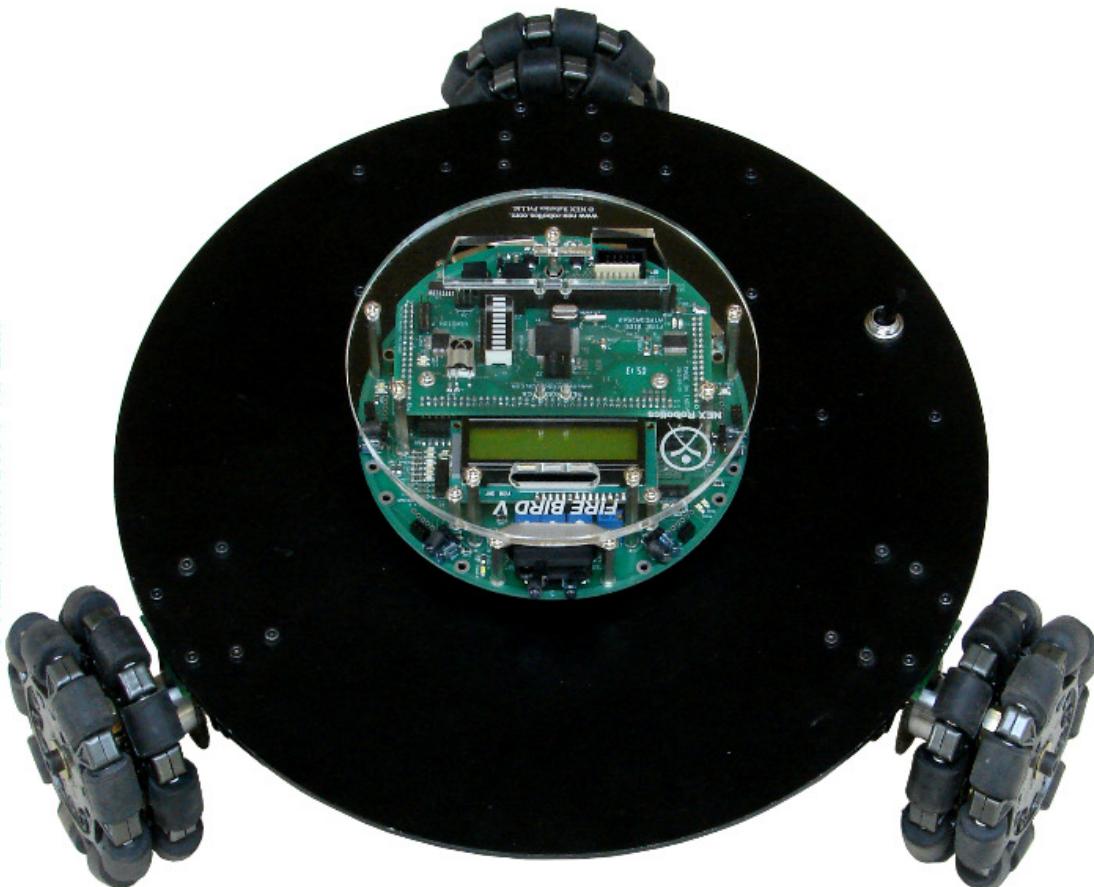


# **FIRE BIRD V**

**Antistatic Protection While Using Robot**

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Designed and Manufactured by: NEX Robotics Pvt. Ltd.

## Antistatic Protection While Using Robot

In the winter season, have you ever walked across a carpeted floor and gotten a shock when you touched a doorknob, table, counter, or even another person? This shock is a result of static electricity. **Usually humans don't feel static electric shock till it crosses few thousand volts (15000V to 25000V). It takes less than 18volts to damage most of the components on a hardware platform.**

That's why when working on the robot you have to protect it from static electricity. A shock that you can not even feel can do serious damage to the robot.

