

BOSSPAC™
ENGINEERING TECHNOLOGY



WASP

WASP™
**Wireless Acceleration
Sensor Puck**

USER MANUAL

VERSION 3.20
15/07/2016



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BossPac Engineering & Technology

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BossPac Engineering & Technology

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WARNING

READ THIS MANUAL BEFORE OPERATING THIS DEVICE.

MISE EN GARDE

LISEZ LE MANUEL AVANT UTILISATER

WARNING

**TO PREVENT EQUIPMENT FAILURE, AND/OR DAMAGE,
AND/OR PERSONAL INJURY, REGULAR CALIBRATION
AND INSPECTION OF THIS DEVICE IS REQUIRED.**

MISE EN GARDE

**POUR PRÉVENIR LE DOMMAGE À L'EQUIPMENT, ET/AU AUX
PERSON, LA CÀLIBRATION ET L'INSPECTION REGULIER EST
RÉQUIS.**

WARNING - EXPLOSION HAZARD

**SUBSTITUTION OF COMPONENTS MAY IMPAIR
SUITABILITY FOR CLASS 1, DIVISION 2**

AVERTISSEMENT – RISQUE D’EXPLOSION

**LA SUBSTITUTION DE COMPOSANTS RENDRE CE MATÉRIEL
INACCEPTABLE POUR LES EMPLACEMENTS DE CLASSE 1,
DIVISION 2**

WARNING - EXPLOSION HAZARD

**DO NOT REMOVE BATTERIES UNLESS
AREA IS KNOWN TO BE NON-HAZARDOUS.**

AVERTISSEMENT - RISQUE D’EXPLOSION

**AFIN D’ÉVITER TOUT RISQUE D’EXPLOSION, S’ASSURER QUE
L’EMPLACEMENT EST DÉSIGNÉ NON DANGEREUX AVANT
CHANGER LA BATTERIE.**

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1. Introduction

This Operations Manual provides basic information on how to operate the **WASP™ Wireless Acceleration Sensor Puck**

This manual covers the following topics:

- Installation of WASP™
- Assembling of WASP™
- Placement of WASP™
- Optional Thermal Calibration of WASP™
- Troubleshooting

2. Installation

2.1. Assembling Of Wireless Sensor Pucks

2.1.1 Battery Installation

Each sensor puck is shipped with a separate Battery Circuit Board Assembly. The battery circuit board contains a non-removable long lasting lithium battery, (permanently secured to pcb).

WARNING – USE ONLY WITH REPLACEABLE BATTERY BOSSPAC EA000166

WARNING – EXPLOSION HAZARD. DO NOT REMOVE BATTERIES UNLESS AREA IS KNOWN TO BE NON-HAZARDOUS.

AVERTISSEMENT – RISQUE D'EXPLOSION. AFIN D'ÉVITER TOUT RISQUÉ D'EXPLOSION, S'ASSURER QUE L'EMPLACEMENT EST DÉSIGNÉ NON DANGEREUX AVANT CHANGER LA BATTERIE.

2.1.2 Sensor Activation

To turn on and activate each sensor puck you must carefully attach the battery board to the sensor unit. Plug the pins on the battery board into the corresponding sockets on the sensor puck housing. See Figure 1:

It is important that the Battery PCB Assembly and the WASP™ Sensor are oriented correctly. Failure to orient the battery with the WASP™ can cause damage to the battery pins and will damage the Sensor. This is done by lining up the white or silver mark on the WASP™ main housing with the largest cutout on the battery board as show in figure below. Newer sensor housing also have a small notch at the location of the white marking.

Once the pins make contact a LED on the battery module board will turn on to indicate *power on*. During this time, the WASP™ device performs a power-on self test (POST). The LED will flash quickly for a couple of seconds and then turn off to indicate this cycle.

