Servo Pod for Fire Bird V ATMEGA2560

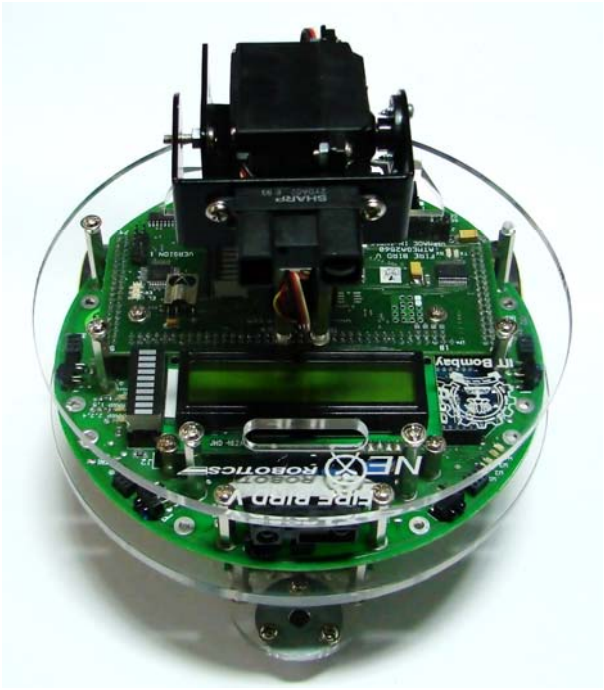

Figure 1: Servo Pod mounted on the Fire Bird V ATMEGA2560 Robot

Servo pod is used for moving sensor payload in any direction in the upper half sphere using two servo motors along Pan and Tilt direction. It supports all the analog Sharp IR range sensors and Ultrasonic range sensor form Max Botics.

Specifications

- Operating Voltage : 5V
- Pan Servo: 0 to 180 degrees
- Tilt servo: 0 to 180 degrees (practical usable angle is 110 degrees)

Package contains

1. Pan and Tilt servo mount: Qty 1
2. 16 pin FRC cable for connection with Sharp IR Range Sensor or ultrasonic range sensors from Maxbotix
3. Documentation

Servo motor basic operation

Please refer to chapter 5 “Timer / Counter Operations on the robot” in the Fire Bird V ATMEGA2560 Software Manual.

Note: Use Fire Bird V ATMEGA2560 Hardware and Software Manual along with this application note.

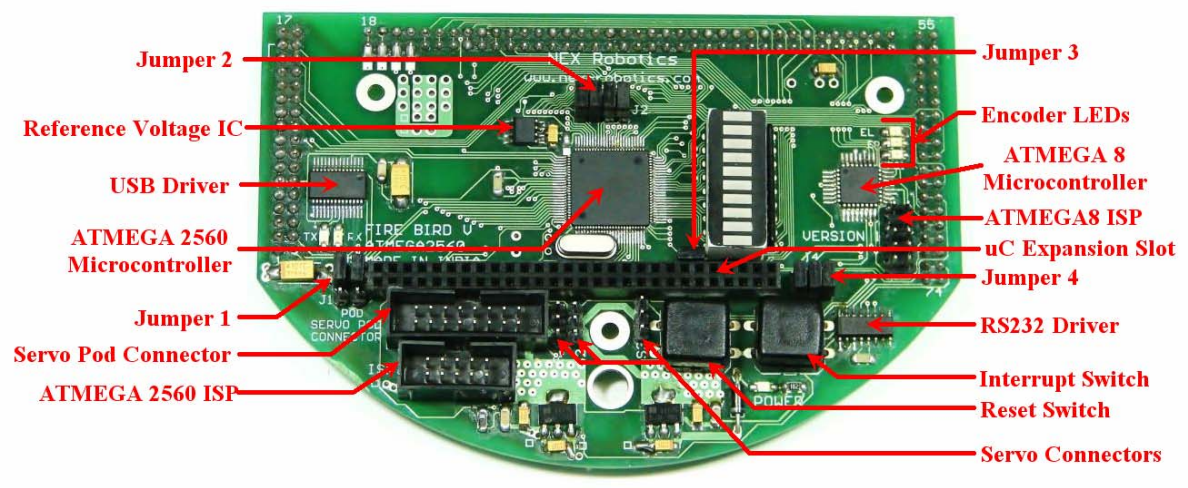

Figure 2: ATMEGA2560 microcontroller adaptor board for the Fire Bird V robot

Servo Connections:
Pan servo: S1, white or orange wire towards the uC expansion slot
Tilt servo: S2, white or orange wire towards the uC expansion slot

