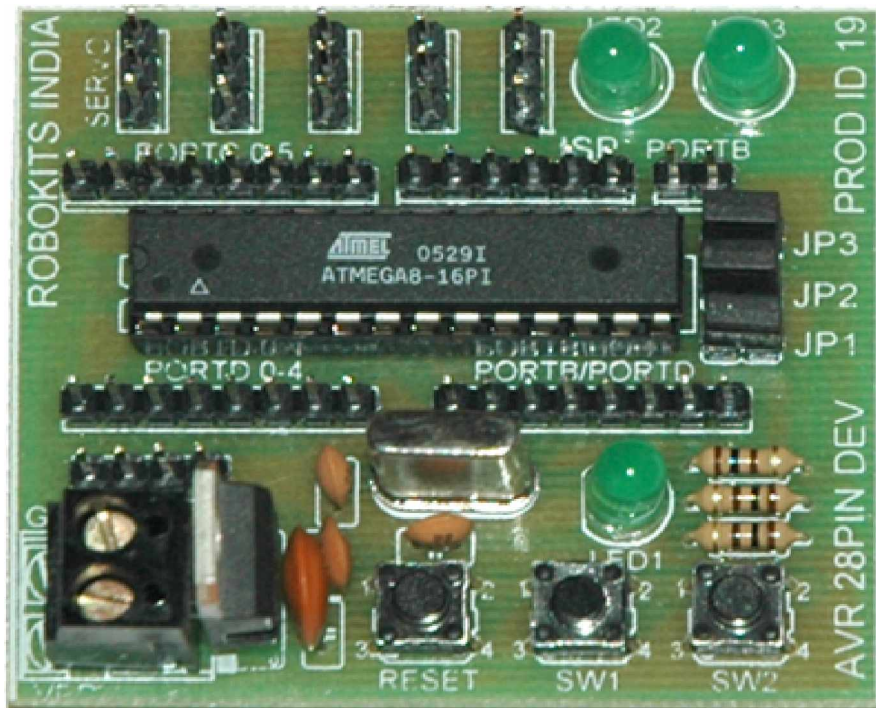




AVR 28 Pin Development Module



Users Manual

Robokits India

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Thank you for purchasing the AVR 28 Pin Development Module. This unit has been carefully engineered and tested to provide superior performance. This document covers the features and operation of the AVR 28 Pin Development Board.

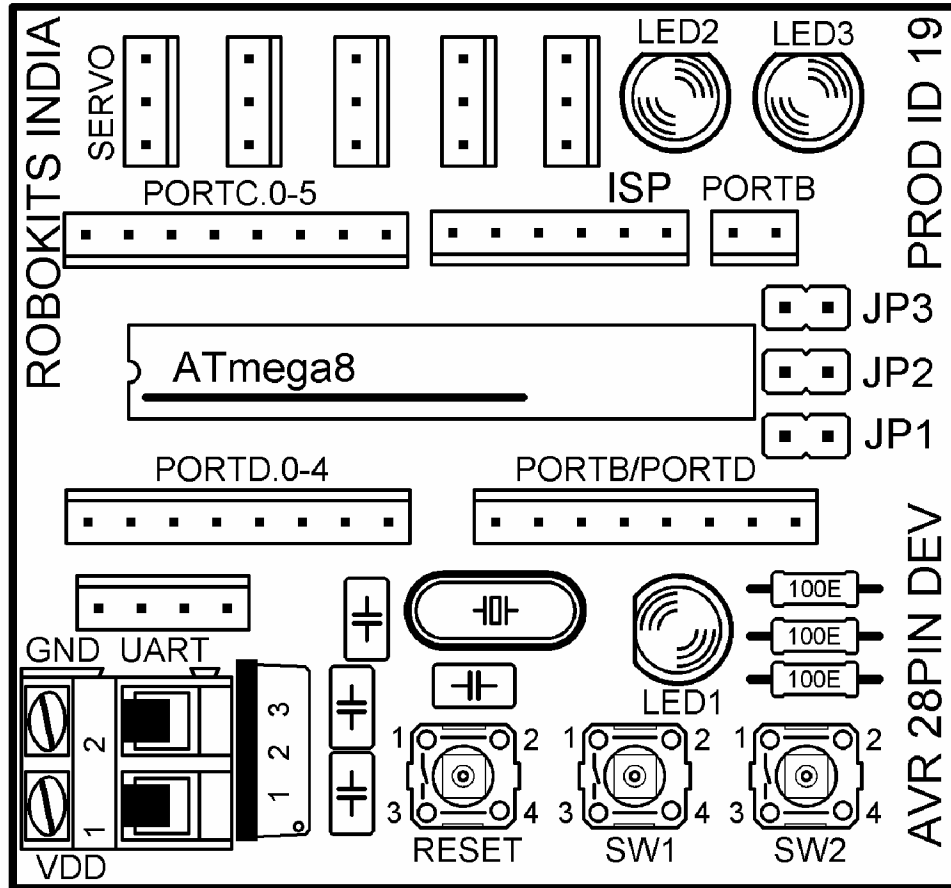
This is an easy-to-use board using the popular Atmel ATmega8 microcontroller. The board includes everything you need to learn, develop or using for an application.