### Safety Precautions:

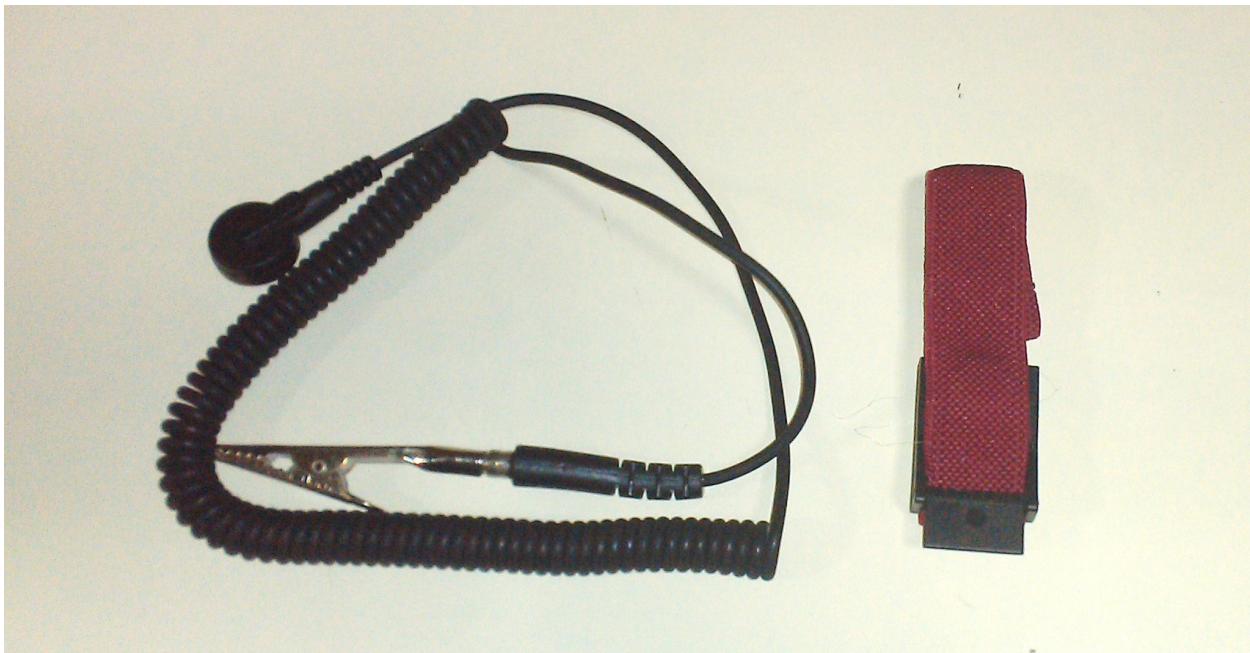
1. When possible, try to avoid working in areas having carpeted, plastic chairs. Carpets greatly increase static buildup within your body. Avoid wearing woolen or silky clothes. If possible use cotton clothes.
2. Always use an anti-static wrist strap when working on robot. One end is an elastic band that fits around your wrist and which is connected to an alligator clip by a wire. The clip connects to a metal part of the computer chassis, which equalizes the voltage between you and the robot, thus avoiding static sparks.
3. Always touch a metal part of the computer chassis with your bare hand before you touch anything inside the robot. Do this even if you are wearing an anti-static wristband.
4. Always handle electronic components by a non-conducting (non-metallic) edge. Don't touch the pins or other connectors. **This is very important while inserting battery connector or power charging connector. Avoid touching metal can photo transistor of the white line sensor.**



**Figure1: Antistatic wrist strap**

**Following are the steps involved in using antistatic strap**

Figure 2 shows Antistatic strap. It is made up of two parts. Wrist band should be worn on lesser used hand. Band is connected with the cable via a round button. Crocodile clip is removable and it should be connected to earth. Figure 3 shows how to wear Antistatic Wrist Strap



