Plimpton Innovations, LLC

Accelerometer Sensor

Instruction Manual

Contents

Introduction

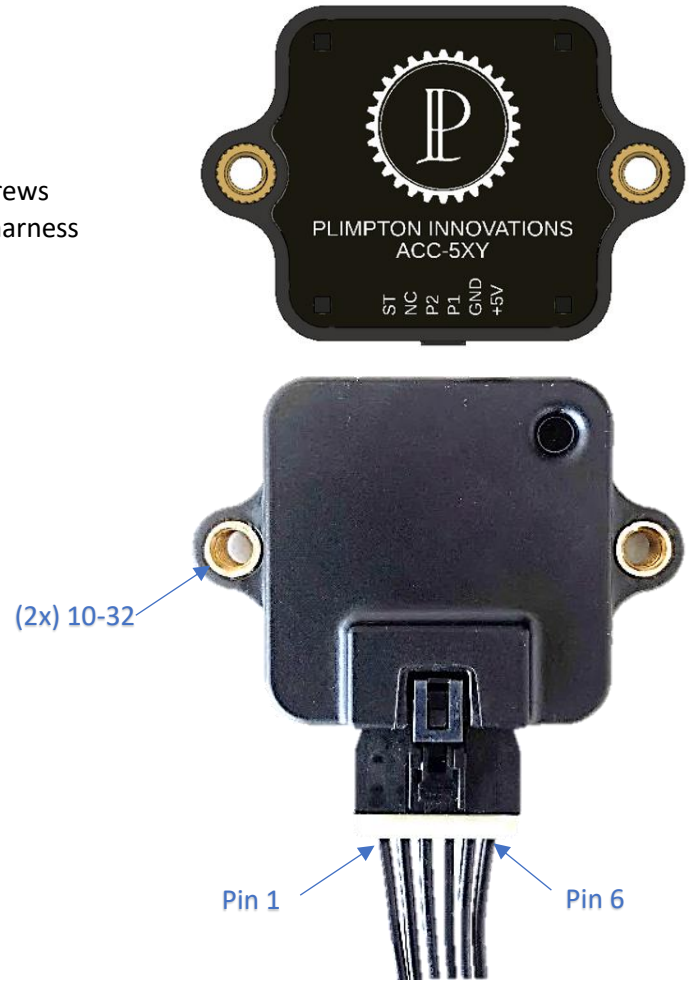
The PI Accelerometer sensor is designed specifically for motorsports applications. The most common use of the sensor is to record the motion of the vehicle via an aftermarket datalogger and displaying the motion to the tuner to as an aid optimize performance. If a timeslip is not provided, this can also be used to determine if the vehicle was faster or slower than a known race event. The sensor output signals can be wired into most aftermarket ECU's capable of 0-5V analog inputs.

Characteristics

- Power on using 5 Volt sensor power (NO GREATER THAN 5.5V)
- 0-5 Volt Analog outputs
- Low Power Consumption

Package Contents

- Accelerometer Sensor
- Stainless Steel 10-32 Button Head mounting screws
- Components for mending with existing wiring harness
    - 1.5ft Flying Lead Harness
    - Heat shrink
    - Splices (x6)
- Components for DIY Harness
    - Mating connector
    - Wire terminals (minimum one extra)
    - Terminal Lock
- Calibration Card



Terms of Use

The use of this equipment implies in total accordance with the terms described in this manual and exempts the manufacturer from any responsibility regarding product misuse. This product must be installed and tuned by specialized auto shops or professionals with experience in aftermarket motorsports wiring and vehicle tuning. The oversight of any of the warnings or precautions described in this manual can cause damages and lead to warranty void of this product warranty.

This product is not certified or designed for aeronautic purposes or any flying vehicles. In some countries where an annual inspection of vehicles is enforced, no modification in the OEM ECU is permitted. Be informed about local laws and regulations prior to the product installation.

Limited Warranty

This product warranty is limited to one year from the purchase date, only covering manufacturing defects and requiring purchase invoice presentation. Damages caused by failure or misuse of the unit are not covered by the warranty. Warranty void analysis is done exclusively by Plimpton Innovations, LLC technical support team.

Additional Legal Disclaimer

The use of this product is done so at the users own risk and his/her own responsibility. Information furnished by Plimpton Innovations, LLC is believed to be accurate and reliable. However, no responsibility is assumed by Plimpton Innovations, LLC for its use, damages incurred from its use, nor infringements of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under patent or patent rights of Plimpton Innovations, LLC.

Installation

Before installation, ensure power to the vehicle is off and the battery is disconnected.

Mounting Location

There are multiple locations and orientations the sensor can be mounted. Please Follow the checklist below for determining if the location is suitable:

- ☐ Sensor is away from high temperatures
  - engine/drivetrain bays, turbo(s), exhaust piping/manifolds, or heat exchanger devices (Radiator, intercooler, exc.)
- ☐ Sensor is away from harsh chemicals
- ☐ Sensor is out of direct sunlight and rainfall
- ☐ Sensor is spaced off panels that may get warm from conductive, convective, or radiative effects (Achievable with nylon spacers, see Figure 1)

Acceptable mounting locations on the vehicle may include:

a. In the vehicle cabin on a flat panel
b. In the vehicle cabin on a PI rollbar mount

Once a suitable location is determined, fasten the sensor using the supplied hardware in the enclosure.

