

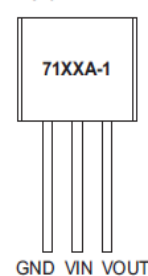
THE ELECTRONICS HOBBY KIT

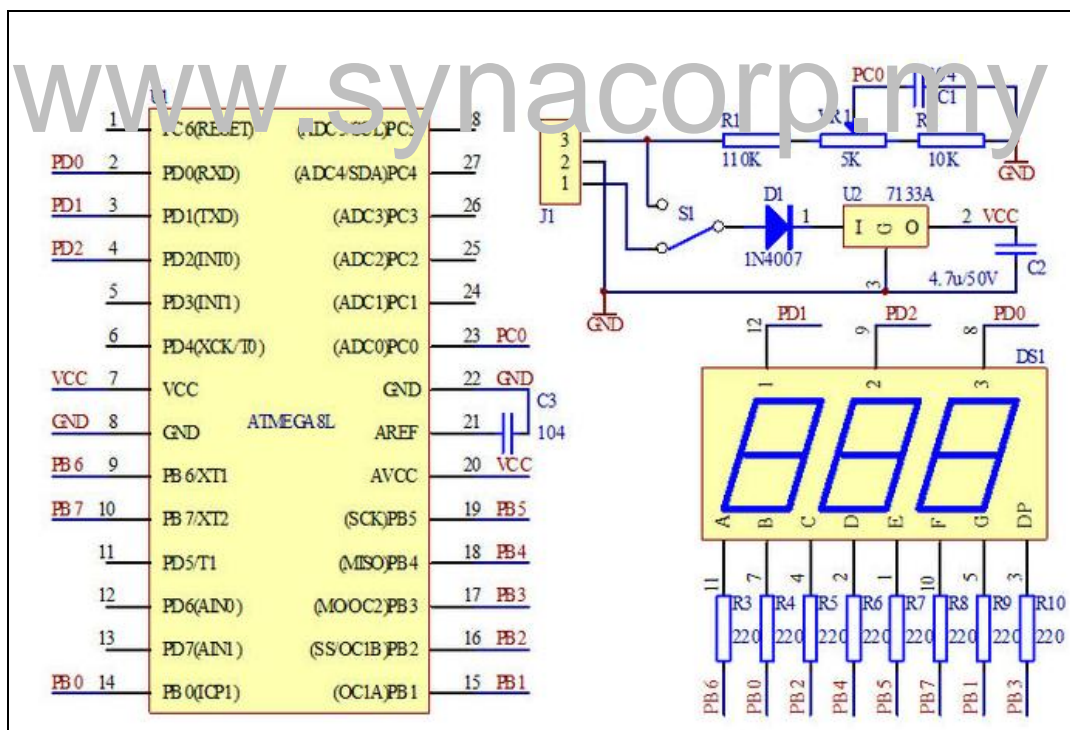
DIY ELECTRONIC VOLTMETER KIT

Operating voltage = 3.5-25V

Measuring range = 3.5-25V

Measuring Accuracy = 0.1V

<p>R1 = 110kΩ (BROWN-BROWN-BLACK-ORANGE) R2 = 10kΩ (BROWN-BLACK-BLACK-RED) R3 = 220Ω (RED-RED-BROWN) R4 = 220Ω (RED-RED-BROWN) R5 = 220Ω (RED-RED-BROWN) R6 = 220Ω (RED-RED-BROWN) R7 = 220Ω (RED-RED-BROWN) R8 = 220Ω (RED-RED-BROWN) R9 = 220Ω (RED-RED-BROWN) VR1 = 3296 5K D1 = 1N4007 C1 = 104 C2 = 4.7μF (50V) C3 = 104 U1 = ATMEGA8L (WITH IC SOCKET) U2 = 7133A</p>	<p>ATMEGA8L-8PU</p> <table border="0"> <tr> <td>(RESET) PC6</td><td>1</td> <td>28</td><td>PC5 (ADC5/SCL)</td> </tr> <tr> <td>(RXD) PD0</td><td>2</td> <td>27</td><td>PC4 (ADC4/SDA)</td> </tr> <tr> <td>(TXD) PD1</td><td>3</td> <td>26</td><td>PC3 (ADC3)</td> </tr> <tr> <td>(INT0) PD2</td><td>4</td> <td>25</td><td>PC2 (ADC2)</td> </tr> <tr> <td>(INT1) PD3</td><td>5</td> <td>24</td><td>PC1 (ADC1)</td> </tr> <tr> <td>(XCK/T0) PD4</td><td>6</td> <td>23</td><td>PC0 (ADC0)</td> </tr> <tr> <td>VCC</td><td>7</td> <td>22</td><td>GND</td> </tr> <tr> <td>GND</td><td>8</td> <td>21</td><td>AREF</td> </tr> <tr> <td>(XTAL1/TOSC1) PB6</td><td>9</td> <td>20</td><td>AVCC</td> </tr> <tr> <td>(XTAL2/TOSC2) PB7</td><td>10</td> <td>19</td><td>PB5 (SCK)</td> </tr> <tr> <td>(T1) PD5</td><td>11</td> <td>18</td><td>PB4 (MISO)</td> </tr> <tr> <td>(AIN0) PD6</td><td>12</td> <td>17</td><td>PB3 (MOSI/OC2)</td> </tr> <tr> <td>(AIN1) PD7</td><td>13</td> <td>16</td><td>PB2 (SS/OC1B)</td> </tr> <tr> <td>(ICP1) PB0</td><td>14</td> <td>15</td><td>PB1 (OC1A)</td> </tr> </table>	(RESET) PC6	1	28	PC5 (ADC5/SCL)	(RXD) PD0	2	27	PC4 (ADC4/SDA)	(TXD) PD1	3	26	PC3 (ADC3)	(INT0) PD2	4	25	PC2 (ADC2)	(INT1) PD3	5	24	PC1 (ADC1)	(XCK/T0) PD4	6	23	PC0 (ADC0)	VCC	7	22	GND	GND	8	21	AREF	(XTAL1/TOSC1) PB6	9	20	AVCC	(XTAL2/TOSC2) PB7	10	19	PB5 (SCK)	(T1) PD5	11	18	PB4 (MISO)	(AIN0) PD6	12	17	PB3 (MOSI/OC2)	(AIN1) PD7	13	16	PB2 (SS/OC1B)	(ICP1) PB0	14	15	PB1 (OC1A)	<p>TO-92</p>  <p>IC 7133A</p>
(RESET) PC6	1	28	PC5 (ADC5/SCL)																																																							