**Figure 2: Antistatic Wrist Strap**



**Figure 3: How to wear Antistatic Wrist Strap**

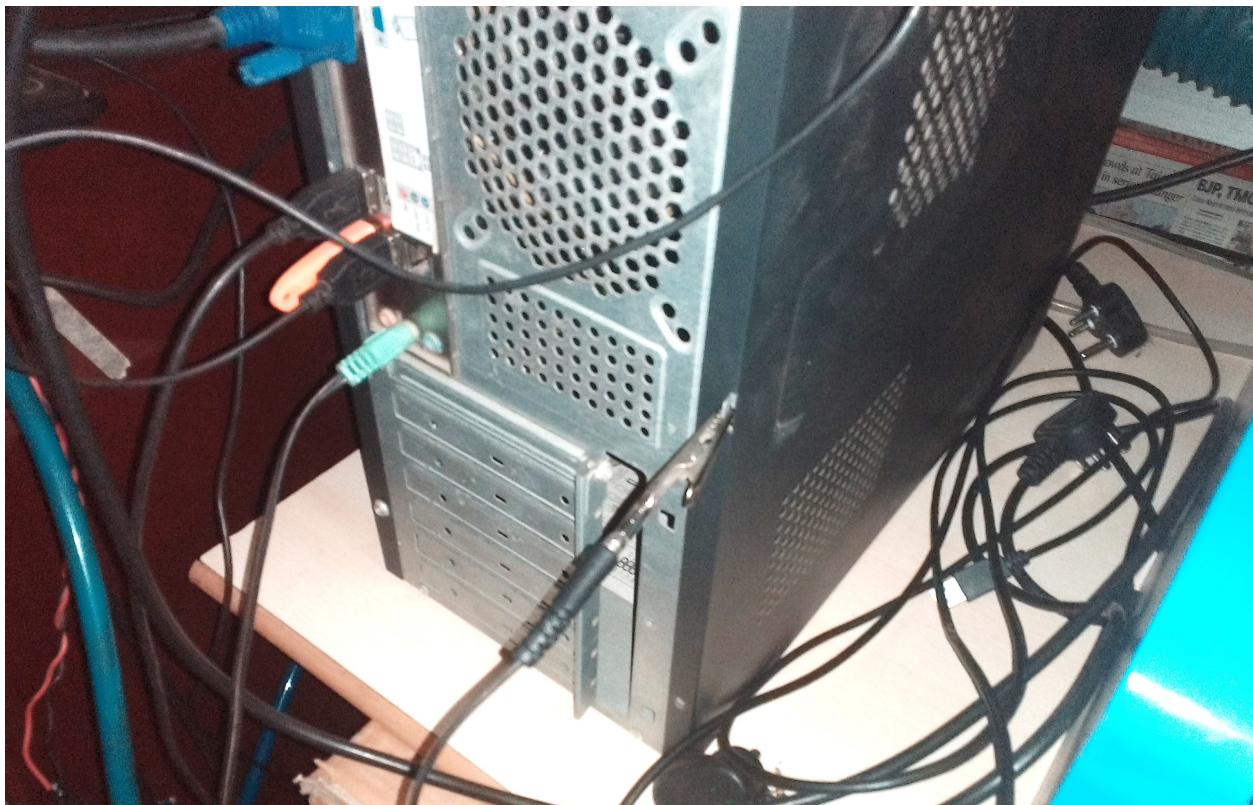
**Warning:**

Never ever try to make your own handmade wrist strap. Professional wrist straps have a resistance of 1Mega ohms inside the black molded part, which is located just after the crocodile clip. This protection resistor will protect you from assured electrocution if just in case mains current is leaked to the earthing. In the homemade strap, its very easy for mains current to jump across the 1mega ohm resistor if its moist or not rated for the high voltage.

**It is a good practice to work in a lab / room which has ELCB (Earth Leakage Circuit Breaker) with maximum sensitivity of 30mA.**

