

# SpeedPod

## Data Sheet Detail



### 1 GENERAL

**SpeedPod** is a measurement gauge with inertial sensor technology, designed to measure multiple characteristics of a door system:

- Minimum Closing Speed
- Opening Speed
- Window Vibration
- Hinge Angle
- Hinge Friction

#### 1.1 SpeedPod Flex

**SpeedPod Flex** comes with all the capabilities needed to measure the minimum closing speed of standard doors that rotate around a near vertical hinge axis. A wide variety of modules are available to customize and expand the product performance and functionality.

Our experts are available to help select the right modules for your application.

##### 1.1.1 Data Logging Module

The **Data Logging Module** allows the user to save measurements to a text file. The text file has a predetermined csv format with header. The file can be stored in the built-in memory card and later transferred via USB cable or saved directly to a computer.

Included fields in the text file:

- Timestamp
- Vehicle ID
- Door Location
- Characteristic
- Value
- Unit
- Pass / Fail

##### Example of file content

```
Time,VehicleID,DoorLocation,ProfileName,Mode, Value, Units,Status
2022 09 20 09:53:20, VIN123, Front Left, ProfA, Speed,1260,mm/sec, Pass
2022 09 20 09:53:45, VIN123, Front Right, ProfA, Speed,956,mm/sec,Pass
2022 09 20 09:54:12, VIN124, Front Left, ProfB, Speed,1460,mm/sec,Fail, WindowShake,12.4,mm,Pass
2022 09 20 15:23:03, DemoName, Rear Left, ProfC, Speed,789,mm/sec,Pass, WindowShake,21.3,mm,Fail
2022 09 20 15:27:03, , Front Rear, ProfB, Speed,1260,mm/sec,Pass
2022 09 20 15:28:13, , Right Rear, ProfB, Speed,1021,mm/sec,Pass, WindowShake,31.4,mm,Fail
2022 09 21 05:28:15, , Right Rear, ProfB, Hinge Angle,1.02,deg,1.1,deg, Pass
```

### 1.1.2 Universal Hinge Orientation Module

The **Universal Hinge Orientation Module** expands the capability of the SpeedPod technology to perform measurements in any direction for many popular door systems:

- Liftgates
- Frunks
- Hoods
- Tailgates
- Trunks
- Butterfly Doors

### 1.1.3 Sliding Door Module

The **Sliding Door Module** allows the user to measure the characteristics of a sliding door mechanism including several types that can be found on cars, minivans, and commercial or delivery vehicles:

- Sliding doors
- Pocket doors
- Roller doors

### 1.1.4 Trajectory Analysis Module

The **Trajectory Analysis Module** performs an advanced analysis of the data to report in real-time the characteristics related to the trajectory of the door:

- Friction Energy
- Door Open Angle (hinged doors only)
- Detent Angles (hinged doors only)
- X and Y Hinge Inclination Angle (hinged doors only)

### 1.1.5 Frameless Window Analysis Module

The **Frameless Window Analysis Module** performs an advanced analysis of the data to report in real-time the characteristics of a frameless window:

- Window Shake when Unlatching
- Window Drop
- Window Preload Angle

### 1.1.6 Latch Analysis Module

The **Latch Analysis Module** is specifically designed to characterize key elements of latch behavior:

- Unlatching Event (Pop Test)
- Striker Alignment

## 1.2 SpeedPod Pro

**SpeedPod Pro** is the most advanced version of SpeedPod Flex and includes all optional modules for superior flexibility of usage and in-depth analysis for all door types.

## 2 OPERATIONAL

### 2.1 SpeedPod Kit Content

A SpeedPod Kit (Flex and Pro) includes the following components.

- SpeedPod
- Protective Cover
- 2 Batteries (in device)
- Power Dock
- Power Cable
- USB Cable
- Wrist Strap
- MyPod Software
- 16GB Memory

### 2.2 MyPod Configuration Software

- Profile Definition: Manages customized templates for inspection by door type
- Measurement Specific Configuration: Enter Door Geometry (if required), Speed Angle, Minimum Number of Acquisitions
- Tolerances: Upper Tolerance / Upper Warning / Lower Warning / Lower Tolerance
- Gap Mode: Monitors “closed” and “not closed” data and will only conclude when set gap tolerance is met

### 2.3 User Feedback

- High Contrast e-ink Display
- Screen Size Diameter 25mm
- Protected by Scratch-Resistant Domed Glass
- Ultra-Bright Triple LED: 3 multicolor LEDs provide real-time information on measurement status
- Ultra-Bright Tolerance LED: Green/Yellow/Red represents the tolerance evaluation

