

# IPS-160

## 6-axes Inertial Platform System with full sensor redundancy

### Description

IPS160 (Inertial Platform System) is an integrated inertial measurement unit improved to be suitable to major stresses of high performance race vehicle in terms of vibration and temperature.

IPS160 incorporates redundant (double) inertial platform having 3-axial accelerometers and 3-axial gyroscopes each; it provides reliable measures even in harsh environments, like high temperature (up to 105°C) or vibration peaks (over 56g peak-to-peak) without any saturation or resonance.

Double CAN communication lines give a fully redundant system, while SW selectable terminations ease loom design/installation.

IPS has its sensors calibrated for offset and gain over temperature.

IPS provides all independent sensor measures as well as advanced measure data fusion of all sensors in order to provide the best and stable acceleration/angular rate measure.

For motorbike application, the bank angle estimation is performed (vehicle speed information has to be provided to the device via CAN Line).

IPS160 mechanical design and loom back-compatible to Magneti Marelli DIP120 module, easy to switch device seamlessly.

### Main Features

- 2 internal 3-axial accelerometer (scale up to 55 g)
- 2 internal 3-axial gyroscope (scale from 250 °/s, up to 2000 °/s)
- 2 CAN lines



### Benefits

- Redundant sensors and CAN lines for higher reliable, fault tolerant vehicle design
- Measure of X, Y and Z accelerations
- Measure of pitch, roll and yaw angular rates
- Enhanced measures by means of redundant sensors reading
- Estimation of bike's Bank Angle (\*)
- SW selectable signal bandwidth
- Programmable CAN packets layout
- Power-up self-test and failure diagnostics

### Typical Applications

All race bikes/cars

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## Technical Characteristics

### Inputs

Accelerometer (1mg @ FS 50 g)	2x 3axes
Gyroscope (0.01°/s @ FS 250°/s)	2x 3axes
Internal microcontroller temperature	1
Internal board temperature	2
VBATT reading	1

### Communications

CAN line (1 Mbit/s) with sw selectable termination	2
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### Other Characteristics

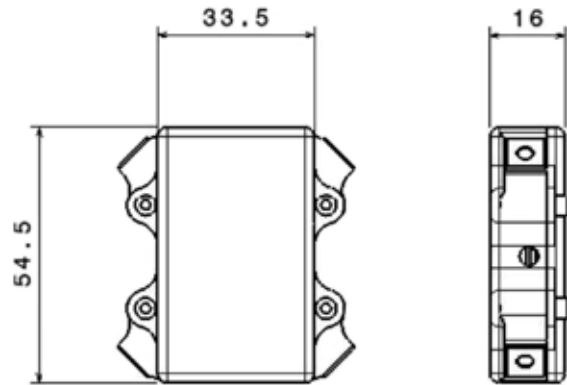
Power supply	8 to 18 V
Operating internal temperature range	10°C - 105° C
Vibrations range tested	20g RMS (sin 50-2kHz)
Accelerometer stability	0.5mg/°C
Gyro stability	0.01°/s /°C
Protection class	IP65
Cable length (min.)	50 cm
Max dimensions (without cable)	38,5 x 50,5 x 16 mm
Weight (with cable)	100 g

## Cable Pin Out

### IPS160 pin out: 8STA61035PN

Function	Pin
<b>Communication</b>	
CAN IMU1 line - High	5
CAN IMU1 line - Low	6
CAN IMU2 line - High	12
CAN IMU2 line - Low	13
<b>Miscellaneous</b>	
VBATT	1
Power GND	2
VBATT	11
Power GND	10
<b>Not Used</b>	
NC	3
NC	4
NC	7
NC	8
NC	9

## Dimensions



Dimensions in millimetres

## Installation

### Mounting

- It may be advisable to fix the case by the use of silent block for shock absorbing
- It is suggested to be mounted as closed as possible to the COG (Centre Of Gravity)
- In general, mounting affects measures quality and overall precision. It is advised to design and verify it carefully

### Orientation

- Main surface must be parallel to the ground
- X, Y and Z axis directions must be respected, as shown on module case

NOTE: the described orientation is mandatory for proper computation of bank angle