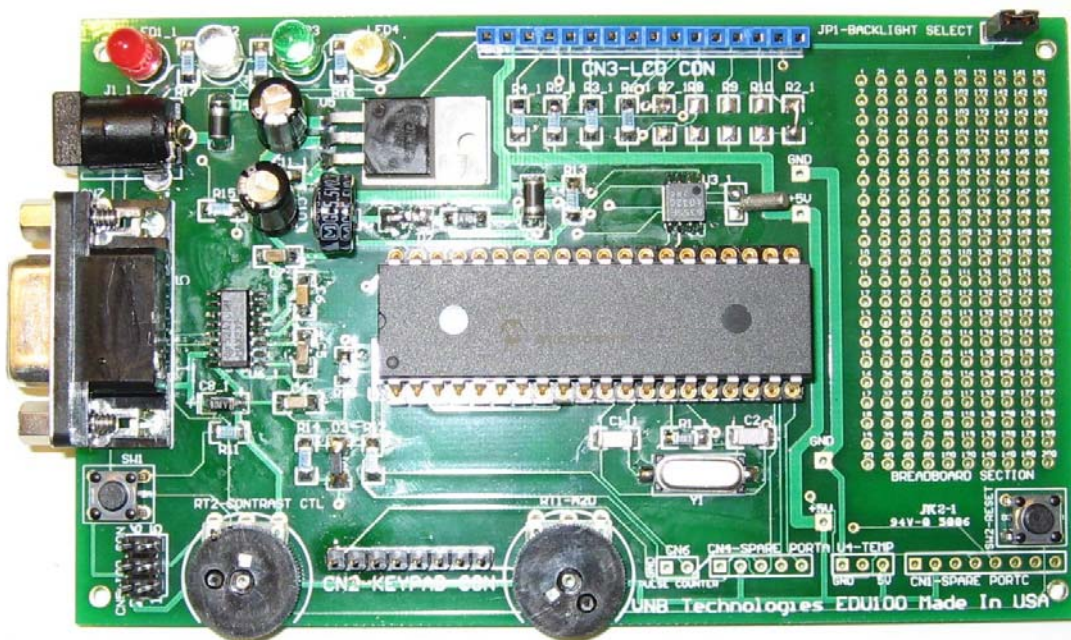


VNB EDU100

Educational Development Board



VNB EDU100 is an entry level educational board/development board. EDU100 is one of the must have boards from VNB for students as well as hobbyists to learn embedded C programming. With this board, students will learn the basic embedded programming/debug skills.

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Features and Contents

- PIC16F877A microcontroller from Microchip
- Main oscillator or clock at 20 M Hz
- Circuitry of RTC (Real Time Clock) with battery or super-cap backup
- Circuitry of temperature sensor
- Circuitry for pulse counter
- LCD display connector
- Keypad connector
- A push button to reset the board
- A push button for external trigger event
- A potential meter to adjust the LCD contrast
- A potential meter for A/D study
- 3 LEDS (RED/GREEN/BLUE)
- A RS232 port DB9 Female
- A 6 pin ICD connector
- Power/GND access points and breadboard area for experiments
- Connector to access extra PIC pins for other experiments.
- DC power supply jack.
- DC step-down circuit to convert 12-volt to 5-volt for main power supply of the board
- A power indicator LED
- One jumper to configure the board to have LCD back light turned ON/OFF

Connector/Jumper/Switches Description:

LEDS:

- LED1: power indicator , Red LED
- LED2: RED
- LED3: GREEN
- LED4: YELLOW

Jumpers:

- JP1: Close to enable Backlight of the LCD, Open to disable Backlight of the LCD.
- J1: DC Power Jack

Connectors:

- CN1: Spare Port C.
 - CN1-1 : GND access
 - CN1-2: +5V access
 - CN1-3: PIC pin 15 (C0)
 - CN1-4: PIC pin 16 (C1)
 - CN1-5: PIC pin 17 (C2)
 - CN1-6: PIC pin 18 (C3)
 - CN1-7: PIC pin 23 (C4)
 - CN1-8: PIC pin 24 (C5)
- CN2: Keypad connector
- CN3: LCD connector
- CN4: Spare Port A.
 - CN4-1 : GND access
 - CN4-2: +5V access
 - CN4-3: PIC pin 3 (A1)
 - CN4-4: PIC pin 4 (A2)
 - CN4-5: PIC pin 5 (A3)
- CN5: ICD connector. This is pin compatible with CCS ICD, ICD2 from Microchip and ICD2 from VNB technologies.
 - CN5-1: PIC pin 1 (MACLR)
 - CN5-2: +5V
 - CN5-3: GND
 - CN5-4: PIC pin 40 (B7)
 - CN5-5: PIC pin 39 (B6)
- CN6: Pulse count circuitry
- CN7: RS232 DB9 Connector

Switches:

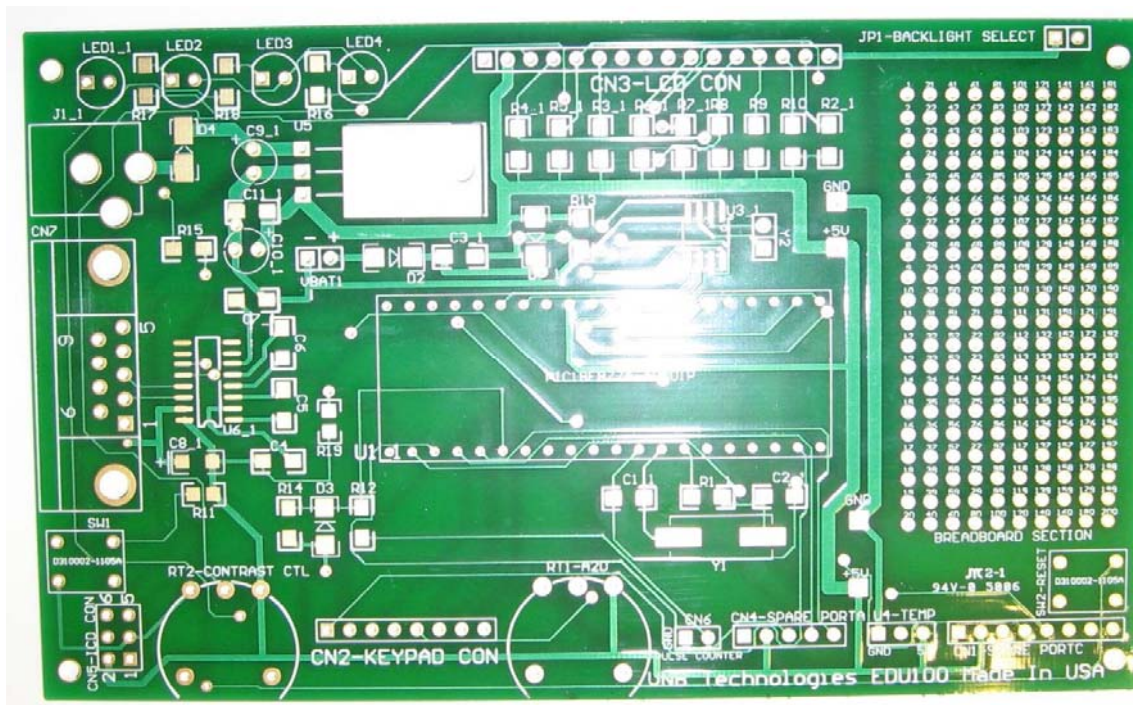
- SW1: Push Button for external trigger event
- SW2: Reset Switch

Potential Meters:

- RT1: Potential meter for A/D exercises
- RT2: Potential meter for adjusting LCD contrast

Other Components:

- U4: Temperature sensor.
- VBAT1: For RTC chip power backup. Either an external battery or a super CAP backup (default value is 0.22uF) can be used here.
- If the super CAP backup is used, the diode D2 can be replaced by a 330 Ohm Resistor.



Part List

To make it easier for those who chose to assemble the board themselves, the part list is included here

Description	Designator	Quantity	Notes
Cap 1206 15pF	C1, C2	2	
10uF	C3	1	Not populated
Cap 1206 1uF	C4,C5,C6,C7	4	
CAPPOL 1206 10uF	C8	1	Polarized Cap
100 uF Electrolytic CAP	C9, C10	2	
Cap 1206 0.1UF	C11	1	
Header, 8-Pin	CN1	1	
Header, 8-Pin	CN2	1	
Header, 16-pin	CN3	1	
Header, 5-Pin	CN4	1	
Header, 6-Pin	CN5	1	
Header, 2-Pin	CN6	1	
DB-9 Female Connector	CN7	1	
1N4148 Standard Diode	D1,D2	2	
Diode Zener 5.1V	D3	1	
Standard Diode, 1A	D4	1	
DC Jack	J1	1	
Header, 2-pin	JP1	1	
RED LED	LED1	1	
WHITE LED	LED2	1	
GREEN LED	LED3	1	
YELLOW LED	LED4	1	
Resistor 1206 30 Ohms	R1	1	
Resistor 1026 1K	R2	0	Replaced by a wire jumper if want to use back light support, leave this one open otherwise
Resistor 1206 1K	R16,R17,R18	3	
Resistor 1206 10K	R3,R4,R5,R6	4	R7,R8,R9,R10 are not used
Resistor 1206 10K	R11,R12,R14	2	
100K	R13	1	Not populated
R 1206 1K	R15	1	
Resistor 0805 47K	R19	1	
Variable Resistor 5K POT	RT1	1	
Variable Resistor for A/D	RT2	1	
PUSH BUTTON SWITCH	SW1, SW2	2	

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PIC18F877A 40 PDIP	U1	1	
RTC-635R Timer	U3	1	
HEADER, 3-pin	U4	1	
7805, Power Regulator	U5	1	
Max232 SO16	U6	1	
Header, 2-pin	VBAT1	1	for battery connection or COIN Capacitor
20 MHz Oscillator	Y1	1	
32 KHz Oscillator	Y2	1	

Sample codes:

Sample codes to bring up this board can be found at <http://www.vnbtech.com>

Requirements:

Power Supply

Require a 5-12V DC power supply adapter.

System Requirements:

- Windows 95, 98, ME, NT, 2000 or XP
- RS232 port and USB port.

Contact information:

Visit our company website <http://www.vnbtech.com>

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Revision History

Date	Version	Description of change	Author
2006-12-29	1.0	Initial Release	CD

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