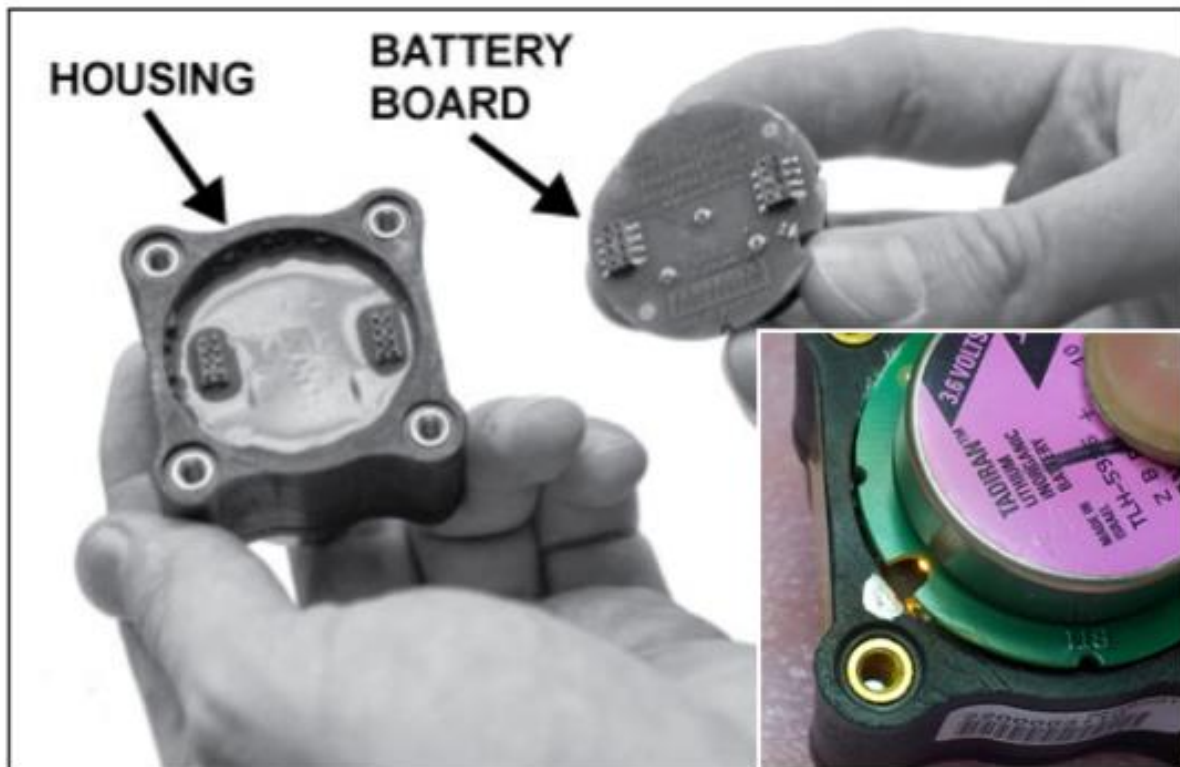


Figure 1: Install WASP™ Battery Board

2.1.3 Cap and Gasket Installation

Each sensor includes a Gylon 3545 gasket to be placed between housing and top cap. This gasket is required for the sensor to maintain an IP54 rating. There is no specific orientation required for the top cap; and it is retained by four 8-32 stainless steel screws.

WARNING – DO NOT REMOVE FOUR SCREWS ON THE BOTTOM OF THE DEVICE

2.1.4 WASP™ LED Error Indicator

Should the POST (Power On Self Test) fail, the device locks up and **flashes** the LED in a discernible pattern to help diagnose the source of the problem. See the section at the end of this manual on troubleshooting for details on the LED flash codes.

2.2. Placement Of The WASP™ Pucks

2.2.1 WASP™ Mounting

The sensor pucks can be attached to the desired equipment by the supplied magnet base. Optional methods of epoxy or stud mounted can be used. The supplied magnets have an effective operating range of -40°C to 185°C (-40°F to 365°F)

WARNING – THE RARE EARTH MAGNET BASE PLATE HAS IN EXCESS OF 50 LBS OF FORCE AND CAN CAUSE HARM IF CARE IS NOT TAKEN

To ensure effective wireless transmission between the sensor pucks and the receiver it is recommended that there is a direct line of sight between the units.

