

# Application Note: Ingress Protection: Model 1201/1201F-IP67

## Definition of IP Standard

The Ingress Protection (IP) standard was developed by the 100 year-old International Electrotechnical Commission (IEC) to help classify the protection level of enclosed devices. More than 125 countries are associated with the IEC, which is headquartered in Geneva.

The IEC 60529 standard is a code beginning with the letters "IP" followed by 2 digits. These two digits classify the level of protection of an enclosure against solid objects or dust, accidental contact, and water. Tables 1 and 2 below identify the digits and classification levels.

**Table 1: First Digit - Foreign Object and Dust Protection**

- 0 = No protection
- 1 = Foreign bodies > 50 mm
- 2 = Foreign bodies > 12 mm
- 3 = Foreign bodies > 2.5 mm
- 4 = Foreign bodies > 1.0 mm
- 5 = Protection against dust
- 6 = Dust-tight

**Table 2: Second Digit - Water Protection**

- 0 = No protection
- 1 = Water drops falling vertically
- 2 = Water drops falling at an angle (15°)
- 3 = Water-spray at an angle up to 60°
- 4 = Water-spray from all directions
- 5 = Water jets
- 6 = Strong water jets
- 7 = Intermittent immersion in water
- 8 = Continuous immersion in water

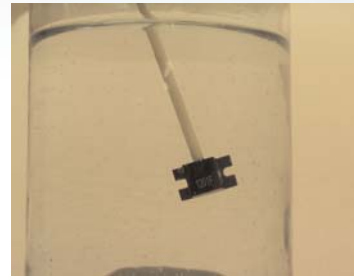
## Classification of Model 1201 and Model 1201F Accelerometer

The 1201 and 1201F accelerometers are used for on-vehicle impact testing. They are identical except the 1201F has a mounting flange. Both devices have black, anodized aluminum housings attached to a 4-wire, polyurethane-jacketed cable. These units are powered with 10 Vdc and provide a mV output. Internal electronics are secured against intrusion through a lid attached to the housing and proprietary coatings on all internal electronics.

Model 1201 users need to know the level of water resistance of the devices for washing of vehicles after a crash.

To determine the appropriate IP classification, a Model 1201F was suspended in 1 meter of water (Figure 1) for 30 minutes.

**Figure 1: 1201F Submerged in Water**



The Zero signal was monitored during this time and remained steady at 4.18 mV's (Table 3). No shorting of the circuitry or damage to the unit occurred. These results confirm a rating of IP67 for the Model 1201 and 1201F.

**Table 3: Zero Signal**