Features

- Small Size : 55 x 51 mm
- Can be easily power from an DC source or Battery
- 3 Indicator LEDs
- LED select through jumpers JP1, JP2, JP3.
- Onboard power regulation and filter circuit
- Included AVR Serial Port Programmer for programming the Microcontroller.
- 3 Switches including 1 Reset Switch
- Included PC-MCU serial link for communication with PC
- Provided with standard .1" header pins to be used with other circuits.
- Can be used as any autonomous Robots board.
- Programmer, Serial port and Power Supply are provided externally which helps keeping the board size small.
- Includes ATmega8 microcontroller.



Board Top Layout



Board Information

- Provide supply to screw type connector. Connect Ground terminal to the side written with GND and 7V-12V at VDD terminal.
- There are three switches on the board to facilitate user. The one written Reset at bottom is a Reset switch for microcontroller. SW1 and SW2 are connected with INT0 (PORTD2) and INT1 (PORTD3).
- LED1 (PORTB0), LED2 (PORTD7) and LED3 (PORTD6) are connected via selectable jumpers JP1, JP2 and JP3 respectively, So that those controller pins can also be used for other purpose.
- UART connector is compatible to the serial link provided in the same kit. The pin configuration is TXD (PORTD.1), RXD (PORTD.0), VCC, GND (Black wire - Towards Switches).
- ISP connector is compatible with the serial programmer provided with the kit. The pin configuration is MOSI (PORTB.3), MISO (PORTB.4), SCK (PORTB.5), RESET (PORTC.6), VCC, GND (Black wire - Towards Servo\ADC Header).



- There are five headers compatible to servo. Also the same are connected with the ADC pins and can be used to connect sensors. The pin configuration of the connectors is I/O pin of micro (Towards Microcontroller), VCC, GND (At the end of the board). The connectors from the side of LED are connected to I/O pins PORTC.0, PORTC.1, PORTC.2, PORTC.3, and PORTC.4 respectively.
- All pins of microcontroller are easily accessible through header pins.
- The pin configuration of connector written with PORTC.0-5 is PORTC.0 (End near LED2), PORTC.1, PORTC.2, PORTC.3, PORTC.4, PORTC.5, VCC, and GND (Towards the end of the board).
- The pin configuration of connector written with PORTD.0-4 is PORTC.6 (Towards the end of the board), PORTD.0, PORTD.1, PORTD.2, PORTD.3, PORTD.4, VCC, and GND (Towards Crystal).
- The pin configuration of connector written with PORTB/PORTD is PORTB.0 (Towards the end of the board), PORTD.7, PORTD.6, PORTD.5, PORTB.7, PORTB.6, GND, and VCC (Towards Crystal).
- The pin configuration of connector written with PORTB is PORTB.1 (Towards the end of the board) and PORTB.2 (Towards ISP connector).



