Fire Bird V will help you get acquainted with the world of robotics and embedded systems. Thanks to its innovative architecture and adoption of the 'Open Source Philosophy' in its software and hardware design, you will be able to create and contribute to, complex applications that run on this platform, helping you acquire expertise as you spend more time with them. Fire Bird V is designed by NEX Robotics and Embedded Real-Time Systems lab, CSE IIT Bombay.

As a Universal Robotic Research Platform, Fire Bird V provides an excellent environment for experimentation, algorithm development and testing. Fire Bird V is evolved from Fire Bird IV and Fire Bird II which are being used in IIT Bombay to teach embedded systems and robotics. Its modular architecture allows you to control it using multiple processors such as 8051, AVR, PIC and ARM7 etc. Modular sensor pods can be mounted on the platform as dictated by intended applications. Precision position encoders makes it possible to have accurate position control. The platform can be upgraded to tank drive and Hexapod insect or any other desired form very easily. It is powered by high performance rechargeable NiMH batteries. A 2.4 GHz ZigBee module provides state of the art secure and multi-channel wireless communication up to a range of one kilometer.

Research Areas

Artificial Intelligence
 Multi-Agents System
 Control systems
 Autonomous navigation
 Mobile sensor network
 Collaborative robotics
 Real-Time systems
 Automotive technologies

Unique Features

- Ideal for doing research in the areas of robotics, embedded   systems, artificial intelligence and sensor networks etc.
- Modular Design: Unique layered design gives versatility in   design
- Hands-on learning platform
- Covers wide   range of subjects like Microcontrollers, Embedded Systems, Mechatronics,   Sensor Networks, Image processing.
- Detailed   tutorials help in interactive learning.
- Ideal for   doing research in the areas of robotics, embedded systems, artificial intelligence, sensor networks etc.
- Supports Microsoft Robotics Developer Studio (MRDS)
- Modular   Design: Unique layered design gives versatility in design
- Powered by   rechargeable 9.6V 2100mAh NiMh battery pack with smart battery charger
- High   performance white line sensors with the illumination modulation facility   for improved performance in line grid based navigation with improved power   conservation

- Up to five   IR range sensors covering front half of the robot with range up to 150cm for intelligent navigation
- Eight analog   IR proximity sensors for close proximity detection up to distance of 20cm

- Eight   directional light intensity sensors
- Supports   four DC motors with position encoders
- Battery voltage monitoring   and audible battery low warning for battery protection
- Battery current monitoring
- Closed loop   motion control using position encoders
- 16x2   character LCD for displaying sensor data or any other information
- Easy to   interface with PC using wired and wireless communication
- Supports   2.4GHz Wireless ZigBee for communication with multiple robots or with PC
- Extensive   hardware and software documentation and many application notes and example   C programs in AVR studio.
- Available in   Hexapod, Omni directional robot, tank drive, Insect and 4 Wheel drive with   gripper configuration
- Supports   servo motor based wireless camera with pan and tilt motion, IP camera and   sensor pods.
- Easy   hardware integration for add on sensors like GPS, Magnetometers, accelerometers and gyroscope etc.

 Note: This product will be shipped with in 14 days after the order confirmation

Download Fire Bird V Flyer
 List of international and national publications on the Fire Bird platforms

Specifications

Microcontroller
NXP P89V51RD2 (8051 architecture based Microcontroller)

Sensors
Three white line sensors
One Sharp GP2D12C Infrared Range sensor with 80cm range
Three analog IR proximity sensors (TCRT5000)
Two position encoders (shaft encoders)
Battery voltage sensing

Indicators
2 x 16 Characters LCD
Indicator LEDs
Buzzer

Control
Autonomous Control
PC as Master and Robot as Slave in wired or wireless mode

Communication
Wired RS232 (serial) communication
Simplex infrared communication (from infrared remote to robot)
Wireless ZigBee Communication (2.4GHZ)

Dimensions
Diameter: 16 cm
Height: 10 cm

Weight: 1250 Gms.

Power
9.6V, 2100mAh Nickel Metal Hydride (NiMH) battery pack and external Auxiliary power using battery charger.

Battery Life
2 Hours while motors are operational at 75% of time

Locomotion
Two DC geared motors in differential drive configuration and caster wheel at front as support

- Top Speed: 24 cm / second
- Wheel Diameter: 51mm
- Position encoder: 30 pulses per revolution
- Position encoder resolution: 5.44 mm

Software Support

- Keil
- GUI based control
- Microsoft Robotic Developer Studio (MRDS)
- MATLAB

Kit Contains

- Fire Bird V Robot with all the sensors mentioned in technical specifications
- Documentation CD
- USB to Serial Converter

- Smart NiMH battery charger with power adaptor
- Serial cable
- Flex printed 6 feet white line

- USB Cable

Fire Bird V P89V51RD2 Robot control GUI for controlling robot in wired and wireless mode
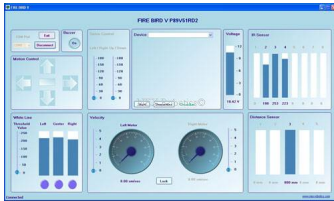
Visual Programming Language in Microsoft Robotics Studio
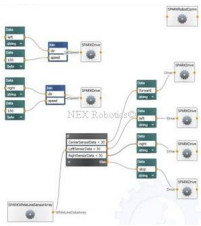
Fire Bird V in Microsoft Robotics Developer Studio (MRDS)