(RXD) PD0	2	27	PC4 (ADC4/SDA)																																																							
(TXD) PD1	3	26	PC3 (ADC3)																																																							
(INT0) PD2	4	25	PC2 (ADC2)																																																							
(INT1) PD3	5	24	PC1 (ADC1)																																																							
(XCK/T0) PD4	6	23	PC0 (ADC0)																																																							
VCC	7	22	GND																																																							
GND	8	21	AREF																																																							
(XTAL1/TOSC1) PB6	9	20	AVCC																																																							
(XTAL2/TOSC2) PB7	10	19	PB5 (SCK)																																																							
(T1) PD5	11	18	PB4 (MISO)																																																							
(AIN0) PD6	12	17	PB3 (MOSI/OC2)																																																							
(AIN1) PD7	13	16	PB2 (SS/OC1B)																																																							
(ICP1) PB0	14	15	PB1 (OC1A)																																																							



Theory Of Operation

This Kit is a two-wire system, and is powered by the measured voltage. A minimum voltage of 3.5V is required to power the bias IC U2 and the measuring voltage range is 3.5~25V.

The measured voltage is inputted via J1 PIN3. And it's inputted to the ATMEGA8L PIN23 U1 after the voltage is divided through R1,VR1 and R2. VR1 preset is used to calibrate the input voltage with 0.1V accuracy. A more accurate voltmeter can be used to calibrate the KIT voltmeter input display.

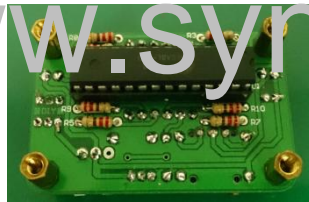
The analog voltage will be transferred to digital signal through the A/D converter inside of the ATMEGA8L. At last, the measured voltage will be displayed on the 7 segment display after scanning the digital tube.

The system power is connected through S1 and the IC & diode (from D1 to U2) to provide output bias voltage of 3.3 V (Vcc).

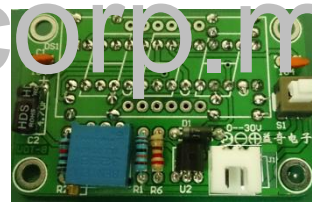
Assembly Instruction Diagram Step

www.synacorp.my

1.



2.



3.



4.