Setting up the Board

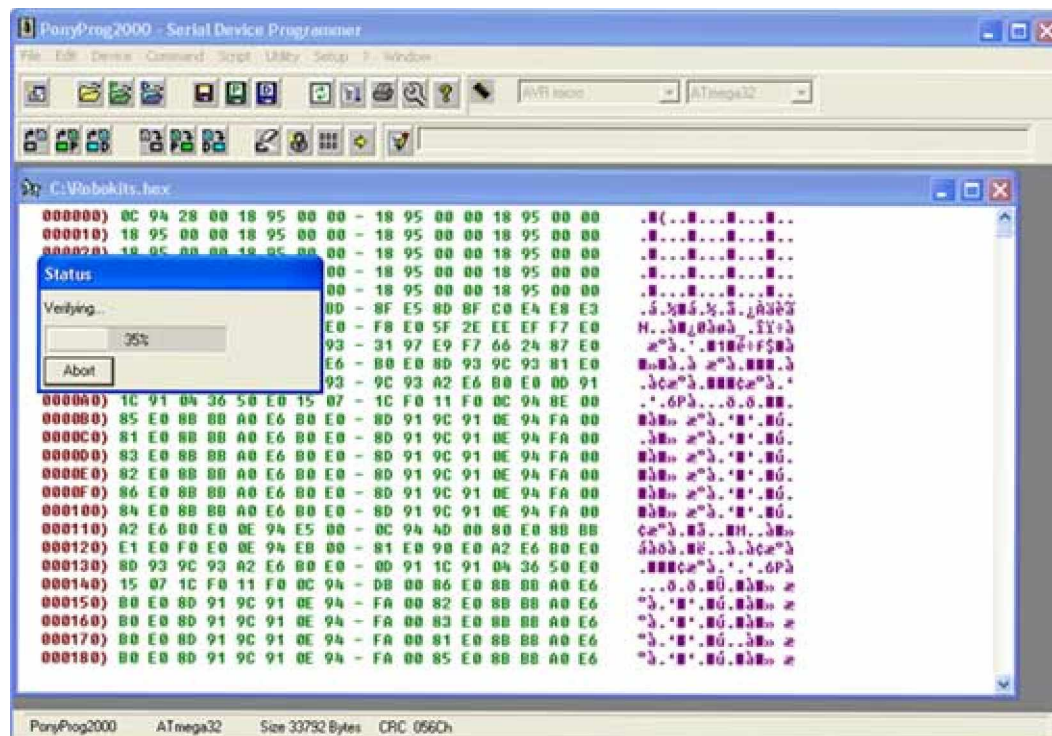
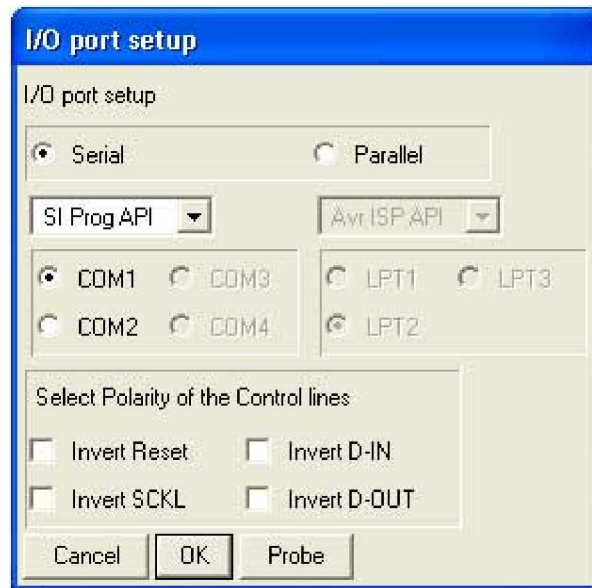
Providing Power Supply

- You can provide the power supply to the board from any DC source from 6V to 20V.
- The microcontroller is preprogrammed for Blinking LEDs, so when you provide the power supply (included) all 3 LEDs should start blinking.
- To provide the supply from AC adapter, cut normal connector and observe voltage polarity using multimeter and then provide VDD and GND to corresponding pins of a supply connector.
- To give supply other than power supply provided open the screws, insert the supply wires and fasten them again. See the polarity while giving the power supply.