Figure 1: Sensor mounted with spacers.

Standard Pinout and Calibration

The standard sensor pin out is shown below. If a custom programmed sensor was purchased, the alternative pin out will be provided on the calibration card supplied in the original package.

Table 1: Standard Programming Wiring Pinout and Calibration.

PIN	DESCRIPTION
P1	5V Sensor Power (5.5V MAX)
P2	Sensor Ground
P3	Acceleration (Analog)
P4	Acceleration (Analog)
P5	NC (Not Connected)
P6	ST – Self Test

ATTENTION: Please follow the calibration examples in your ECU Provider's setup section closely as some of the units and values may be changed to accommodate ECU.

A white shrink label displaying "+5V" is preshrunk on the pin 1 wire of the pigtail. For further clarity, small abbreviations of the channels are shown on the backing plate and align with each corresponding pin.

Figure 2: Acceleration Sensor Backing Plate with Nomenclature.

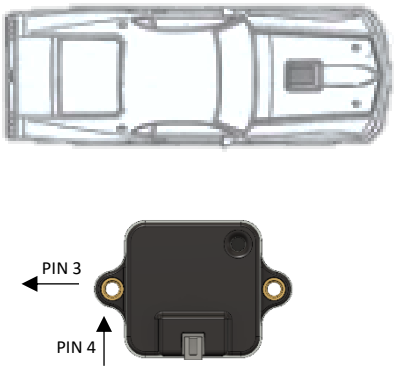
Wiring

The wiring harness must be protected from sharp edges that may damage wires and cause short-circuits. Pay close attention when passing the wiring harness through holes, always using rubber shields or other kind of wire protection. Route the wiring through areas that aren't exposed to chemicals, excessive heat, and away from moving parts. Follow the following steps for wiring the sensor via pigtail.

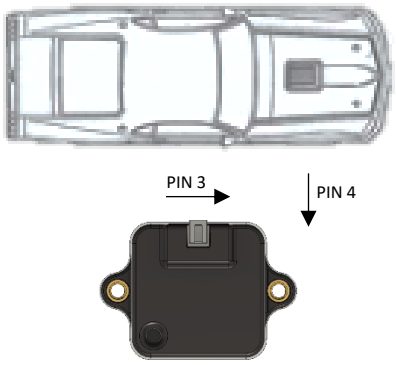
1. Ensure power in the vehicle is off
2. Strip ¼" of the wire insulation away on pigtail (20awg wires supplied)
3. Strip ¼" of the wire insulation away on vehicle wires
4. Use proper size crimp style splice connector to join wires and protect splice with heat shrink
5. Push Molex connector into sensor until latching occurs
6. Once sensor is tightened, secure the wiring harness to body or chassis between 0.75"-1.5" away from sensor connection using a zip tie or wire clamp

For DIY wiring harness, please refer to the Nano-fit Molex Application Specification:
https://www.molex.com/pdm_docs/as/AS-105300-100-001.pdf

Calibration Diagrams



	-5G	+5G
PIN 1: **5V ONLY**		
PIN 2: **Sensor GND**		
PIN 3: **Longitudinal G**	PIN 3 HIGH	PIN 3 LOW
PIN 4: **Lateral G**	PIN 4 LOW	PIN 4 HIGH
PIN 5: **No Connect**		
PIN 6: **Self-Test**		



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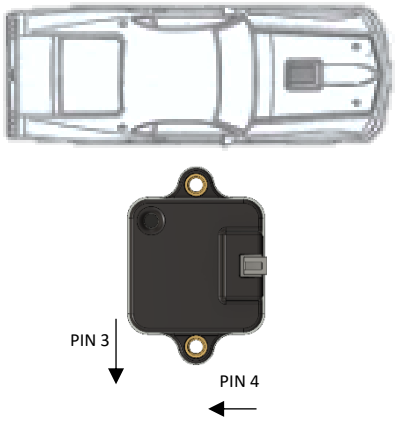

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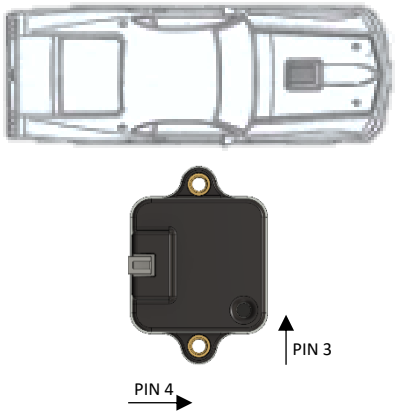

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** Please refer to the serial number and calibration card provided for pin voltage values**

Revision

Version	Change	Date
V1.0	Initial Release	June 4th, 2022