### 2.4 Wireless Communication

- Bluetooth v4.2 Module for wireless connectivity
- Wi-Fi Module 802.11b/g/n for wireless connectivity
- MyPod configuration software to setup and configure the device for application requirements
- Optional data collection software such as Audit or PLS for structured data collection or data viewing
- USB-C 3.1, Gen 2 cable included for charging and wired connection

### 2.5 Mounting

- Patented Suction Cup Mounting System with single movement activation
- Up to 24h attachment on clear surfaces
- Validated for over 100,000 cycles

### 3 SPECIFICATIONS

#### 3.1 Speed Measurement

Momentary Speed at a specified position:

- Range: 10 to 4300 mm/sec
- Uncertainty: < 1.5%
- Resolution: 1 mm/sec
- Units: m/sec, mm/sec, ft/sec

#### 3.2 Vibration Measurement

Door or Window Vibration:

- Range:  $\pm 160$  m/sec<sup>2</sup>
- Uncertainty: < 1.5%
- Resolution : 0.05 m/sec<sup>2</sup>

#### 3.3 Additional Measurement

Additional metrics will be dependent on the performance of the two main sensors. Performance indicators of the individual modules--such as angle and friction measurements--are available upon request.

#### 3.4 Memory Capacity

- Integrated 16 GB SD card available for measurement storage
- Accessible via USB-C connection

#### 3.5 Environmental

- Operating Temperature: -10°C to 60°C
- Storage Temperature: -20 °C to +60 °C
- Humidity: 65  $\pm$  20 % RH (non-condensing)

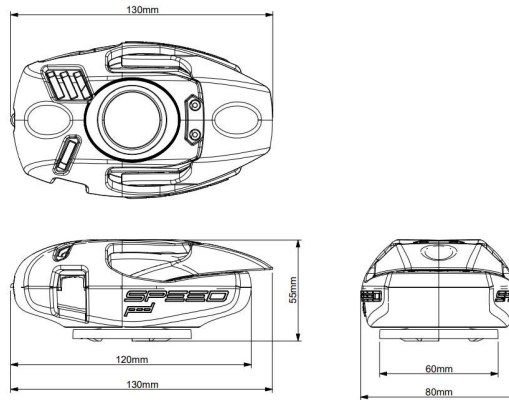
#### 3.6 Battery

- Two Independent Batteries: 3.7V, 650mAh 2.5Wh (1)
- Li-ion Rechargeable Batteries
- Operation Time on a Single Full Charge: 8h (2)
- Power Station for Fast Charging.
  - Charging Time from 0 to 40%: 1h
  - Charging Time from 0 to 100%: 3h
- Power Station uses Wall Adapter: 110-210VAC to 5VDC, 6W

### 3.7 Dimensions and Weight

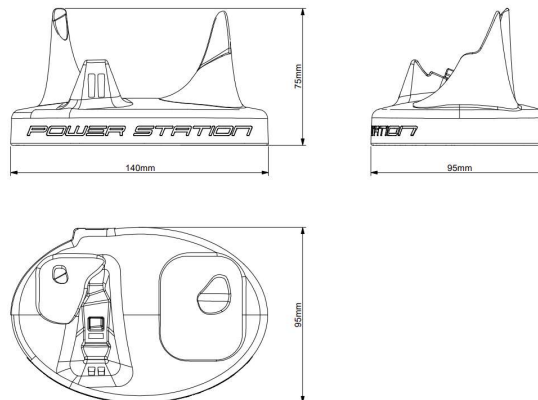
#### 3.7.1 SpeedPod Device

- Height x Width x Length: 55 x 80 x 130mm
- Weight: 0.23kg



#### 3.7.2 Power Station

- Height x Width x Length: 75 x 95 x 140mm
- Weight: 0.5kg



#### 3.7.3 SpeedPod Kit in Shipping Case

- Height x Width x Length: 300 x 250 x 120mm
- Weight: 2.32kg

### 3.8 Compliance

- Complies with CE guidelines. (1)
- Conform to wireless regulations for measurement instruments (1)

## 4 MAINTENANCE

### 4.1 Verification Procedure

SpeedBay is the technology that verifies the performance of SpeedPod on a regular basis. The verification procedure is integrated into MyPod software and can be run automatically. SpeedBay is recommended during intense usage of the gauge by multiple operators, typical for in-line installations. SpeedBay is sold separately.

### 4.2 Calibration Procedure

- Calibration interval of 1 year is recommended.

### 4.3 Field Service Kit

- Suction Cup Replacement Kit: Includes suction cup, lever, mounting hardware and fasteners
- Protective Cover Renewal Kit: Includes protective cover, mounting hardware and fasteners
- Battery Replacement Kit

### 4.4 Warranty

- Device is under 1 year Factory Warranty (1)
- Extended Warranty for continued coverage is available

(1) *Detailed datasheet or certificates available upon request*

(2) *Function of usage frequency and wireless connection configuration*