Programming the Microcontroller

- To program the microcontroller use the provided programmer.
- Inset the programmer port to serial port of your pc.
- Inset the female header to the board on ISP male header. (Green wire towards LEDs)
- You can use the programming software PonyProg for programming. (Use following Settings)



- You can also directly program the microcontroller with WinAVR. Open any sample code .c file with programmer's notepad and click tools -> program to program it.
- Use documentation of serial programmer provided on CD for troubleshooting programming.
- To quickly program you can use Robokits.bat provided on the CD in the serial programmer documentation folder. Copy your compiled hex file and the bat file in a folder and rename the hex file as Robokits.hex. Run Robokits.bat to program the device through serial programmer.
- We suggest ponyprog to program the fuse bits. It can also be done by AVRDude. See the AVRDude manual for more information.
- If you are programming fuse bits through AVRDude, you can use this link to calculate fuse bits. <http://palmavr.sourceforge.net/cgi-bin/fc.cgi>

Connecting the Serial Link

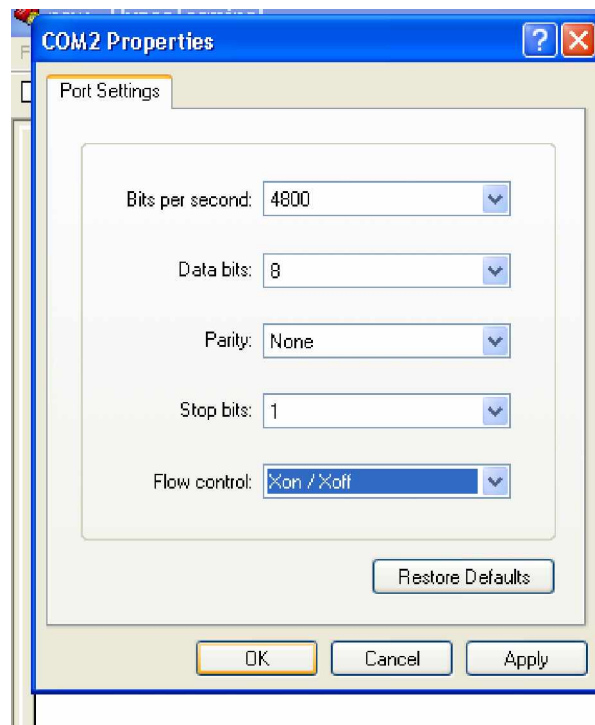
- Open Programmers notepad.
- Open robokits.c file from uart folder.
- Connect programmer to serial port.
- Click tools -> program to program it.
- Connect the PC-MCU serial link to serial port.
- Insert the female header to UART pins. (Keep black wire towards switches)
- You can communicate with microcontroller with PC software like Hyper Terminal. Set appropriate baud rate and com port to setup the communication.
- Click start menu -> all Programs -> accessories -> communications -> HyperTerminal path to open HyperTerminal software in windows XP.



- Write name and press ok.



- **Select com port on which you have connected serial link and press ok.**



- **Set baud rate and other features as shown in figure. Use different baud if required. Sample codes work on 4800 baud rate.**



Programming sample codes

- **Sample codes are provided in Win AVR. To program the code open the code with programmers' notepad provided with Win AVR.**
- **Open Robokits.c file in programmer's notepad from intended folder.**
- **If you are not using com1 to program edit the makefile to set appropriate port.**
- **To compile use Tools -> Make All**
- **To program use Tools -> Program**
- **See the description and notes on sample code .c file.**

**Service and Support**

Service and support for this product are available from Robokits India. The Robokits Web site (<http://www.robokits.org>) maintains current contact information for all Robokits products.

Limitations and Warrantees

The AVR 28 Pin Development Board is intended for personal experimental and amusement use and in no case should be used where the health or safety of persons may depend on its proper operation. Robokits provides no warrantee of suitability or performance for any purpose for the product. Use of the product software and or hardware is with the understanding that any outcome whatsoever is at the users own risk. Robokits sole guarantee is that the software and hardware perform in compliance with this document at the time it was shipped to the best of our ability given reasonable care in manufacture and testing. All products are tested for their best performance before shipping, and no warranty or guarantee is provided on any of them. Of course the support is available on all of them for no cost.

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