-16 error check

The HA9-wow receiver processes this packet. The receiver performs a CRC-16 error check on the packet. If the data is not accurate it is discarded. When a packet is received that is error free it is converted to a 29-character packet and transmitted out the serial port at 19,200 Baud. The data is transmitted serially in ASCII Hex format and terminated with a CR character. This format requires two bytes for each byte of data; 14 data bytes x 2=28 plus the CR is 29 characters. See the HA8-wow specification for details.

The resulting binary data format of the packet is:

- |                 |   |
|-----------------|---|
| 1-byte ID field | this field will contain a byte whose LSBit indicates the service state of the transmitter, 0=normal, 1=service mode.  |
| 8-byte serial#  | this field contains the serial number of the 1-Wire sensor.   |
| 2-byte data     | this field contains the vibration data as a 12-bit number stored MSB first. A value of 0FFF is a full scale reading. A zero input vibration will result in a reading of 0000. |
| 2-byte CRC-16   | this is the originally received data packet CRC as described above.   |
| 1-byte checksum | the checksum is a mod 256 sum of all the ASCII character values in the response but does not include the CR   |

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Example:

**41283FA60B000000EC000F8AD0AB<CR>**

This field is the mode indicator, the LS-bit which indicates the service state of the transmitter, C1=normal, C0=service mode.

**41283FA60B000000EC000F8AD0AB <CR>**

This field is the unique serial number of the 1-Wire sensor.

**41283FA60B000000EC000F8AD0AB <CR>**

This is vibration data field stored MSByte first as a 12-bit number in a 16-bit field. The number shown is 000F (15) or 15/4096 of full scale. Use the calibration points printed on the sensor to calibrate the sensor for full range vibration readings.

**41283FA60B000000EC000F8AD0AB <CR>**

This field is the CRC-16 error check as was originally received and checked. This CRC is over the first 11 bytes of the packet starting with the mode flags and ending with inclusion of the temperature data.

**41283FA60B000000EC000F8AD0AB <CR>**

This field is the mod 256 sum of all the ASCII character values in the response but does not include the <CR>.

**4828AE9105000000AA2D2DD474AB <CR>**

This is the CR terminator, 0Dhex.

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## **FCC Radio Frequency Interference Statement**

### **Wireless Vibration Sensor**

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**NOTE:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15, Subpart B, of the FCC Rules. This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instructions, it may cause interference to radio communications.

The limits are designed to provide reasonable protection against such interference in a residential situation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

- *Reorient or relocate the receiving antenna of the affected radio or television*
- *Increase the separation between the equipment and the affected receiver.*
- *Connect the equipment and the affected receiver to power outlets on separate circuits.*
- *Consult the dealer or an experienced radio/TV technician for help.*

### **MODIFICATIONS**

Changes or modifications not expressly approved by **Point Six Inc.** could void the user's authority to operate the equipment.