

Automatic Blood Pressure Measurement

Warning: The following note is intended to illustrate a typical sensor and actuator application and not intended for actual medical use.

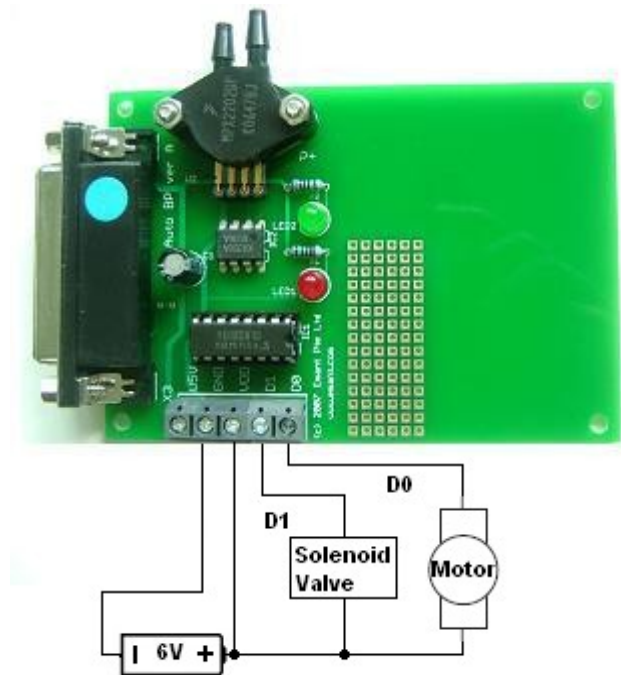
The auto blood pressure kit comprises

- EMANT300 USB DAQ module
- ABP Adaptor
- ABP assembly

The ABP assembly comprises

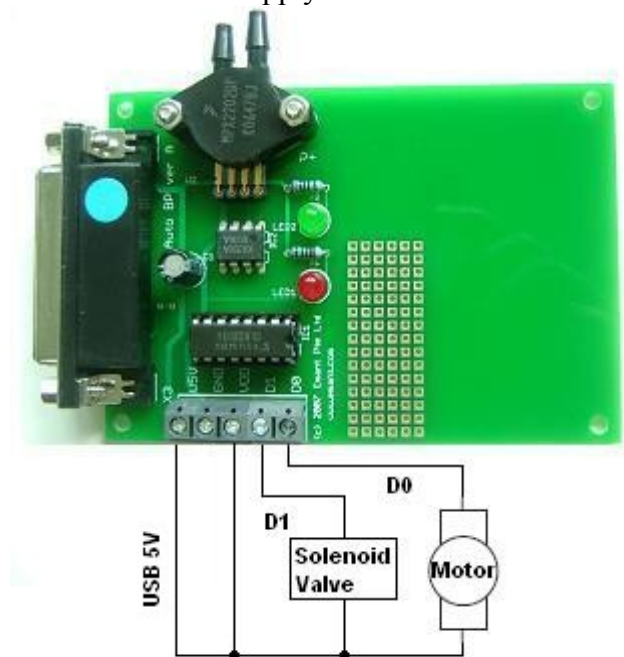
- pump motor
- solenoid valve
- cuff

The schematic of the ABP adaptor is attached at the end of this document. The adaptor uses the low cost MPX2200 series of Pressure Sensors from Freescale Semiconductors to measure the pressure. An ULN2003 is used to drive the pump motor and solenoid valve found in the ABP assembly.