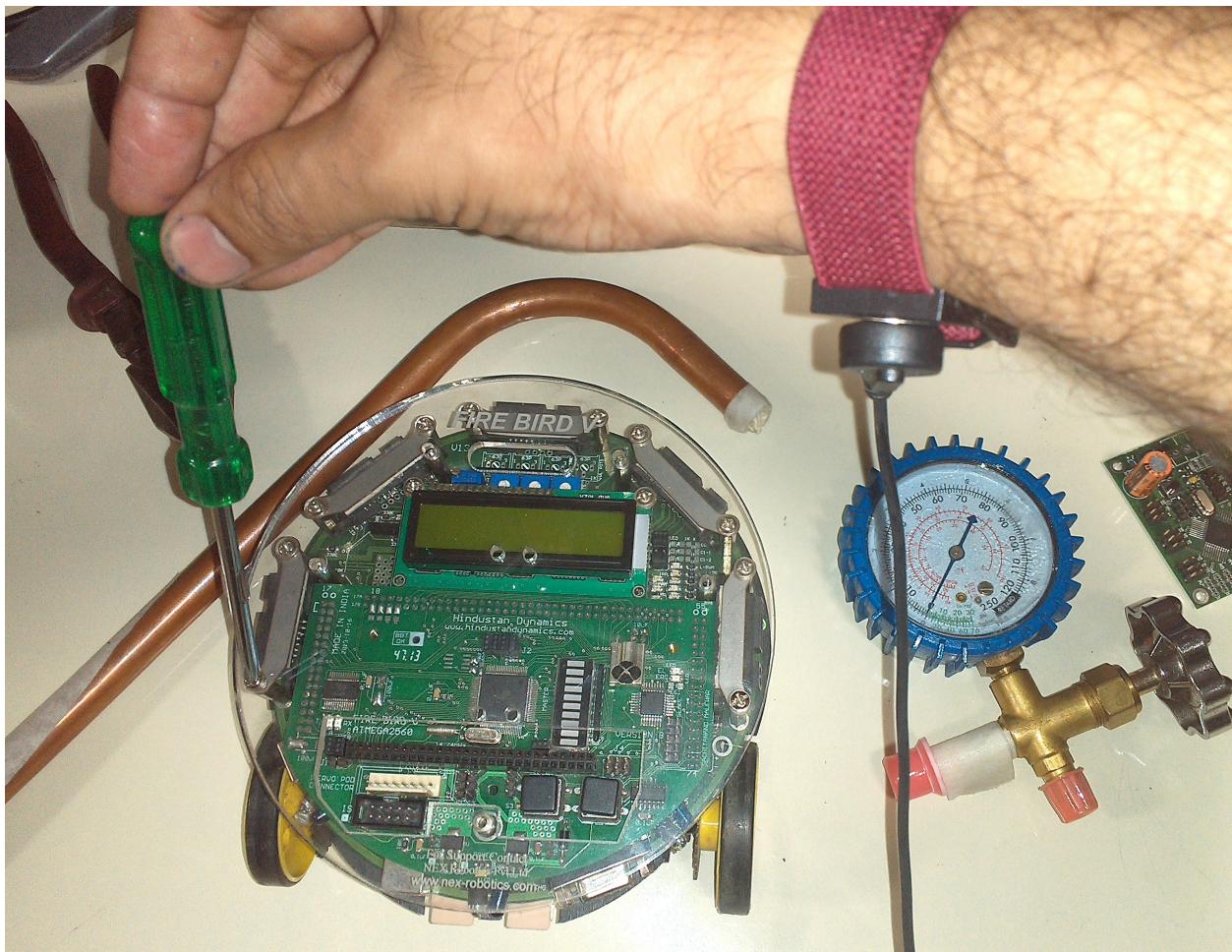
Connect the other end of the Antistatic Wrist Strap to the PC's chassis. Figure 4 shows the Antistatic Wrist Strap connected to the PC's body.

You can also connect crocodile clip to the earth terminal of the mains plug. If you want to connect crocodile clip to the mains earth terminal then use an ISI mark 3 pin connector. Connect a single wire to earth pin and lock the crocodile clip on the earth wire which is coming out of 3 pin plug. If possible use green wire for the earth pin connection and insert rubber part of the wire along with the copper in the screw terminal to ensure that wire will not come out because of continuous twisting and pulling of the wire.



**Figure 4: How to wear Antistatic Wrist Strap**

**Now you can start work on the Robot.**



**Figure 5: Working on the robot while wearing Antistatic Wrist Strap**