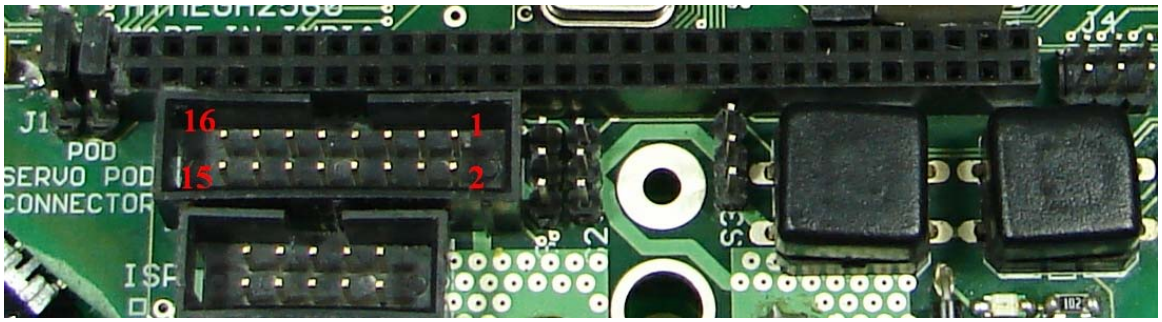

Figure 3: Servo Pod Socket

Pin No.	Pin Name	Description
1	Servo POD1*	Connection with ATMEGA2560 ADC channel 14*
2		
3	Servo POD2	Connection with ATMEGA2560 ADC channel 15
4		
5	GPIO	Connection with ATMEGA2560 OC2A/PB4 pin (Pin no. 23)
6		
7	Atmega8 ADC	Connection with ATMEGA8 ADC channel 1
8		
9	Atmega8 ADC	Connection with ATMEGA8 ADC channel 3
10		
11	Ground	Ground
12		
13	V SYS	+ 5V (VCC)
14		
15	V BATT	Battery Voltage(9V – 11V)
16		

Table 1: Servo Pod socket pin description

***** Connected to Sharp IR range sensor in the following application example

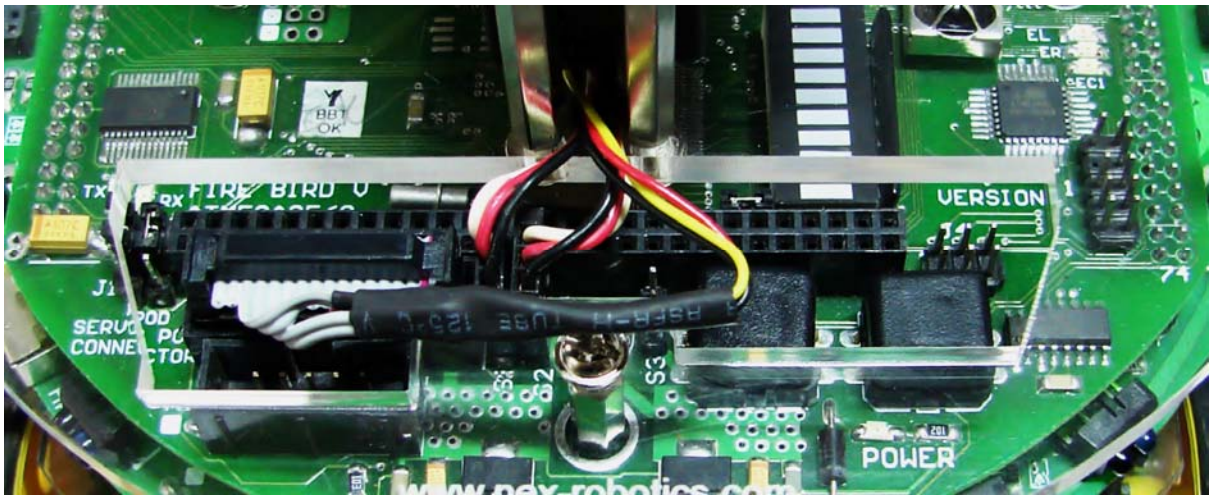

Figure 4: Interfacing Servo pod with the robot

Application Example: "Servo_pod"
"Servo_pod" application example provides all the functions necessary for acquiring data from the analog sensor in 10 bit resolution, which is mounted on the servo pod, moving pan and tilt servo in desired angle and data display on LCD.

It is located in the "Accessories\Servo Sensor Pod\Servo_Pod_Firmware" folder in the documentation CD.

Figure 5: LCD display

LCD display data interpretation:
A14: Analog data of ADC channel no. 14
A15: Analog data of ADC channel no. 15
SP: Servo pan angle
ST: Servo tilt angle

Interfacing sensor with the Servo Pod Socket

Kit contains 16 pin FRC wire. Refer to figure 3 and table 1. Each column of the connectors (say pin 1 and 2, pin 3 and 4 etc.) are connected together in the Servo Pod Socket. You can connect a pair of wire for one connection. Red wire and its adjacent wire represents pin number 1 and 2 of the Servo Pod Socket. You can short these adjacent pair of wires and treat them as same wire.

For the application example mentioned above connect sensor out to the Pin no. 1 and 2 of the Servo Pod Socket. Connect sensor's Vcc to the pin no. 13, 14 and ground to the pin number 11, 12.

Figure 4 shows Sharp IR range sensor connected to the Servo Pod Socket.

Notice

The contents of this manual are subject to change without notice. All efforts have been made to ensure the accuracy of contents in this manual. However, should any errors be detected, NEX Robotics welcomes your corrections. You can send us your queries / suggestions at
info@nex-robotics.com

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⚠ **Product's electronics is static sensitive. Use the product in static free environment.**
⚠ **Read the user manuals completely before start using this product**

Recycling:

Almost all the part of this product are recyclable. Please send this product to the recycling plant after its operational life. By recycling we can contribute to cleaner and healthier environment for the future generations.