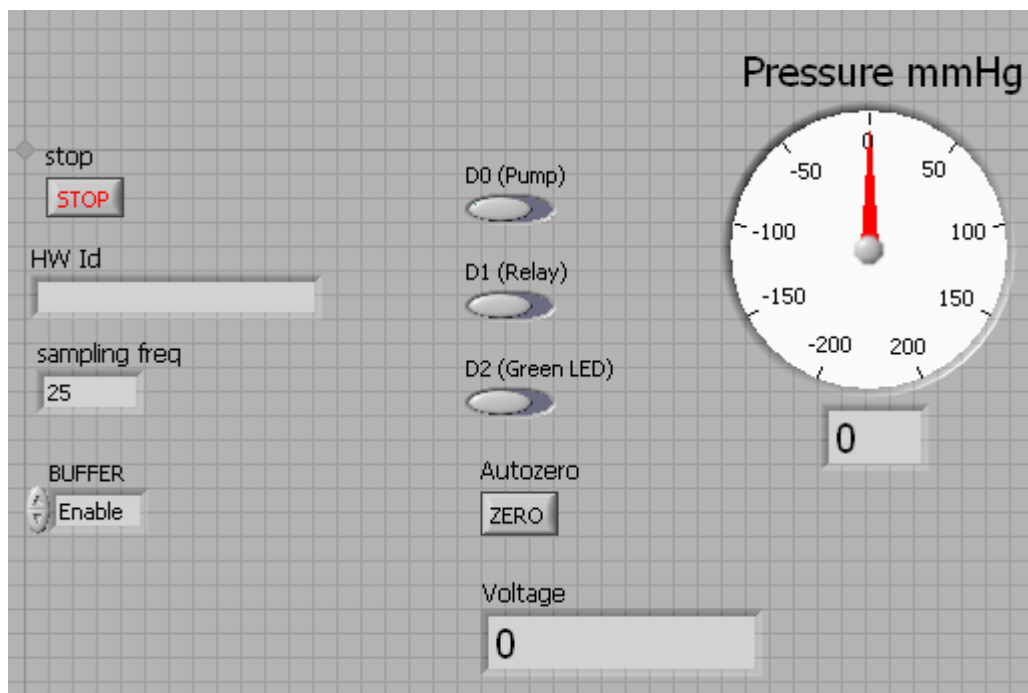
The connections between the ABP adaptor and ABP assembly is shown as above if you are using an external 6V power supply.

Alternatively, if the solenoid valve and pump motor draws less than 300mA and can operate at 4 to 5V, then you can make use of the USB 5V supply as shown



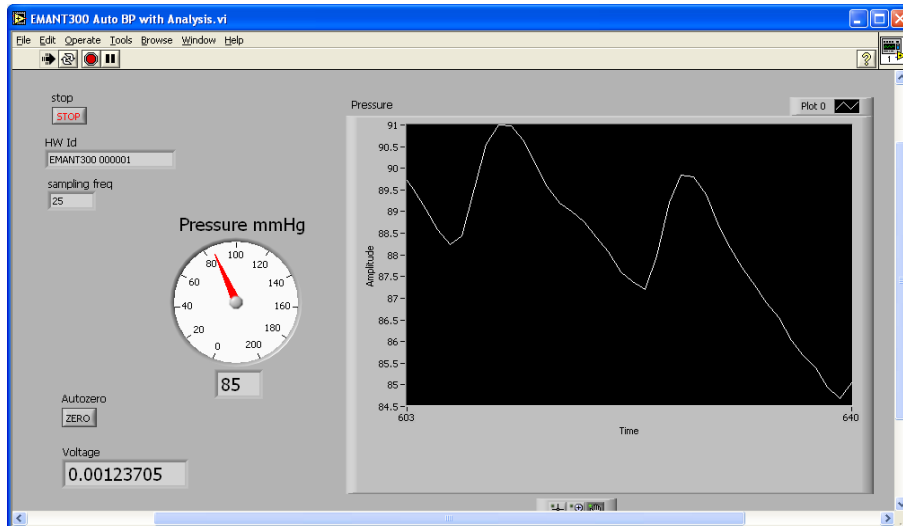
Two LabVIEW examples are provided to (we assume that you have already installed the necessary drivers for the EMANT300 – see installation guide if you have not done so)

The first program lets you control the solenoid, pump and read the switch. Connect up the EMANT300 to the ABP adaptor. Attach the cuff. Switch on the external power supply if you are using one. Run the program *EMANT300 Auto BP II Test.vi*