- It is recommended that the surface is prepared for the installation of the WASP™ sensors.
- Ensure the surface is clear of debris and excess paint.
- Ensure the magnetic base is screwed securely to the stud on the bottom of the WASP™.
- Ensure the top screws are tightened to a maximum of 15 ft. lb or 1.7 N m
- It is recommended to fill the center section of the magnetic base plate with a small amount of SILICON HEAT TRANSFER COMPOUND to facilitate the most efficient heat transfer from the mounting surface into the sensor.
- Carefully set the sensor into place. Avoid snapping with the magnet base as it can damage the magnet.

2.3. Optional Thermal Calibration Of WASP™s

To ensure the greatest accuracy of the monitored variables it is optional to do thermal calibration of each WASP™ unit. The process of thermal calibration is as follows:

- Ensure the machinery for which the WASP™ is to be attached is at operating temperature.
- Place the WASP™ (s) units at their desired mounting points using thermal paste. Allow 15 minutes for the temperature to stabilize.
- Using a thermometer gun, record the temperature value at the valve cap at the mounting point of the WASP™ unit.
- At the receiver, adjust the display temperature to match the value of the thermometer gun using the temperature offset function. (See the section on temperature calibration in the “Setting Temperature Warning and Critical Alarm Thresholds” section of this manual).

3. Troubleshooting WASP LED Flash Codes

3.1. LED Flash Codes

The following table contains a brief description of all flash codes reported by the device:

FLASH CODE	DESCRIPTION
1 Flash - Accelerometer Failure	Device cannot communicate with the accelerometer
2 Flashes - Battery Failure	Device battery is either too low or too high. Valid regions are 3.00 V to 4.00 V
3 Flashes - Temperature Sensor Failure	Temperature sensor readings are outside of the acceptable start-up temperature window, from -40 °C to +100 °C
4 Flashes - Radio Failure	Device cannot communicate with the onboard radio
5 Flashes - Regulator Failure	The regulated voltage is outside of the allowable window, yet the MCU is still able to operate. For safety and reliability, the device only accepts regulated voltages between 2.00 and 2.40 V.

3.2. What To Do When An Error Is Reported?

Accelerator Failure (1-Flash)

This is indicative of an electrical failure: either the accelerometer isn't receiving power or the device has lost electrical connectivity between the MCU and the accelerometer. In either event, the device is inoperative. Recommend replacing the WASP unit.

Battery Failure (2-Flash)

Recommend removing and reconnecting the battery as sometimes the power connectors do not mate evenly. If the problem still persists, replace the battery board.

Temperature Sensor Failure (3-Flash)

Assuming that the device isn't powering up in extreme temperatures, this is indicative of an electrical fault with the RTD. Recommend replacing the WASP unit.

Radio Failure (4-Flash)

Much like an accelerometer failure, this is indicative of an electrical failure. The problem is much more severe in this instance as device cannot communicate. Recommend replacing the WASP unit.

Regulator Failure (5-Flash)

This is indicative of an electrical failure. Replace the WASP unit.

3.3. Contact Info

BossPac engineers can be reached at:

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FCC & IC Statements

FCC Class B Part 15

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 undesired operation.

Changes or modifications not expressly approved by BossPac Engineering Technology Inc. may void the user's authority to operate the equipment.

IC RSS 210

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

FCC/IC RF Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. The antenna(s) used for this equipment must be installed to provide a separation distance of at least 8 inches (20cm) from all persons.

Cet équipement est conforme à l'exposition aux radiations de FCC et d'Industrie Canada établies pour un environnement non contrôlé. L'antenne (s) utilisé pour cet équipement doit être installé pour fournir une distance d'au moins 20cm à partir de toutes les personnes.