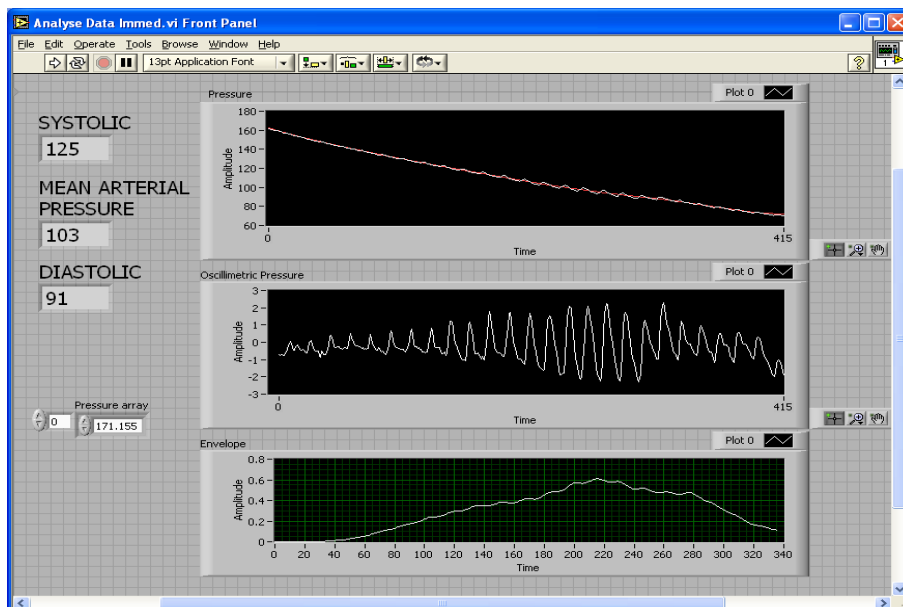


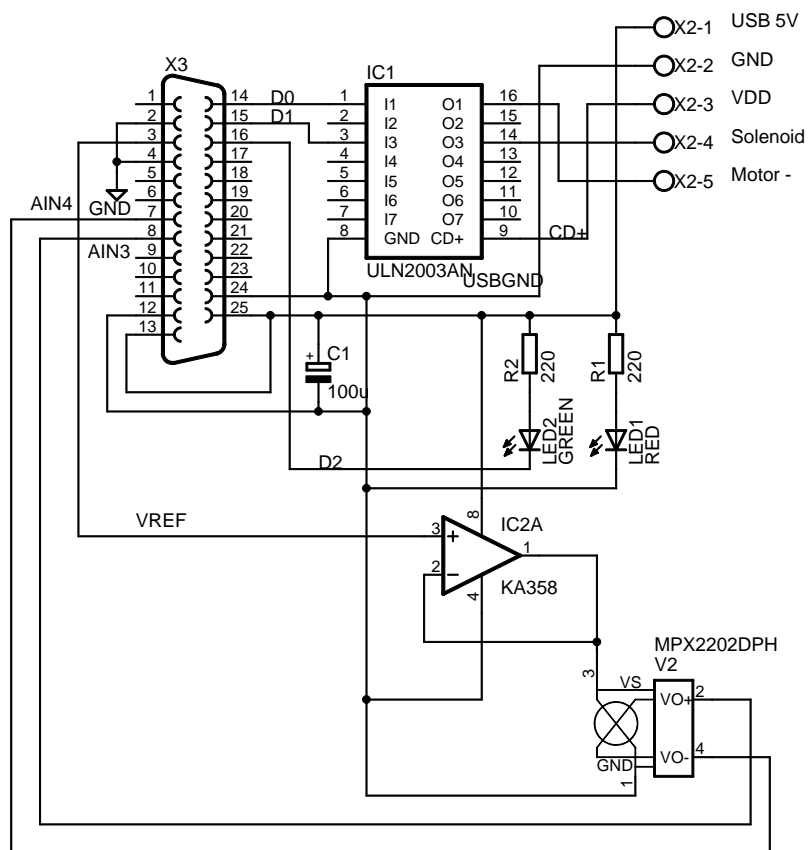
If the hardware is correctly connected, the HW Id will be displayed. You will have to zero the pressure sensor the first time. Use the LabVIEW program to turn on and off the Pump and solenoid. To inflate the cuff, you need to switch on both the solenoid and Pump.

The second program demonstrates the oscillometric method of measuring the blood pressure. You may want to read *Braun Blood Pressure Measurement pages 5 – 8*. Another reference is *Home Blood Pressure Monitoring*



The program pumps the pressure to 170mm Hg. At 170mm Hg, the pump stops and the pressure gradually drops to 70mm Hg when the solenoid valve opens. The pressure data is then passed to a second VI which analyses the data to calculate the Mean Arterial Pressure, and then the systolic and diastolic pressures





TITLE: Auto BP II

Document Number:

REV:

Date: 19/09/2007 09:13:26p

Sheet: 1/1